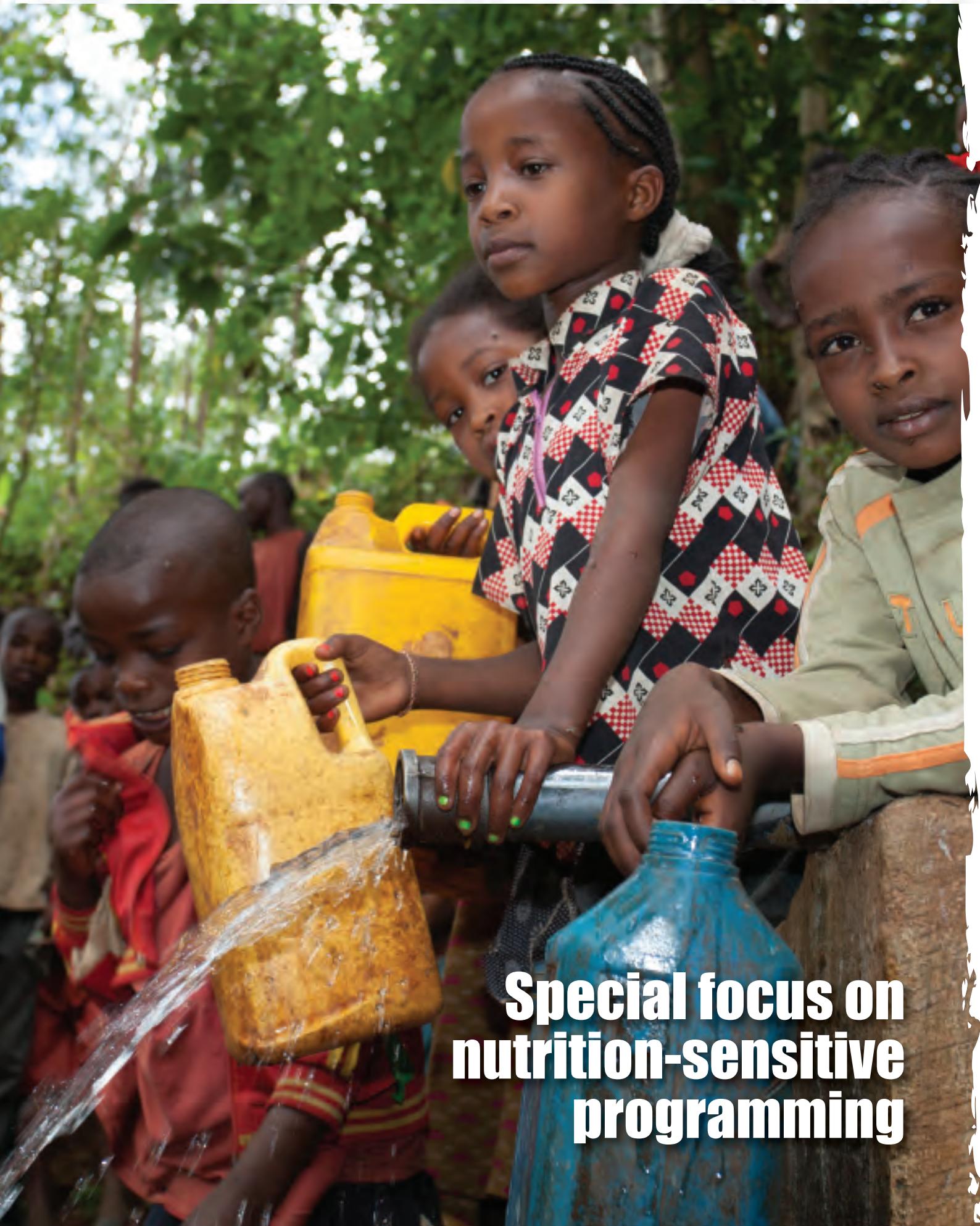


Field Exchange

Emergency Nutrition Network



**Special focus on
nutrition-sensitive
programming**

Contents

1 Editorial

Field Articles

- 9 Role of communication and advocacy in scaling up nutrition: lessons and plans from the Zambian experience
13 SUN experiences: lessons from Pakistan
17 Nutrition-sensitive research in Ghana
20 SUN Movement experiences in Indonesia
56 The potential of nutrition-sensitive Conservation Agriculture: lessons from Zambia
59 Use of a two-stage approach to identify intervention priorities for reduction of acute undernutrition in Abaya district of Ethiopia
62 Increasing nutrition-sensitivity of value chains: a review of two Feed the Future Projects in Guatemala
65 Integrating MIYCN initiatives across sectors in Dadaab refugee camps in Kenya
68 Impact of food aid on two communities in Niger
72 Impact of community-based advocacy in Kenya
75 Implementation challenges and successes of an AG4Nut project in the eastern region of Burkina Faso
78 Nutrition-sensitive agriculture in Zambia: work in progress
97 The nutrition-sensitive potential of agricultural programmes in the context of school feeding: lessons from Haiti
100 The REFANI Project in Pakistan: adapting research to a multi-sectoral programme for impact measurement
104 Child Development Grant Programme (CDGP) in northern Nigeria: influencing nutrition-sensitive social policy programming in Jigawa State
108 Integrated food security programming and acute malnutrition prevention in the Central African Republic
111 Improving food and nutrition security for households with underweight children in Taita Taveta County, Kenya
114 Evaluation of an integrated health-nutrition-WASH project to reduce malnutrition prevalence in children under two in Bangladesh
118 IYCF-Friendly Framework pilot in Jordan, Bangladesh and Kenya
122 Building the 'enabling environment' via a multi-sector nutrition platform to scale up micronutrient supplementation

- 132 Impact of agronomy and livestock interventions on women's and children's dietary diversity in Mali
134 WASHplus in Mali: integrating WASH and nutrition for healthy communities
138 Nutrition Impact and Positive Practice: nutrition-specific intervention with nutrition-sensitive activities
142 Integrating nutrition products into health system supply chains: making the case
145 Child Survival Week as a platform for promoting vitamin A supplementation in Niger
149 Nutrition-sensitive multi-sectoral planning: experiences on Link Nutrition Causal Analysis (NCA) in Kenya

Research

- 23 Briefing on the Bihar Child Support Programme, India
26 Nutrition incentives in dairy contract farming in northern Senegal
29 The cost of a knowledge silo: A systematic re-review of water, sanitation and hygiene interventions
31 Water for food security and nutrition
33 Cash, food or vouchers? Evidence from a randomised experiment in northern Ecuador
35 Review of programmes integrating family planning with food security and nutrition
37 Review of the micronutrient impact of multi-sectoral programmes focusing on nutrition
39 Inter-sectoral coordination for nutrition in Zambia
40 Complementary food hygiene: An overlooked opportunity in the WASH, nutrition and health sectors
42 Impact of an integrated agriculture and nutrition and health behaviour change communication programme for women in Burkina Faso
44 Doing cash differently: how cash transfers can transform humanitarian aid
46 Cash transfers and child nutrition
48 Links between household agricultural production and nutrition
50 WASH interventions and their effects on the nutritional status of children
51 Is reliable water access the solution to undernutrition?
53 Impact of a homestead food production programme on household and child nutrition in Cambodia

- 54 Large-scale intervention to introduce orange sweet potato in Mozambique increases vitamin A intake

News

- 82 Mainstreaming human nutrition in livestock interventions: lessons learnt from a capacity-building workshop for the Sahel region
85 Global Forum on Nutrition-Sensitive Social Protection Programmes
87 Guidelines and free on-line modules to support multi-sectoral programming for nutrition and resilience
88 Understanding the SUN Movement Common Results Framework: lessons learned from five countries
90 Nutrition and social protection
91 Regional conference on responding to challenges of undernutrition in West Africa
92 Agri-health research: what have we learned and where to next?
93 Baby WASH coalition planned to overcome development silos
94 Programming implications of stunting in protracted emergency contexts
94 Making agriculture work for food and nutrition security
95 SUN in practice: Contribution of agriculture and social protection to improving nutrition
95 SuSanA Thematic Online Discussion: Linking WASH and Nutrition
96 Process learning: field testing a social and behaviour change guide for nutrition-sensitive agriculture

Views

- 125 Action Against Hunger/Action Contre la Faim: Promoting a comprehensive nutrition-security approach and organisational culture to enhance nutrition-sensitive programming
128 Developing guidance and capacities for nutrition-sensitive agriculture and food systems: lessons learnt, challenges and opportunities
131 Reflections on 30 years of nutrition-sensitive agriculture

ENN updates

- 153 ENN's new strategy 2016-2020
154 En-net update
154 Nutrition Exchange



Dedication: Dr Jeroen Ensink

This special edition of *Field Exchange* is dedicated to the memory of Dr Jeroen Ensink, Senior Lecturer in Public Health Engineering at the London School of Hygiene and Tropical Medicine (LSHTM), who died on Tuesday 29 December 2015. Dr Jeroen Ensink was co-author on research summarised in this issue (Loevinsohn M et al, 2015) and ENN extend sincere condolences to his family, friends and colleagues for their tragic loss.

Jeroen was an internationally renowned water engineer and dedicated humanitarian. He was passionately committed to a simple cause: improving access to water and sanitation in countries where children continue to die needlessly due to the lack of these basic services. As a researcher and educator, Jeroen's career crossed many continents. He lived and worked in countries including Pakistan, India, Vietnam, Tanzania and Malawi, and

collaborated with numerous universities and international agencies. He devoted particular effort to building local research capacity in developing countries. His own research was rigorous but always practical. He published over 50 scientific papers and, at the time of his death, was leading a large study in the Democratic Republic of Congo to understand how improvements in water supply and other measures could control and prevent cholera outbreaks.

Jeroen was a natural teacher, and immensely popular with students in whom he invested much time and energy. He was Course Director on the School's Master's degree in Public Health in Developing Countries. He provided support and inspiration in equal measure and many of his students are now successful researchers and public health professionals in their own right. In addition to a flood of tributes from his many collaborators, Water-

Lines, a major journal in his field, will publish a collection of dedicated papers in April and announce an annual prize in his memory.

At the request of Jeroen's family and colleagues, the LSHTM has established the Jeroen Ensink Memorial Fund to support MSc Scholarships for students from sub-Saharan Africa and South Asia to become future leaders in public health. Those who would like to make a gift to the fund should contact Bill Friar, Head of Development, email:

william.friar@lshtm.ac.uk

Loevinsohn, M; Mehta, L; Cuming, K; Nicol, A; Cumming, O; Ensink, JH (2015). *The cost of a knowledge silo: a systematic re-review of water, sanitation and hygiene interventions. Health policy and planning. Health Policy and Planning* 30:660–674, first published online May 29, 2014 doi:10.1093/heapol/czu039

Dear readers

Introduction to the special issue

The most recent *Lancet* series on maternal and child undernutrition (Bhutta et al, 2013) calculated that even with 90% coverage of specific nutrition interventions (addressing maternal nutrition, infant and young child feeding (IYCF), micronutrient deficiencies and management of acute malnutrition), only 20% of global stunting cases and 60% of wasting cases could be averted. This reflects a widespread understanding that attention is also needed to the broader determinants of malnutrition if reductions are to be achieved at scale.

The conceptual framework for malnutrition from the Lancet series identifies the underlying determinants of nutritional status as, broadly, food, health and care (see Figure 1), encompassing sectoral activities beyond nutrition and health and referred to as nutrition-sensitive interven-

tions. While the broad underlying and basic determinants of malnutrition are identified in the conceptual framework, the framework does not assign weighting or metrics to these domains in terms of their likely impact on malnutrition. There is currently a push to better understand what these other sectors can do and how they can contribute to improving nutrition at scale. The advent and rise of the Scaling Up Nutrition (SUN) Movement and the World Health Assembly (WHA) targets among other initiatives has further increased focus on multi-sector programming to address the underlying determinants of malnutrition, with particular attention on stunting.

This special issue of *Field Exchange* presents a snapshot of field experiences and relevant peer-reviewed research to provide insights into the current state of knowledge and action for nutrition-sensitive programming. Many examples

of current programming, research, policy guidance and meetings that relate to a spectrum of nutrition activities are included, identified through a call from ENN for content in July 2015. While this compilation is not representative of all that is happening in various countries or across the range of sectors, it provides a useful snapshot of activities undertaken in the name of addressing the underlying determinants of malnutrition. Here we surmise what is being undertaken to help understand how the concept is understood and applied, to capture good practice and learning and to help strengthen current approaches and inform future work.

Operationalising definitions

It is clear from the diversity of articles submitted to this special issue that many agencies and governments are engaged in work addressing the underlying determinants of nutrition (and in some instances the basic causes (Leroy et al,

2015)), and that nutrition sensitivity means many things to different people and agencies. Working definitions do exist (Ruel et al, 2013): Nutrition interventions refer to actions that aim to change nutrition outcomes, including anthropometry, nutritional status measured by biomarkers, or nutrient intakes and diets and may be nutrition-specific or nutrition-sensitive (see Box 1). Clarity on what definitions mean operationally can help us to plan effective programmes, evaluate our efforts and calculate costs in relation to benefits of this work. Based on these definitions, key points of difference for nutrition-sensitive action are attention to the underlying determinants of nutrition, incorporation of specific diet and nutrition goals and actions, and the potential of these types of programmes to be used as delivery platforms for nutrition-specific actions.

It is known that programmes have more impact on nutrition if they explicitly include a nutrition goal or outcome objective. It is therefore important to be explicit about any expected or plausible pathways to effect nutrition-related change (sometimes referred to as ‘theories of change’); some sectors have elaborated conceptual pathways (Herforth et al, 2015; Dangour et al, 2013; Fenn et al, 2015), but examples of impact-pathway models for individual programme types are few. How programmes act in different contexts is important to investigate, as different issues (dealt with by different sectors) are likely to be enabling or limiting factors for the complex causal pathway that leads to nutrition outcomes in different situations. Unintended positive (e.g. improved determinants of nutrition) or negative (e.g. opportunity costs) effects may also emerge and need to be captured. Tightly defined research can sometimes lack broader perspectives and flexibility to consider impact pathways, unin-



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tended benefits and negative consequences that may emerge during programming if they were not considered in the original research design, e.g. research designed to look at the impact of WASH interventions on diarrhoea will not accommodate impact pathways relating to women’s empowerment (Loevinsohn et al, 2015). A number of research articles in this special issue explicitly highlight that limited evidence of nutrition impact may be due to shortcomings in design, implementation and evaluation (Loevinsohn, 2015; Guatam et al, 2015).

The mixture of articles in this edition suggests a number of ‘operational’ definitions or categories of nutrition-sensitive programming, outlined in Box 2. In order to be considered nutrition-sensitive, a minimum requirement is to align some portion of the programme within a theoretical causal pathway leading to diet or nutrition impact. A nice example of this approach is reflected in an article from Guatemala (Klein,

2015), where impact pathways informed the qualitative study of agriculture value-chain activities in two projects to explore impact assumptions and investigate ways to improve nutrition sensitivity.

Within or aside from a pathways approach, programmes may use different instruments to enhance their nutrition-sensitivity. These typically include:

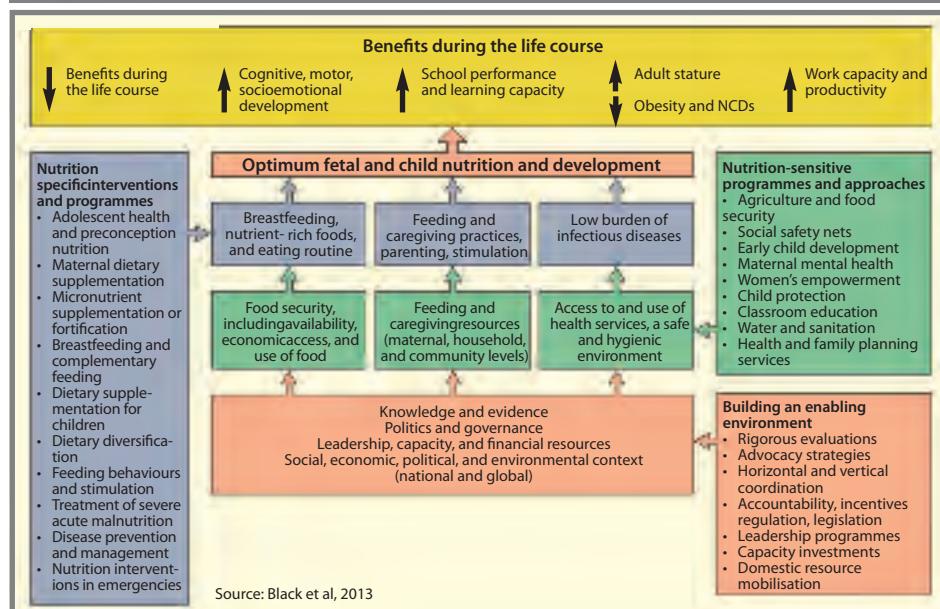
- integrating and measuring nutrition goals;
- targeting nutritionally vulnerable groups;
- using conditionality to increase service use or change behaviour;
- adding or expanding coverage of nutrition-specific actions; and
- working with other sectors to cover more pathways at once, or to cover more proximate steps on a pathway.

A programme in a relevant sector, if it can place itself on a plausible pathway to positively nutrition impact, might be described as *indirectly* nutrition-sensitive – and sometimes just doing a good job in that one sector is enough for a particular context. But there are ways to make these actions even more *directly* nutrition-sensitive, if the context demands it.

Nutrition-sensitive research: evidence and challenges

The content of this edition demonstrates an appetite for operational research, i.e. agencies ‘piggy backing’ research onto programmes (Mayer et al, 2015; Bonde, 2015; Oxford Policy Management, 2015; Moyo et al, 2015; Schwartz et al, 2015; Lewis, 2015; Adamu et al, 2015; O’Mahony et al, 2015). There is a spectrum of practice from investigation of country-specific, government-supported programmes (Oxford Policy Management, 2015; Schwartz et al, 2015; Adamu et al, 2015) to cross-country agency initiatives (O’Mahony et al, 2015) and ACF’s nutrition causal analysis (NCA) approach (Gallagher, 2015; Mutegi et al, 2015). Nutrition-sensitive interventions can be complex, so producing strong evidence about their effects can be difficult

Figure 1 Framework for actions to achieve optimum foetal and child nutrition and development (Black et al, 2013)



BOX 1**Definitions of nutrition-specific and nutrition-sensitive programming****Nutrition-specific interventions and programmes**

Interventions or programmes that address the immediate determinants of foetal and child nutrition and development – adequate food and nutrient intake (diets), feeding, caregiving and parenting practices, and low burden of infectious diseases.

Examples: Adolescent, preconception and maternal health and nutrition; maternal dietary or micronutrient supplementation; promotion of optimum breastfeeding; complementary feeding and responsive feeding practices and stimulation; dietary supplementation; diversification and micronutrient supplementation or fortification for children; treatment of severe acute malnutrition; disease prevention and management; nutrition in emergencies.

Nutrition-sensitive interventions and programmes

Interventions or programmes that address the underlying determinants of foetal and child nutrition and development – food security; adequate caregiving resources at the maternal, household and community levels; and access to health services and a safe and hygienic environment – and incorporate specific nutrition goals and actions. Nutrition-sensitive programmes can serve as delivery platforms for nutrition-specific interventions, potentially increasing their scale, coverage, and effectiveness.

Examples: agriculture and food security; social safety nets; early child development; maternal mental health; women's empowerment; child protection; schooling; water, sanitation, and hygiene (WASH); health and family planning services.

Source: Ruel et al, 2013

and expensive. The first challenge for research comes in deciding what effects should be measured: should an agriculture programme be looking at effects on stunting, or a WASH intervention look at impacts on food consumption? Again, a theory of change or programme-impact pathway can help clarify which determinants a project is likely to change, and which it is not.

For instance, a single-sector agriculture programme aiming to improve availability of vegetables and animal-source foods through home-stead food production would sensibly measure changes in diets, but may not have a significant impact on stunting unless it was either mainstreaming or working alongside a project aiming to impact the other underlying determinants in health and care (Bonde, 2015).

In this issue of *Field Exchange*, the large majority of articles focus on stunting and do not

include wasting as outcome goal or impact indicator (exceptions include O'Mahony et al, 2015 and Mbura et al, 2015); this may reflect the widespread (though not uncontested) dichotomy between wasting and stunting, with the former being seen as a manifestation of crisis and the latter as an endemic problem to be measured and addressed in more stable situations. This may also reflect the SUN Movement's focus on stunting in the 1,000-day window, coupled with its interest in nutrition-sensitive programming and attendant funding flows.

The second challenge comes in understanding what form of research should be applied. There are many research approaches used by contributors to this edition, including published randomised controlled trials (RCTs) (Bernard et al, 2015; Hidrobo et al, 2015; Hotz et al, 2015); randomised trials still underway (Oxford Policy Management, 2015; Shwartz et al, 2015); case

control/cross sectional studies (Siling et al, 2015); descriptive studies (Mbura et al, 2015); case studies/qualitative assessment mixed methods evaluations (Oxford Policy Management, 2015); and opportunistic retrospective analysis (Hoq et al, 2015; McKune et al, 2015). In order to understand programme impact, randomised designs provide strong evidence. While there are relatively few of these studies for nutrition-sensitive programmes, the evidence base is growing (see, for example, agriculture and nutrition research in Burkina Faso (Hotz et al, 2015) and emerging work around cash transfers and nutrition impact in India (Oxford Policy Management, 2015), Pakistan, Niger and Somalia (Shwartz et al, 2015)).

Poor research design has hampered impact investigation in quite a few of the articles featured in this edition (Borwankar et al, 2015; Leroy et al, 2015; Guatam et al, 2015; de Groot et al, 2015), with little exploration of pathways (Dangour et al, 2015). Another challenge is how to realise the nutrition objective of a nutrition-sensitive intervention within the short timeframe of the intervention; a number of the programmes described aimed to impact on IYCF behaviour or practices or child anthropometry, but these were not measured as it was unlikely to see a change within the project lifetime (Bery et al, 2015; Lewis, 2015; Moyo et al, 2015). This raises questions about appropriate research duration, which for many of the complex outcomes in nutrition will be longer than standard project-funding cycles. Sustainability of impact is a related issue that is rarely discussed in the context of nutrition-sensitive programmes; only one study in this issue (Maïmouna et al, 2015) has looked at long-term impact (output or outcome), although some are working with and looking to influence national programmes and policies for sustainable impact (Oxford Policy Management, 2015; Shwartz et al, 2015; Adamu et al, 2015 and Aryeetey, 2015).

There is also a question about the external validity of many of the small-scale impact studies being implemented and whether findings in one or two local contexts, such as described in Mali (Bery et al, 2015) or in Kenya (Mbura et al, 2015), can be applied to the national level. Efforts to build a collective of evidence from different contexts are underway in some cases, such as by Goal around their Nutrition Impact and Positive Practices (NIPP) approach (O'Mahony et al, 2015) or ACF around NCA (Mutegi et al, 2015). Independent research on impact is not well represented in this issue (Oueddrogo et al, 2015 in Burkina Faso; Oxford Policy Management, 2015 in India), which may be a cause for concern if indicative of agencies most often conducting in-house studies. These may be prone to interpreting findings favourably to support current and future funding requests to donors who increasingly seek value for money, but also where governments and NGOs often

BOX 2**Types of nutrition-sensitive programmes**

- i. A sector intervention that deals with the underlying causes of undernutrition (WASH, food security, women's empowerment), with an explicit demonstration of the part the programme could play on a causal pathway to nutrition impact. This intervention can't claim nutrition impact as it does not directly aim for it or measure it.
- ii. A relevant sector intervention that integrates strong and sector-appropriate nutrition goals, and measures them.
- iii. A relevant sector intervention explicitly targeted based on nutrition considerations; this could be targeting households with malnourished children (linking through nutrition-specific services such as a community management of acute malnutrition (CMAM) programme), or targeting nutritionally vulnerable populations.
- iv. A relevant sector intervention that uses conditions explicitly aimed at improving the human capital determinants of nutrition, such as use of health services or schooling.
- v. A relevant sector intervention that incorporates nutrition-specific components, such as IYCF, complementary feeding, or behaviour change communication, in order to scale up their coverage.
- vi. Relevant interventions from multiple sectors, converging on one population. These may be implemented as a coherent whole with an explicit aim to integrate nutrition-relevant actions across sectors, or may be implemented as separate sectoral programmes but with a broad goal of improving nutrition in the same population.

These programme types are not mutually exclusive; with sensible application, the more of these instruments that can be used to incorporate nutrition considerations into a programme, the more nutrition-sensitive it is likely to be.

do not have strong in-house research capacity, because that is not their core business.

In summary, several factors – a deep understanding of context, an explicit theory of change and a credible research design – would go a long way to improving the evidence base for nutrition-sensitive programming; these observations concur with the research priorities identified in the Lancet series (Ruel et al, 2013). But this is no small task, and one that implementing agencies and government institutions are often not equipped to undertake alone. The sections below provide a brief summary of some of the key evidence on nutrition-sensitive actions in certain crucial sectors, from the literature and from articles submitted for this special edition.

Agriculture

Investment in agriculture and nutrition has been happening for decades (Siling et al, 2015) with renewed global vigour in scrutinising this area (Dufour, 2015).

In this edition, a range of articles feature agriculture and nutrition linkages, from nutrition-sensitive agriculture in Zambia (Mayer et al, 2015) to nutrition-sensitive potential of agriculture in the context of school feeding in Haiti (Mallonee et al, 2015), nutrition incentives in dairy contract farming involving the private sector in Senegal (Bernard et al, 2015), among others (Mayer et al, 2015; Klein, 2015; Moyo et al; 2015, Mallonee et al, 2015, Ouedraogo et al, 2015; Bernard et al, 2015; Titus, 2015; Danton, 2015; Dufour, 2015). Agricultural and pastoral communities form a large proportion of the beneficiaries of development aid programmes, and small-scale agriculture is a major provider of both food and income for these families; on a macro scale, agriculture also determines food prices and is the driver of many economies. As such, it might be assumed that raising productivity and incomes should be the major preoccupation of the agriculture sector, and these are certainly important factors in reducing hunger and poverty but, with a nutrition-sensitive lens, this is not all the agriculture sector can do.

Purely increasing income does not reduce undernutrition rates fast: a 10% rise in gross domestic product (GDP) is associated with a 6% decline in stunting and a 7% decline in underweight, so it would take decades to eliminate undernutrition in a typical agricultural economy through this route. Rising income also leads to a commensurate rise in overweight or obesity: a 10% rise in GDP is associated with a 7% rise in obesity in women (Ruel et al, 2013). Thus, in order to be nutrition-sensitive, agriculture programmes need to go beyond income and address the determinants of all forms of malnutrition.

A key nutrition outcome is the quality of diets, and agriculture is the sector with the most influence on what is available, affordable and accessible to be eaten, beyond starchy staple

foods. So diets are a product of all of the key pathways from agriculture to nutrition (through changes in production, income and women's empowerment), and should be a key outcome indicator of agricultural programmes. A review of agency guidelines has formed quite a consensus on Key Recommendations for Improving Nutrition through Agriculture (Herforth et al, 2014) at both policy and programmatic levels.

One of the most common nutrition-sensitive agriculture-sector programmes is homestead food production. In 2011, a systematic review of published research (Masset et al, 2012) assessed whether this broad category of programmes was effective in impacting nutrition outcomes. It found that anthropometric and biomarker nutrition indicators were rarely affected through these programmes, but that there were often positive impacts on diets (increased consumption of foods produced). While there were limitations to the studies and meta-analysis, it did appear that programmes were more likely to be effective if they included attention to empowering women in agriculture. A more recent set of studies looking at farm-level pathways to nutrition (Winters et al, 2015) backed up the key finding: in general, farming households producing a greater diversity of crops had greater access to a diverse range of foods and children in those households had more diverse diets.

In agriculture projects, one potential negative impact that has been studied is on women's time use, as time spent on agriculture competes with time used for other nutrition-relevant activities such as childcare and feeding, as well as resting and socialising. A recent review (Johnston et al, 2015) confirmed that agriculture in general, and interventions in particular, do disproportionately take up women's time. The impacts on nutrition depended on how this additional time burden was managed, whether by reducing rest time, switching to more convenient foods, reducing time for feeding and cooking, or sharing domestic duties within the household. This con-

text of trade-offs and potential responses should therefore be considered as part of programme planning, in agricultural and other time-intensive interventions.

The Food and Agricultural Organization (FAO) guidance on nutrition-sensitive agriculture and food systems highlights that in agriculture, a consumer-centred approach may be at odds with a food-supply driven approach (Dufour, 2015). In other words, nutrition objectives may compete with economic objectives, and policy change at each stage of the food system is needed. Going beyond sensitisation takes time, perseverance, multi-stakeholder dialogue, trial and error and improved learning that involves experience-based evidence, as well as research. An FAO-led regional workshop featured in this issue looked to capitalise on existing experiences and knowledge on linkages between livestock and human nutrition in the Sahel (Dominguez-Sala et al, 2015). Participants explored impact pathways and how to optimise the nutrition impact of interventions; country case studies (two of which we feature) heavily informed discussions (Bonde, 2015 and Bernard et al, 2015).

Social protection/cash transfer programming

Social safety net programmes, which include conditional and unconditional cash transfer (CT) programmes, are increasingly being implemented in development and humanitarian contexts. These programmes currently provide cash, voucher, or food transfers to an estimated one billion poor people and those affected by shocks (e.g. natural disasters). Cash programming and research feature in a number of articles in this edition (Shwartz et al, 2015; Oxford Policy Management, 2015 and Adamu et al, 2015), in the form of both conditional (Oxford Policy Management, 2015) and unconditional transfers (Shwartz et al, 2015 and Adamu et al, 2015). There is strong evidence that CTs increase household income and protect household assets from being sold, and it is widely thought that these



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create a situation that favours behaviours that could protect children from undernutrition. However, the evidence for an impact of CTs on undernutrition is mixed and inconclusive (Fenn et al, 2015). A number of reasons for this have been suggested, including differences in programme design. There is some evidence that CTs are more effective when complemented with other nutrition interventions.

Ongoing research described in this edition should yield results on nutrition impact in mid-2016 (Oxford Policy Management, 2015) and early 2017 (Shwartz et al, 2015 and Adamu et al, 2015). Many social protection evaluations/impact assessments are underway, and at a recent meeting on nutrition-sensitive social protection programming in Moscow (World Bank, 2015) convened by SecureNutrition (a World Bank project) and the Russian Federation, over 20 countries presented pilot studies and full-scale programmes that are deemed to be nutrition-sensitive and are currently being implemented (World Bank, 2015). The volume of evidence on whether social protection programming can impact nutrition, and how it does in a given context, is therefore on the cusp of increasing significantly to include a compendium of presented case studies (anticipated for Spring 2016; see www.securenutritionplatform.org). At the Moscow meeting, five elements of programme design looked to have the potential to make social protection nutrition-sensitive: promotion of nutrition and health services; delivery of training and capacity building to beneficiaries for good food behaviour; increased resilience to food insecurity; focusing on nutritionally vulnerable populations; and increased coordination between social protection, health and nutrition stakeholders. Effecting increased multi-sector coordination is a theme we will return to later.

Health services and WASH

The other immediate determinant of nutrition status is health, and major underlying determinants of this are use of health services and WASH. Access to adequate, safe and sufficient quantities of water and to sanitation are a human right realised in 2010; the relations with food security and nutrition are explored in a detailed report by the High Level Panel of Experts on Food Security and Nutrition to the Committee on World Food Security (CFS) (HPLE, 2015). WASH interventions have been shown to positively impact many of the childhood diseases that are also associated with undernutrition in children, such as diarrhoea, environmental enteropathy, and worm infections. Consequently, research has investigated whether WASH interventions themselves might impact nutrition through these and, to a lesser extent, through other, indirect pathways. Similarly, use of health systems is intrinsically linked with issues such as improved post-natal practices and higher immunisation rates, which in turn are associated with better nutrition outcomes; there has been less research on these links.

A recent systematic review of the evidence of WASH looked at the effect of interventions to improve water quality and supply, provide adequate sanitation and promote hand-washing with soap on the nutritional status of children. It found a small improvement in child linear growth with some of the WASH interventions reviewed (solar disinfection of water, provision of soap and improvement of water quality). However, this study only focused on the very best quality studies, and even many of these tended to be short evaluations with inadequate methods. There are larger studies ongoing which aim to start to fill this research gap around WASH impacts on nutrition; in the meantime no study reported negative outcomes on nutrition through WASH programmes. There is a continuing debate on appropriate methods to evaluate and synthesise evidence on complex interventions such as WASH. This is nicely highlighted in research summarised in this issue that involved a re-review of a systematic review of the impact of WASH interventions on diarrhoea morbidity jointly from health and development perspectives (Loevinsohn, 2015). The research identified additional pathways (beyond the usual health impacts investigated, typically diarrhoea) that suggested ways in which investments in WASH can more effectively support health and livelihoods.

Other sectors

There are many other nutrition-sensitive sectors and programmes to explore. For example, there are theoretical grounds to suppose that programmes to support maternal mental health or to increase health-seeking behaviour might impact nutrition, but as yet little research. We feature one example from Nigeria where an unconditional cash transfer is already seeing early impacts on antenatal care attendance (Adamu

et al, 2015). Some nutrition-sensitive programmes may also act as platforms for delivery of nutrition-specific interventions; we feature examples from Niger (Maïmouna et al, 2015) and northern Nigeria (Quigley et al, 2015).

Multi-sector action

Multi-sectoral engagement is required if the multiple determinants of malnutrition are to be addressed and there are now recorded experiences of sectors coming together to tackle these, both within governments and within development agencies.

There remains a lack of clarity over how best to work together given the very different mandates, training and technical languages used by different sectors. Common traits that seem to make multi-sectoral actions work better include a mutual understanding of the problem at hand and of the complementary roles of the sectors involved; a supportive institutional culture of collaboration and adaptation within the organisations involved; and strategic capacity at supervisory levels to plan, monitor and manage the process (Garrett et al, 2011). There are also different levels of cross-sectoral working: from no interaction at all, to informal or occasional collaboration, to structured coordination, to full integration (Harris et al, 2011). The World Bank recommends to “plan multisectorally, implement sectorally, review multisectorally” (Alderman et al, 2013); in practice, what type of intersectoral arrangement is required, and whether it is required at all for the issue and context at hand, should be addressed in programme planning. Different shapes and forms of intersectoral coordination feature in a number of articles from both agency and government perspectives (Gallagher et al, 2015; Drimie et al, 2015; Shaheen et al, 2015; Mwendwa et al, 2015; Mutegi et al, 2015 and Sardjuni et al, 2015). Communication between and within sectors is key; framing nutrition according to sectoral priorities has been key to multi-sectoral engagement in Zambia and Indonesia (Sardjuni et al 2015 and Phiri, 2015). Recognising that the primary role and impact of agriculture – a common nutrition-sensitive partner – is around food and diets rather than ‘nutrition’ may be a better way to frame conversations and engage agriculturalists.

Government experiences

While many of the articles in this special issue have been written by international agency staff, we also feature articles by senior national government and allied staff in four SUN countries (Ghana, Zambia, Pakistan and Indonesia) regarding their experiences around multi-sectoral coordination, advocacy and communication, financing, planning and research (107, Shaheen et al, 2015, Sardjuni, 2015 and Phiri, 2015). These document a process that has been followed which includes awareness-raising and capacity-building in other sectors, political lobbying and

ultimately joint planning and implementation. In Zambia, a very active civil society network has seen strong and innovative advocacy on nutrition influence political commitments, spark legislative change and influence relevant policy (Phiri, 2015). However, despite greater commitments to nutrition by the Government, coordination of nutrition interventions across sector ministries has been challenging. Experiences around SUN in Indonesia reflect huge investment and tenacity in engaging across multiple ministries and greater nutrition profile in existing national policies, plans and budgets. However, sustaining commitment and translating policies into programmes also remains a huge challenge (Shaheen, 2015). Pakistan has had positive experiences since joining the SUN Movement in 2011 (Sardjuni, 2015), although it is still too early to say whether the multi-sector approach is working. In India, nutrition-sensitive social protection programmes are being implemented and steered by government with some success (Oxford Policy Management, 2015).

What all these articles have in common is the finding that multi-sector programming is easier said than done. An ENN-led review of the Common Results Framework (CRF), as a tool and construct promoted as part of the SUN Movement, concluded that the development of a national multi-sector CRF, with inclusion of all its features, is a process that may take years, rather than months (Walters, 2015). The processes of galvanising political and key stakeholder interest and ownership, development of multi-sectoral approaches, and monitoring and evaluation frameworks are complex and resource-intensive activities. Sustained commitment of a variety of different sectors and stakeholders is required to establish a relevant, feasible and workable CRF and deliver on it. There is also an important question about how multi-sector CRFs resonate with fragile and conflict-afflicted states (FCAS) and the particular challenges FCAS face. The ENN CRF review asserts that capturing experiences from more SUN countries in FCAS contexts would assist in learning about how the humanitarian perspective is incorporated into the CRF process and how the humanitarian approach can consider multi-sectoral, multi-stakeholder processes.

Findings from a regional conference in West Africa (Huré et al, 2015) highlighted that multi-sector programming needs improved nutrition management tools and enhanced targeting in policies that recognise the priorities of each sector, account for implementation capacity of a given sector, and invest in decentralised multi-sector governance. Development of impact measures and strengthened evidence of effectiveness of multi-sector interventions are also necessary.

Reflections on what is needed

Reflecting on the experiences shared in this issue, it seems legitimate to ask whether it is



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easier to implement multi-sector programming when development partners are leading implementation with limited government involvement. This is not to suggest that planning without government is the way forward, but to recognise the particular complexities that governments face and the need for joint planning and action. Furthermore, might it be even more straightforward in humanitarian contexts, where cluster and inter-cluster coordination mechanisms are established, or in FCAS, where there is often weak national governance and external stakeholders drive programming? On the other hand, it may be harder to plan and implement multi-sectorally within the short financing and reporting timeframe typical for humanitarian donors (Domínguez-Salas et al, 2015 and Mwendwa et al, 2015). ACF is one of the international agencies that has taken a lead in integrated multi-sector programming over a number of years. As described by the authors, establishing multi-sector programming as the model for ACF programming has been a long and difficult process within the agency (Gallagher et al, 2015). Outstanding challenges to fully implementing a comprehensive nutrition security approach across the agency's sectors are lack of evidence of effectiveness and cost-effectiveness; complexities in measuring effectiveness; limited time, energy and motivation to interact across sectors; and inadequate time for analysis within the humanitarian response cycle.

While the SUN Movement model is predicated on multi-sector planning and programming around nutrition, there are few examples of scaled-up, multi-sector government implementation, and where this has taken place, there is limited documentation describing how it has been achieved. There is a need for greater understanding of the political economy at various levels of government, as well as administrative and bureaucratic hurdles that need to be overcome to undertake multi-sector and nutrition-sensitive programming and to cater for weak or absent governance in FCAS. This is also true of NGO-NGO interactions, or even just departments within organisations; there are always political and institutional dimensions to distinct stakeholders coming together. Processes therefore need to be documented analytically and across

a range of contexts with a view to sharing learning. As detailed lesson-capture is something ENN specialises in, we will be doing our very best to assist with this process in the coming years.

Ultimately, we do not yet have the evidence to know whether it is actually worth the effort (in terms of impact) to plan and programme multi-sectorally as opposed to using scarce resources to ensure wider and fuller coverage of sector programmes like WASH, social protection, etc., which are intrinsically (or indirectly) nutrition-sensitive. We are working on intuition that coordinated efforts are better. Given the above call for evidence, the time seems particularly ripe for constructing detailed case studies across a range of countries and contexts to fully understand how best to facilitate the inter-sector planning and implementation process for nutrition-sensitive work. Some of this is being done under the Stories of Change initiative, which will be reported on later in 2016 (see www.transformnutrition.org)

Conclusions

This editorial has tried to bring a programmatic lens to lessons learned and good practice, as well as debates and challenges around nutrition-sensitive interventions, including providing a rationale for work on nutrition in non-traditional sectors; clarifying definitions as they relate to operations; and weaving together key international evidence with field articles to provide a snapshot of current knowledge and action. Several key issues have emerged from this 'reality-check':

- 1) there remain questions around whether, when, and how to work multi-sectorally for nutrition;
- 2) there is a need for more rigorous research on nutrition-sensitive interventions, including appropriate research designs and indicators; and
- 3) there is still work to be done on the detail of definitions for nutrition-sensitive action if they are to be usefully operationalised for government and development partners.

First, as reducing malnutrition requires the work of several sectors, a key challenge to nu-

trition-sensitive programming is connecting across the sectoral ‘worlds’. To this end, donors, NGOs, consultants, researchers, etc. can learn from each other and often make efforts to do so. There are email lists, video conferences, websites, discussion forums, libraries, conferences, workshops, field visits, etc.; each has a variety of pluses and minuses. At this level, however, becoming ever more specific about ‘why’ we come together could support objective expectations for outputs, and learning of the type that is deep enough to sustain momentum. This will be greatly helped by the seemingly growing evidence base for multi-sectoral engagement.

Readers may be aware that development partners have created a range of online communities, often (but not always) international in focus and which connect across many countries. To that end, we have drawn up a very small and informal sampling in Box 3 and encourage readers to explore these and other entities themselves and alert us to other online communities you turn to for information. As focal points of knowledge and learning between agencies and individuals, these communities have a lot of opportunities to be used more strategically. While it is not reasonable to expect these entities to align under a common banner,

it is worth at least considering more regular contact between one another as the shared issues in nutrition-sensitive programming are many. Sometimes it is through technical productions: the iterative and multi-stakeholder launches of the Global Nutrition Report are a good example that a common momentum for exchange can be found.

Second, there is a clear need for more rigorous evidence on the role of agriculture, WASH, health service provision, education and social protection in reducing undernutrition and addressing its determinants. By ‘rigorous’, we mean:

- evaluations with clear impact pathways showing the theoretical impact of a programme;
- strong methods, which often include randomised intervention groups, relevant indicators, large samples and targeted qualitative work in order to understand contexts and interpret findings; and
- the inclusion of detailed costs, activities, and programme effects at all stages of the impact pathways, so that cost-benefit can be calculated not only for the high-level goals but also for the intermediate outcomes which are important from a sectoral perspective.

The more robust evidence we have, the more programmes can focus squarely on implementation and track intermediate outcomes/outputs. Until that time, we need more rigorous evaluations, which require collaboration between researchers in the south and north – with methodological expertise – and implementing agencies and government actors with operational expertise. The goals of operations and research are not immediately compatible, but this is feasible, as a number of the articles in this issue show.

Finally, operationalising the Lancet definitions still poses some fundamental challenges when it comes to examining them in programming terms. In particular, the Lancet definitions are elaborated by a particular segment of the nutrition community primarily concerned with child stunting as the global outcome of interest and action prioritised in the first 1,000 days. The definitions are therefore limited to foetal and child undernutrition and development. In addition, ‘nutrition in emergencies’ is underspecified in these definitions, and classed exclusively as a nutrition-specific intervention.

The continuing debate around terminology and how it is applied to the programmatic context has led to a spectrum of programming undertaken in the name of nutrition sensitivity, with the possibility of nutrition funding being spent where it is not going to create the most impact. This also complicates tracking nutrition-sensitive spend at country level; while SUN guidance and tools on classifying nutrition spend around nutrition-sensitive programming are available and used by countries (Shaheen, 2015 and Sardjuni, 2015), they still require much interpretation and have many challenges at country level. A series of SUN regional financing workshops in 2015 identified a wide range of interpretations of what constitutes nutrition-sensitive programming, with inter-regional as well as inter-country differences. With much of the SUN movement approach based on a fully costed nutrition plan and the global efforts to create resources to finance them, clarified, harmonised definitions are critical.

We conclude on the note that there is much being achieved thanks to the momentum and actions that various initiatives have created, but still much more work is to be done within and between our communities; these debates must engage the widest possible group of nutrition-interest stakeholders – critically governments and those supporting programming at the sub-national level – if we are to fully understand who needs to act and how, what it will cost and what impact we might expect for the elimination of all forms of malnutrition.

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Jody Harris, IFPRI

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Box 3 Sample of online communities for multi-sectoral nutrition work

Name	Short description	Ownership or moderation	Technical areas	Site
Agriculture to Nutrition Community of Practice	Online community with email list serve and monthly discussion-based calls.	Independent	Agriculture, Nutrition	www.knowledge-gateway.org/ag2nut
Accelerated Reduction Effort on Anaemia (AREA)	Online community with email list serve and occasional webinars. Launched summer 2015.	United Nations Standing Committee on Nutrition; USAID SPRING Project	Anaemia (health, nutrition)	www.knowledgegateway.org/area
Agrilinks	Membership website, library, original events and blogs, social media, and discussion fora.	USAID KDAD Project	Agriculture, Nutrition, Food Security	www.agrilinks.org
Food Security and Information Network	Website, library, technical working groups, steering committee.	FAO, WFP, IFPRI, USAID, EU	Food Security, Nutrition Security	http://www.fsincop.net/home/en
Food Security and Nutrition Network	Website, library, original events, social media, discussion fora, and task forces.	USAID TOPS Project	Food Security, Nutrition	www.fsnetwork.org
Malawi Nutrition Group (Yahoo)	Information email list serve for individuals living in Malawi.	Independent	Nutrition	www.groups.yahoo.com/neo/groups/Malawi-Nutrition/info
SecureNutrition	Website, library, original events and blogs, social media.	World Bank	Nutrition, Social Protection, Agriculture, Food Security, WASH, ECD	www.securenutritionplatform.org (soon: securenutrition.org)
Sustainable Sanitation Alliance (SusSanA)	Website, library, discussion forum, events, links; includes WASH and Nutrition Working Group	Secretariat	WASH, Sustainable sanitation	www.forum.susana.org/forum/categories/131-wg-12-wash-a-nutrition

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Field Articles



By Eneya Phiri



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Role of communication and advocacy in scaling up nutrition: lessons and plans from the Zambian experience

Location: *Zambia*

What we know: Undernutrition in Zambia remains prevalent; overnutrition and non-communicable diseases are an emerging problem..

What this article adds: Zambia joined the SUN Movement in 2010. A strong Civil Society SUN Alliance was formed to raise the profile of nutrition on the national (political) agenda, network key stakeholders across sectors, advocate for resource commitments to nutrition, and hold those in office to account. Largely focused on undernutrition, achievements of advocacy and communication activities to date include securing high-level political commitments on nutrition, influence on national social protection and agriculture policies, development of an all-party parliamentary group on food and nutrition, agreement for legislative review to enable stronger multi-sectoral coordination, and community activities around global days of action on nutrition. Informal cross-country learning has been an added benefit of the SUN Movement. Challenges relate to multi-sectoral coordination and costing and implementation of nutrition interventions across sector ministries; development of implementation plans linking policy with action is needed. Spend on nutrition-sensitive programming has increased but remains very low. Civil society advocacy and communications has a continued and evolving key role in scale-up.

The SUN Movement in Zambia

The Republic of Zambia has continued to record some of the highest rates of malnutrition in the world. Current in-country Demographic Health Survey (DHS) statistics show stunting in children under the age of five to be at 40% or 1.2 million children; wasting at 6%; and high levels of a combination of micronutrient deficiencies: 53% of school-aged children are deficient in vitamin A, while 46% have iron deficiency. Over the years, there has been an increase in overnutrition and non-communicable diseases. In 2013-14, nearly 23% of women were recorded to be overweight or obese in Zambia. What makes this even more challenging is that, in many cases, households with undernourished children usually had overweight or obese mothers, making the

double burden of malnutrition a living reality for many Zambian homes (Zambia DHS, 2013).

The Government of Zambia is fully alive to the problem of malnutrition and has taken steps over the years to redress the situation, with varying success. On 22 December 2010 Zambia joined the Global Scaling up Nutrition (SUN) Movement with a letter of commitment from the Minister of Health, thereby becoming one of the first countries to sign up to SUN. This fostered the development of a national Nutrition Plan that is focused on addressing malnutrition from a multi-sectoral and multi-stakeholder perspective. As a result, for the first time, the government, civil society, the private sector and cooperating partners are all collectively engaged in fighting malnutrition. The SUN Framework

in Zambia is designed so that the National Food and Nutrition Commission (NFNC), the statutory body charged with responsibility to coordinate action on nutrition in Zambia under the Ministry of Health, is placed at the centre of efforts to scale up nutrition and houses the SUN Focal Point. The SUN Focal Point coordinates action across other SUN networks, including academia, UN and business and civil society networks.

The role of advocacy and communication in scaling up nutrition

Advocacy and communication form the bedrock of driving and empowering nutrition outcomes. It is through advocacy and communication that policy changes are influenced and communities are sensitised. Advocacy targeted at high-level



E Phiri, Zambia

decision-makers can lead to government commitments that have the potential to improve nutrition programming and accountability. Through strategic lobbying, increased resources (financial and otherwise) are allocated to nutrition interventions. For nutrition interventions to be properly planned and implemented, there must be a good understanding of nutrition among political players, policymakers, policy implementers and the general public. Advocacy and communication play the unique role of creating demand and building consciousness about the importance of nutrition at all levels and among all key stakeholders in nutrition development. Sensitisation and demand-creation are key components of the story of change that has seen community mobilisation around nutrition progress, thereby creating a symbiotic relationship between the population and its leaders and fostering accountability and involvement.

The role of civil society in the SUN Movement in Zambia

Civil society is uniquely positioned to play a crucial role in advocacy and communications. In Zambia, CSO-SUN is the umbrella organisation under which all civil society actors with a nutrition focus are coordinated. Established in October 2012, the CSO-SUN Alliance is a movement of civil society organisations (CSOs) working together to raise the profile of nutrition on the national development agenda. The Alliance is part of the global SUN Movement and unites actors from different sectors such as government, the United Nations, donors, the private sector, civil society and researchers, in an effort to scale up nutrition interventions. CSO-SUN's goal is to increase coverage of effective and integrated nutrition programmes by ensuring political commitment to tackle malnutrition, increasing financial resources and ensuring accountability by government. In order to achieve this, CSO-SUN works to raise public awareness and national consensus about the problem of and solutions to malnutrition through contributing to policy, legal and budgetary frameworks that address the needs of the poorest and most vulnerable. Furthermore, the Alliance works to strengthen in-country accountability for progress in tackling malnutrition and, through networks, enhance learning between organisations and between countries to maximise the effectiveness of their efforts.

CSO-SUN is the first and only nutrition advocacy platform for civil society in Zambia and has so far engaged 75 members of local and international non-governmental organisations (NGOs) and civil society groups. These members form the General Assembly (GA) of the Alliance and, guided by the CSO-SUN constitution, are the supreme authority of the Alliance. The GA elects a board at the annual general meeting (AGM) who are responsible for supervising the day-to-day activities of the CSO-SUN Secretariat. The AGM reviews the performance of the Alliance, evaluates audit reports, plans for the next year and appraises the Board and Secretariat's performance. The Secretariat comprises fixed-term, employed staff charged with the responsibility of coordinating the efforts of the Alliance members. Members are organised into different technical committees to leverage their competencies for effective programming. The technical committees are organised under the following thematic areas:

- Research and policy analysis – deals with matters of policy and research on nutrition;
- Advocacy and communications – spearheads the implementation of the Advocacy and Communications Strategy and deals with strategic engagement and lobbying;
- Networking and coalition-building – focuses on creating smart partnerships with organisations and individuals and fosters relationships with national and sub-national nutrition champions;
- Governance and institutional capacity building – provides direction on governance, management and administrative issues, institutional strengthening and resource mobilisation.

The technical committees are headed by a member of the CSO-SUN board whose organisation belongs to a specific thematic area. These committees regularly interact via email and meet on a quarterly basis to plan and review tasks for the quarter. They also convene in extraordinary situations where their expertise may be required. For example, the Advocacy and Communications technical committee may meet to strategise on how to maximise coverage of nutrition news and issues during a big national event. In this way, Alliance members are often in contact with each other and collectively contribute to achieving the objectives of the Alliance. CSO-SUN also

has structures at district level that are coordinated by the District Focal Point Organisation (DFPO). The Alliance currently operates in three districts of Zambia: Samfya (Luapula Province – northern Zambia), Mumbwa (Central Province – central Zambia), and Lundazi (Eastern Province – eastern Zambia). Each DFPO coordinates a network of local CSOs and community-based organisations (CBOs) who form part of the larger membership of the CSO-SUN Alliance. The DFPOs are supervised by the Advocacy and Communications specialist based at the CSO-SUN Secretariat. The specialist leads the Advocacy and Communications agenda for CSO-SUN and serves as a key point of contact to engage the Alliance members. He/she is responsible for co-ordinating nutrition communications and advocacy activities for all members, ensuring that programmes are well-integrated and non-duplicative, and supporting the priorities of the national nutrition programmes at national and district level.

CSO-SUN activities

Civil society plays a crucial role in creating demand, securing political commitment and ensuring accountability in efforts to scale up nutrition. The work of the CSO-SUN was necessitated by the fact that civil society involved in nutrition was uncoordinated and fragmented. Furthermore, there was weak participation of civil society in advocacy for nutrition. CSO-SUN has therefore championed the campaign to raise awareness and create demand for knowledge on nutrition through the following key activities:

Building political will for nutrition

CSO-SUN has worked successfully with politicians to build political will to combat malnutrition. For example, CSO-SUN supported Zambian political parties to include nutrition messages in the January 2014 presidential campaigns via a Vote Nutrition campaign that advocated for increased focus on nutrition by presidential candidates during the 20 January 2015 presidential election. The Alliance engaged with several political parties to plan for nutrition activities should they form office. At the same time, the Alliance assembled a team of influential celebrities to endorse a campaign advertisement that urged the electorate to vote only for a party/candidate that had a clear nutrition policy and mandate. Also, the Alliance supported the televising of the country's second-ever presidential debate and created a platform for candidates to debate nutrition strategies. These strengthened commitments from the presidential aspirants and, as a follow up to these commitments, CSO-SUN has developed and submitted nutrition 'quick wins' to the President of Zambia; a set of nutrition policy alternatives that the President should focus on during his tenure. For 2016, in preparation for the country's general election, CSO-SUN will engage with political parties to ensure that their party manifestos clearly indicate a plan for nutrition. The Alliance will also revamp its Vote Nutrition campaign to ensure wider coverage. Additionally, the Alliance will engage with the current and aspirant political

leadership to secure attainable commitments in preparation for the Nutrition for Growth summit (N4G2) in August 2016.

Influencing national policies

CSO-SUN has been at the centre of making public sector policies nutrition-sensitive in Zambia. Recently, the Alliance mobilised CSOs to work towards including an objective for nutrition in Zambia's first-ever Social Protection Policy, giving the policy a strong nutrition focus. The policy is currently being implemented under the Ministry of Community Development and nutrition is high among its priorities. CSO-SUN also organised CSOs to make recommendations to the draft National Agriculture Policy to make the policy more responsive to the nutritional needs of the population. The Ministry of Agriculture is in the process of finalising the draft National Agriculture policy. The Alliance became aware that the Ministry had closed the consultation period without consulting nutrition actors on the policy's implication for nutrition outcomes. The Alliance mobilised CSOs and persuaded the Ministry to allow it to make recommendations for strengthening the nutrition sensitivity of the policy. These recommendations have been incorporated into the version of the policy that will soon be adopted by government. Note that nutrition is mainstreamed in other sectoral policies, including the National Health Policy, National Health Strategic Plan and Agriculture Investment Plan; the Food and Drugs Act is under review. Furthermore, CSO-SUN is regularly invited to make submissions and appear before various committees of the Zambian Parliament. In recent years, it has appeared before the Committee on Budget Estimates, Committee on Community Development and Social Services and Committee on Agriculture. This has helped Parliament to make better-informed decisions on, and be more accountable for, actions that impact on nutrition.

All-party Parliamentary Caucus on food and nutrition (APPCON)

Members of Parliament play an essential role in promoting the cause of nutrition, both at national level as influencers of legal and budgetary reforms

and at constituency level as change agents and community leaders. In recognising the unique role that MPs play, CSO-SUN facilitated the formation of the All-Party Parliamentary Caucus on Food and Nutrition (APPCON), a committee of MPs dedicated to food and nutrition development through the National Assembly. APPCON prioritises policy and financial issues through parliamentary debate mediums such as question time, private member motions and points of order for the purposes of strengthening the voice and accountability mechanism for nutrition through Parliament. The caucus works towards enhancing nutrition legislation and building political will to address the burden of malnutrition and facilitate the effective implementation of the national nutrition policy among others. Members of the caucus have so far been successful in raising issues with regard to nutrition and policy on the floor of Parliament.

Strengthening legislative and budgetary frameworks for nutrition

In an effort to improve coordination of nutrition actors through strengthening the National Food and Nutrition Commission (NFNC), CSO-SUN successfully ran a campaign that culminated in the review of the National Food and Nutrition Act of 1967. The Act, which provides for the establishment of the NFNC, had not been reviewed since its enactment in 1967. In its current form, it does not reflect the nutrition problems affecting various sub-populations and therefore does not support the attainment of optimal nutrition status for all. Furthermore, it does not empower the NFNC to adequately coordinate across different actors in a multi-sectorial response to malnutrition. It was therefore necessary to review the Act. The new Bill, currently before Parliament for deliberation, aims to strengthen the NFNC through the following amendments and additions. Firstly, the Bill has provided for the constitution of a multi-stakeholder representative board of directors to head the NFNC. This will improve governance of the institution as the current board was operating without legal legitimacy. Secondly, in its current form, the Bill has given statutory status to the Special Committee of

Permanent Secretaries on Nutrition and clearly defined its role and responsibilities. This committee will assist the NFNC to strengthen accountability for nutrition actors across sector ministries. Finally, the Bill has redefined the overall role of the NFNC and, considering the institution's regulatory powers, given it more clout to perform its mandate.

Similarly, CSO-SUN has conducted national budget analysis and tracking for nutrition sector spending for 2013, 2014 and 2015. The Alliance's analysis for these years has shown perennial low spending of nutrition-specific and nutrition-sensitive interventions as a percentage of the national budget; 0.001% (2013), 0.03% (2014) and 0.1% (2015). Although this represents a mathematical increase annually, it is still extremely low and does not respond to the magnitude of the problem. This budget analysis work, which has been developed with the guidance of the SUN Movement, has gained national buy-in and is the only source of nutrition spending information in Zambia (budget lines are identified and weighted on pre-agreed terms; see: www.scalingupnutrition.org/resources-archive/financial-tracking-resource-mobilization/budget-analysis). The analysis tool-kit has been adopted by the Government and the budget analysis has contributed to several national and international publications on nutrition spending, including the Government's annual sector reports, Global Nutrition Report and the Institute of Development Studies (IDS) Hunger and Nutrition Commitment index (HANCI).

Community mobilisation and demand creation

Community mobilisation is an effective way to raise awareness and create demand for improved nutrition at community level. CSO-SUN has been engaged in community mobilisation efforts to organise communities to act collectively for improved nutrition planning and programming. One way in which CSO-SUN does this is through the annual commemoration of the Global Day of Action (GDA), when civil society across the globe speaks out together for improved nutrition, highlighting the power of coming together and making the case publicly for strong action by national and global leaders. In Zambia, CSO-SUN commemorates the GDA with events in different communities across its areas of operation. These events, which range from sporting competitions between constituencies to sanitation and clean-up exercises, are aimed at bringing the community and their leaders together to dialogue and share grievances and ideas on the best approach for improving nutrition. These events have, in the past, led to the formation of community Nutrition Groups comprising of members of the community who engage directly with community leadership on nutrition-development issues. Another way in which CSO-SUN mobilises communities is by organising vulnerable groups, such as breastfeeding mothers, targeting them with nutrition information and empowering them with the skills and knowledge to improve nutrition in their households. These groups reg-

Children attending CSO-SUN Global Day of Action



ularly feature on communication platforms such as gatherings and community radio shows to encourage their peers and lobby their leaders.

Media engagement

CSO-SUN has been very successful in engaging the media to sustain the nutrition dialogue in the Country. The Alliance has trained the media on nutrition reporting and recognised deserving institutions and individuals at its annual award-giving ceremony. This has continued to inspire accurate nutrition coverage in Zambia. On average, the Zambian media covers nutrition issues around four times a week across print, radio, online and TV media. This sustains the narrative on nutrition, ensuring that it is always a prime topic when discussing development issues. It also creates demand from the public and keeps government leaders accountable.

Status of SUN

Efforts to scale up nutrition in Zambia have seen significant strides, with the Government having recognised the far-reaching effects of malnutrition. The Government also recognises that undernutrition is complex and requires an integrated approach across various sectors including health, HIV/AIDS, social protection, food security and agriculture, education, water and sanitation, and should involve the private sector, civil society and communities. Nutrition has been integrated into the Revised Sixth National Development Plan 2013-2016 (R-SDP) by its mainstreaming across all sector-specific implementation plans of the R-SDP (in addition to governance, HIV/AIDS, gender disability and environment and disaster risk management). The R-SDP is aimed at achieving the objectives set out in the Vision 2030 of becoming a pros-

perous middle-income country by 2030. This integrated approach requires effective coordination, human resources and delivery structures. Furthermore, the Government, through the National Food and Nutrition Strategic Plan (NFSNP) for 2011-2015, committed itself to prevention of stunting in children under two years of age. The Government has also made several commitments, including revising the National Food and Nutrition Commission Act, strengthening accountability of the NFNC to adequately coordinate across key sectors (which is at an advanced stage), and establishing a Special Committee of Permanent Secretaries on Nutrition to meet and agree on policy directives as well as service-delivery channels and track progress against targets.

Despite greater commitments to nutrition by the Government, it should be noted that coordination has remained a challenge for scaling up nutrition efforts in Zambia, with the NFNC still under the Ministry of Health and the high-level steering committee not meeting regularly enough to concretise high-level management of nutrition programmes in the country. Added to these have been the challenges of implementation of nutrition interventions across sector ministries. Although sound policies and strategic plans are in place, the lack of a general implementation plan fails to link policy to action. Whilst there is increased attention to overnutrition and NCDs, these are not yet reflected in policy and strategies.

Lessons learned

Through the Alliance's advocacy and communication efforts, it has been learnt that there is goodwill from stakeholders including CSOs, media, Parliament and Government towards

collaborating to achieve improved nutrition. Civil society actors need to be strategic in their messaging in order to capture the commitment of stakeholders. Packaging of messages is very important as nutrition concepts are often difficult to understand, depending on a variety of factors (target audience literacy level, familiarity with nutrition issues, etc.). For example, when targeting community groups, it is necessary to synthesise and break down information as needed into simple, meaningful language for better uptake and understanding. When communities are sensitised, they will demand better nutrition programming; farmers who understand the value of growing a variety of crops for diversified consumption will demand farming inputs that support this and will reject mono-crop strategies from the Government. In turn, the Government could be persuaded into restructuring its agriculture policies to be more responsive to the people's needs and demands. Furthermore, in working with Parliamentarians, it is essential to adopt an approach that strengthens their knowledge base regarding constituency needs in way that appreciates MPs' existing capacity. In order to secure their buy-in, stakeholders need to be empowered with information so they can understand their role and execute their responsibilities, be involved at every step and have resources invested in them for their sustainability. It has also been learnt that belonging to a global network of nutrition actors through the SUN Movement makes for easy access to information between countries, which includes pairing member countries. For instance, Zambia has been paired with Malawi on several occasions to facilitate cross-learning, especially as the two are neighbouring countries facing similar challenges.

Conclusion

The SUN is rising in Zambia and it is prime time for concerted advocacy and communication efforts. As the world heads into the post-2015 development era and the N4G2, civil society in Zambia will focus on ensuring that all actors implement planned nutrition programmes and are held accountable to their commitments. Through advocacy and communications, CSOs have an important role to play in ensuring that nutrition is considered a high priority in political and development agendas. As such, CSO-SUN will continue to leverage the support and collaboration of national and international partners in achieving the nutrition objectives that all agree are needed for Zambia.

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BOX 1 Zambia SUN Progress Report 2015

The National Food and Nutrition Strategic Plan (NFSNP) 2011-2015 complements the National Food and Nutrition Policy and is the common results framework (CRF) behind which all supporting stakeholders are aligning. It includes eight operational strategies and three supportive strategic directions (SDs) with a complete implementation matrix and a monitoring and evaluation framework. SD 1 Prevention of Stunting in Children Under Two Years of Age: *First 1,000 Most Critical Days has a programme developed called the First 1,000 Most Critical Days Programme (MCDP)* to be implemented over a three-year period. Provincial and district nutrition multi-sectoral plans for the First 1,000 MCDP have been developed with national-level support and facilitation. Two-year (2014-2016), multi-sectoral nutrition plans, developed by the District Nutrition Coordinating Committees (DNCCs), have been costed, based on the minimum package. The minimum package of interventions under the First 1,000 MCDP comprises of nutrition-specific and nutrition-sensitive programmes that are also aligned to the results of the R-SDP.

The NFSNP is available at:
http://scalingupnutrition.org/wp-content/uploads/2013/02/Zambia_NFNC-Strategic-Plan-2011-2015.pdf

The NFSNP has been partially costed for the minimum package and recommended scenarios to guide resource mobilisation for the First 1,000 MCDP which is based on SD1 with technical support from the World Bank. More work is needed in the area of costing, especially related to nutrition-sensitive interventions, which have limitations in cost assumptions. The NFNC along with line ministries and the CSO have proposed to address this by costing district-level activities or some nutrition-sensitive interventions in the minimum package to help bridge the gap in the World Bank costing report (Horton, Shekar, McDonald et al, 2010). The pooled fund, SUN Fund Management Unit (SFMU), will enable expert contractors to undertake fiscal-space analysis to identify the financial gaps and assist in planning or resource mobilisation to scale up the programmes nationwide. Nutrition Cooperating Partners (including UN agencies and donors) are planning to map available nutrition funds among its members on an annual basis. Independent audits by the SFMU will also be undertaken.



SUN experiences: lessons from Pakistan

By Muhammad Aslam Shaheen and Dr. Ali Ahmad Khan



Muhammad Aslam Shaheen is Chief of Nutrition at the Ministry of Planning Development & Reform, Pakistan and is the SUN Focal Point in Pakistan.



Dr. Ali Ahmad Khan is the Programme Officer for the SUN Secretariat, Ministry of Planning Development & Reform, Pakistan

Location: Pakistan

What we know: Pakistan joined the SUN Movement in April 2013 with the country launch on 16 December 2013.

What this article adds: Nutrition-specific/sensitive programme budget analysis of government expenditure was performed for the first time in 2014-15 (development funds are not yet captured in such an exercise). Since joining the SUN Movement, there has been stronger coordination between government and donors, UN agencies, business and other development partners. An academic and research network is also being formed. Devolution has added a complexity to coordination and harmonised plans that is being managed. Multi-sectoral planning has produced a national nutrition policy that is being costed. Priorities in Pakistan include monitoring the delivery of programmes under the national nutrition policy and action plan; maintaining political interest in nutrition; including non-public sector financing in budgetary analysis; and using nutrition-related budget utilisation as an overarching indicator of success.

Background

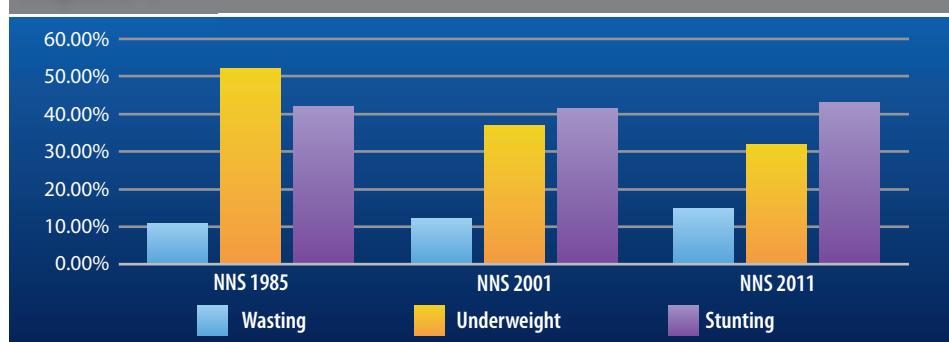
On 26 January 2013, the Islamic Republic of Pakistan submitted an application to join the Scaling Up Nutrition (SUN) Movement with a letter of commitment from the Senior Chief Nutrition, Ministry of Planning Development & Reform/Planning Commission of Pakistan. In April 2013, Pakistan became the 34th country to become part of the global SUN Movement which was launched on 16 December 2013 with an official declaration. Joining the SUN Movement was partly a reaction to the alarming figures for malnutrition in the National Nutrition Survey (NNS) 2011 and in previous surveys (see Figure 1).

The SUN Movement in Pakistan is currently working under the direction of the apex institute in the country, the Planning Commission of Pakistan. The Planning Commission is the government body that regulates almost all programmes and proposals related to federal and provincial departments. All the planning documents are submitted to the Planning Commission, reviewed and if found feasible, are submitted further for approval. The Planning Commission has had to

adjust to many new realities and challenges, including recognising and accommodating the roles of the private sector, civil society, media and information technology; the impact of globalisation (assessing how global events affect country policies and programmes, and suggesting actions to minimise the negative effects and maximise the positive ones); devolution; and the National Finance Commission award on economic policy, design and formulation.

The Chief of Nutrition, Mr. Aslam Shaheen, is the SUN Focal Point for the country and deals with technical and operational matters related to the Movement. His efforts are in line with the Pakistan Vision 2025 (see www.pc.gov.pk/wp-content/uploads/2015/05/Pakistan-Vision-2025.pdf) and guidance is provided by the Members, Secretary and Minister for the Ministry of Planning Development & Reform.

Figure 1 Trends in nutrition status of children under five in Pakistan (1985, 2001, 2011)



The SUN Core Group (or National Nutrition Committee (NNC), equivalent to the SUN multi-stakeholder platform) consists of key members of development partners and ministries who steer the process forward in the country. Members of the Core Group are:

- Ministry of Planning Development & Reform – Nutrition Section/SUN Secretariat;
- Ministry of National Health Services Regulation & Coordination – Nutrition Wing;
- Ministry of National Food Security & Research – Food Commissioners;
- WFP;
- WHO;
- UNICEF;
- FAO;
- World Bank;
- DFID;
- DFAT;
- European Union;
- Save the Children;
- Micronutrient Initiative (MI);
- Global Alliance for Improved Nutrition (GAIN); and
- Harvest Plus.

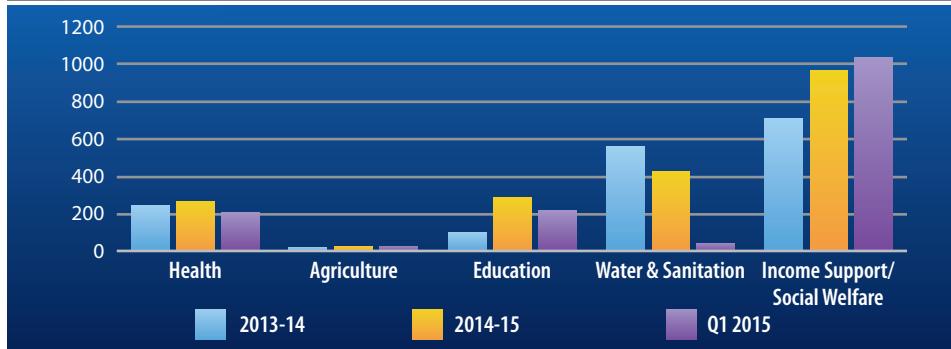
As outlined in the Global SUN Strategy, there are specific networks that have been formed for streamlined efforts to scale up nutrition in the country. At present, the networks that have been established are:

- SUN Government Network;
- SUN UN Network;
- SUN Donor Network;
- SUN Civil Society Alliance – CSO Network;
- SUN Business Network being finalised; and
- SUN Academia & Research Network.

In order to increase the potential for innovation and evidence-based interventions, Pakistan has proposed and established the SUN Academia & Research Network; such a network is not proposed in the Global SUN strategy. The idea of harnessing support from key parliamentary and media stakeholders is also under consideration in Pakistan, with the possibility of setting up a separate network for these actors.

Pakistan has provinces in addition to states and areas that are under federal control. Devolution has taken place in the provinces only; the status of the states and areas under federal control remain the same. Each of the four devolved provinces has nominated the Chief of Health of the Provincial Planning and Development Departments (P&DD) as the provincial SUN Focal Point. These focal points, along with the provincial representatives of the Core Group members and members of the networks, coordinate their efforts for scaling up nutrition in-country. Provincial Inter-sectoral Steering Committees and Technical Working Groups work to operationalise the Provincial Policy Guidance Notes and provincial inter-sectoral nutrition strategies. In this way, the provinces, with support from the Federal Government, have their project concept documents (PC-1s) approved for nutrition. Two provinces have Nutrition PC-1s and the other two have Health Sector integrated reform PC-

Figure 2 Nutrition sectoral budget allocations, Federal, PSDP/BISP



Is. These projects aim to combat malnutrition and related mortality and are implemented by provincial Departments of Health. Nutrition-specific projects in Sindh and Baluchistan include management of severe acute malnutrition (SAM), micronutrient supplementation, and behaviour change communication (BCC). In Punjab and Khyber Pakhtunkhwa (KP), nutrition-specific and nutrition-sensitive programming is reflected in Health Integrated Services projects, using an integrated approach with interventions such as the Lady Health Worker (LHW) programme, immunisation programmes, maternal, newborn and child health (MNCH), family planning and nutrition interventions. Programmes are costed and include nutrition indicators.

Nutrition-sensitive programming

What is it?

In Pakistan, nutrition-sensitive programming is defined in the same way as proposed in the Lancet 2013 nutrition series as: "interventions or programmes that address the underlying determinants of foetal and child nutrition and development, which include food security; adequate care-giving resources at the maternal, household and community levels; access to health services; and a safe and hygienic environment." The following are the programmes/activities that are considered potentially nutrition-sensitive in Pakistan:

- Education
- Water
- Agriculture
- Health

- Planning and development
- Livestock and fisheries
- Social welfare
- Local government
- Women empowerment
- Industries
- Special programmes, e.g. income-generation and poverty-reduction projects

Finance and budgets

The Benazir Income Support Programme (BISP) is a Federal Government national programme allocation that provides a social safety net and contributes to national food and nutrition security. It is essentially cash support to vulnerable groups based on their poverty-scoring in the country. It is funded out of the federal Public Sector Development Programme (PSDP) budget, which entails all the programmes that are going to be funded and implemented by the Government of Pakistan. Through 2010 and 2011, devolution to provincial level has taken place. On devolution, the federal BISP and PSDP have continued, while provinces have also begun their own social welfare and safety-net programmes. BISP selection criteria include checks that avoid duplication. In this instance, the provinces receive more resources from the Federation according to set criteria determined by the National Finance Commission (NFC). This is an extensive formula which is agreed by all federating units, including population, needs, situation etc. In PSDP's social sector programme, budgetary allocations have been reduced, whereas provinces have enhanced their nutrition-specific/sensitive allocations from the increased



Table 1 Nutrition-sensitive weighting applied to budget analysis

Assigned weight	Justification	Examples
100%	All resources (finance, assets and human) in the identified budget allocation are devoted towards a clearly-mentioned nutrition objective or outcome. The identified budget allocation describes a well-defined sectoral intervention with high-impact evidence (2013 <i>Lancet Series</i>)	<ul style="list-style-type: none"> National Food and Nutrition Commission Management of Malnutrition Micronutrient supplementation programme Infant & Young Child Feeding Counselling Nutrition support programme Food consumption and nutrition assessment
75%	The identified budget allocation clearly mentions a nutrition objective and/or outcome and/or action as part of an integrated programme or department mandate. The identified budget allocation describes a well-defined intervention/action that addresses an immediate determinant of foetal and child nutrition (e.g. nutrient intake) and/or specifically targets children, women of reproductive age and households that are at highest risk of malnutrition	<ul style="list-style-type: none"> Block allocation for multi-sectoral nutrition intervention Integration of Health Services Delivery with special focus on MNCH, LHW, EPI and Nutrition Integrated Reproductive Maternal, Newborn, Child Health & Nutrition Programme Nutrition and public health surveillance system Food safety inspection Kitchen gardening – a way to safe and nutritious vegetables
50%	The identified budget allocation describes a well-defined sector-wide programme or department that clearly addresses an underlying determinant of foetal and child nutrition and specifically targets children, women of reproductive age and households at high risk of malnutrition	<ul style="list-style-type: none"> Introduction of Early Childhood Education National programme for Family Planning & Primary Health Care Conditional cash transfer to keep adolescents in the education systems Promotion of girls' education National reproductive health programme
25%	The identified budget allocation describes a sector-wide programme or department that clearly addresses underlying determinants of foetal and child nutrition and development. The programme or department works at the 'environment' or 'population' level by addressing characteristics that are related to the effectiveness of a nutrition outcome (e.g. maternal or parental education, access to health services, safe and hygienic environment, etc.).	<ul style="list-style-type: none"> Agriculture improvement for food security Improved storage structures Revamping agriculture extension services Support to elementary and secondary education Water supply schemes Income support programme Social welfare support Women development National TB control programme National HIV/AIDS control programme

Table 2 Breakdown of the national and sub-national budgetary allocations (PKR) for nutrition-sensitive programming for Pakistan in federally-controlled areas*

PSDP/ADP **	Allocated for nutrition sensitivity (%)	
	2013-14	2014-15
Federal***	0.00%	0.00%
Punjab	0.96%	1.10%
Sindh	5.53%	5.59%
KP	4.95%	10.59%
Baluchistan	8.69%	7.68%
Outside PSDP (Federal)	25%	25%
BISP****	Total allocation: 40 billion PKR	Total allocation: 97 billion PKR

* Federal territory, federally-administered Tribal Areas (FATA), Azad Jammu & Kashmir (AJK) and Gilgit Baltistan (GB).

** At provincial level, social safety net programmes are part of the ADPs and are integrated in the provincial figures reflected in Table 2.

*** Nutrition-sensitive funding features in the federal budget, but the proportion related to the overall budget is small, thus showing zero up to two decimal points. Moreover, most of the sectors are also devolved, thus the reduced funding. Note that the BISP is presented separately but is a federal spend.

****BISP is funded out of the federal PSDP budget but is presented separately to the PSDP federal-level spend. Total allocation for 2015-16 is 1,020 billion PKR. BISP is considered 25% nutrition-sensitive (as per the formula in Table 2) and 100% funded by the Federal Government as a national programme.

federal financial resources received according to the set criteria of NFC.

Nutrition-specific/sensitive programme budget analysis was performed (for the first time) following Pakistan's joining of the SUN Movement in 2013. Table 1 reflects the federal financial allocation to the national PSDP and the BISP. This mostly reflects government spend; however some projects funded by donors (e.g. bilateral, trust funds) and development partners also have a grant/loan component to them. This budgetary analysis was performed according to the directions of the Global SUN Movement Secretariat (see Table 2) and were presented in the SUN Movement Financial Tracking Workshop held in Asia in early 2015. For 2015-16, there is specific budget allocation for Nutrition and the Sustainable Development Goals (SDGs), an additional tranche of funding. The budget allocation reflected in Table 1 is for federal government only; since devolution, the provincial governments allocate finance in their budgets separately which are not depicted in the PSDP or BISP. Funding that targets women is now devolved and integrated across sectors; federal government previously provided funding that allowed targeting of women, but now expect provinces to fund this out of their Annual Development Programme of provinces (ADP) allocation.

Table 3 includes detail on how the allocations were applied for various sectors at sub-national level for federally-controlled areas. This reflects how, overall, budgetary allocations for nutrition-sensitive programming increased between 2013-14 and 2014-15. The BISP is a federal allocation that provides a social safety net and contributes to food and nutrition security. It is funded out of the federal PSDP budget but is presented separately to the PSDP federal-level spend in Table 3. The total allocation for 2015-16 is 1,020 billion PKR. The BISP is considered 25% nutrition-sensitive (as reflected in Table 2). The programme is 100% funded by the Federal Government as a national programme.

Added value of the SUN Movement in Pakistan

Since Pakistan joined the SUN Movement, there has been increased coordination between the donors, UN agencies and other development partners with government. Currently, efforts are being made by the SUN Movement Secretariat (SMS) to clarify the exact financial contributions of development partners, since details are not yet captured. This stream of funding facilitates the Government's ability to scale up nutrition in the country as it provides examples of successfully implemented programming, as well as filling the budgetary gaps until these can be fully covered by the Government.

The SMS has advocated funding of both nutrition-specific and -sensitive programming. Since devolution, provinces have had the authority to directly invest in nutrition and, as outlined above, provincial SUN Units are being established with provincial SUN Focal Points nominated in the P&DD. A combination of advocacy and



Participants in the National SUN Self-Assessment Workshop 2015 on 25th May, 2015 in Islamabad



Member Food Security & Climate Change Planning Commission, presiding over meeting for revision of Food Composition Table and Dietary Guidelines for Pakistan

these new structures has led to Pakistan allocating funds for identified nutrition-specific and -sensitive interventions at both national and provincial levels. Allocation at provincial level is documented in the provincial ADPs.

2015-16 is the first year that there have been direct allocations of funds for nutrition-specific and -sensitive programming. An amount of 100 million PKR has been assigned for nutrition and SDGs in the PSDP specifically. It is unrestricted funding (i.e. programmes and activities are not specified) that is available particularly for federal areas to implement nutrition and SDGs-related programming; almost half is specified for nutrition by the Federal Government.

Provincial allocations are separate from federal allocations. As outlined earlier, provincial funding will be used by line ministries to prepare their PC-1s; indicators and monitoring and evaluation (M&E) will be part of the project documents. Provinces are developing their capacities to implement programmes. The Planning Commission will have a role in monitoring progress. Moreover, there are additional nutrition-sensitive allocations for various relevant sectors too. We are hopeful that these allocations will be fully utilised, as there is knowledge and capacity for implementation both within the government sector and with support available through development partners. As the above data shows, there has been an overall increase in funding for nutrition-sensitive programming, with stakeholders endeavouring to coordinate efforts for its effective utilisation.

Elements of success

Since joining the SUN Movement, the SUN Focal Point, under the stewardship of a senior Government official in the Ministry of Planning Development & Reform, has worked with partners to develop a clear path for improving nutrition in the country. UN and donor agencies were well coordinated in their efforts prior to Pakistan joining the SUN Movement, but the Movement has enabled better coordination, planning and implementation among the civil society organisations (CSO) and business communities. The CSO, business, academia and research networks are structured to have a general body, executive council, secretariat and advisory committee. These networks are relatively recent

developments, with some having an approved strategy and others in the process of formulating and finalising these.

Since provincial devolution has taken place in Pakistan, the National SUN Focal Point has, with the consensus of stakeholders and partners, appointed provincial SUN Focal Points for leading provincial efforts to scale up nutrition. Since devolution, every province is autonomous in planning and setting its priorities. The SUN Secretariat, through its nominated persons in the provincial SUN Units, has advocated for increased allocation of funding and tries to harmonise the work of provinces, yet the provinces are autonomous and, as such, have their variability. The plans before the SUN Secretariat are made available at the national level once they have been finalised and approved. Moreover, since the SUN Secretariat was established, there is regular liaison between the provinces and federal level. This has ultimately led to increased provincial spending on nutrition-specific and -sensitive programming.

Nutrition is a multi-sectoral challenge and efforts have been made to involve all relevant sectors in the process of scaling up nutrition. At national level, the Ministry of Health Services Regulation and Coordination and the Ministry of National Food Security and Research have been regular members of the Core Group meetings. Other ministries, such as Social Support and Education, are increasingly involved in co-ordination meetings in order to effect a more multi-sectoral approach to tackling the issue of

malnutrition. Provincial policy guidance notes and inter-sectoral strategies include relevant nutrition indicators. The aim is to plan multi-sectorally but to implement sectorally and then evaluate multi-sectorally. It is too early to say if and how this multisector approach is working.

Conclusion and recommendations

Pakistan has made significant strides towards scaling up nutrition, from generating greater political will to establishing effective coordination mechanisms with all key stakeholders. However, there is some distance to go to achieve the targets set forth in the Pakistan Vision 2025 and international targets for nutrition e.g. World Health Assembly targets, 2nd International Conference on Nutrition, etc.

We have come to understand that the process is slow and requires patience and teamwork from all stakeholders. Effective programming and implementation, both at national and provincial levels, are essential to achieve the targets. An inclusive approach is key, as is the ability to think 'outside the box'. Nutrition-sensitive programming is a new concept that is being fostered and early signs are that stakeholders are embracing it. However, continued advocacy, monitoring and evaluation are required to ensure that these efforts are productive.

The following are the priorities for Pakistan's efforts to scale up nutrition programming:

- Ensure that all the sectors are involved in the SUN process;
- Have a National Nutrition Policy and Action Plan in place;
- Effectively monitor and evaluate the programmes and interventions that are implemented under the Action Plan;
- Maintain the current level of political interest in nutrition at the highest possible level;
- Continue budgetary allocations analysis and inclusion of non-public sector financing in this analysis; and
- Monitor utilisation of budgets as an overarching indicator of success.

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Participants in National SUN Self Assessment Workshop 2015 on 25th May 2015 in Islamabad

Mothers participating in the nutrition-sensitive agriculture programme



Location: Ghana

What we know: Ghana has made significant progress in reducing malnutrition prevalence; given its stability and resources, there is potential for further improvement. Understanding the context-specific drivers of undernutrition is needed to inform policy.

What this article adds: This article describes ongoing, nutrition-sensitive research in Ghana and explores related issues around financial commitment and evidenced policy, with particular reference to the SUN Movement. The author outlines a series of nutrition-sensitive, cross-sectoral research programmes implemented across three ecological zones in Ghana: Enhancing Child Nutrition through Animal Source Food Management (ENAM), Nutrition Links, and the Ghana Nutrition Improvement Project (GNIP). Assessment of the 2014 national budget found inadequate commitment to nutrition-specific and nutrition-sensitive programming. Since then, multi-sectoral planning has contributed to a national nutrition policy that is being costed. The SUN multi-stakeholder platform aspires to coordinate local research to inform country policy.

Nutrition-sensitive research in Ghana

By Richmond Aryeetey



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public health nutrition. He is engaged in research on health system support for infant and young child nutrition, as well as on nutrition-sensitive interventions in Ghana. Dr Aryeetey is also actively involved with the multi-stakeholder platform for the SUN Movement in Ghana and Co-chairs the Capacity Building Working Group of the country's SUN platform.

The author acknowledge the comments and suggestions of Grace Marquis, McGill University, Principal Investigator (PI) of the Nutrition Links Project, and Esi Colecraft, DrPH, University of Ghana, Co-PI of the Nutrition Links Project, in the development of this article.

The Republic of Ghana in West Africa is currently ranked by the World Bank as a lower middle-income country. The population is estimated at about

26 million and growing at a rate of 2.4%. (Ghana Statistical Service, 2010.) Ghana is often hailed as one of the few Millennium Development Goal (MDG) successes in sub-Saharan Africa; in the last 25 years it has reduced poverty by more than half (UNDP, 2015). In 2015 the UN Food and Agriculture Organization (FAO) awarded Ghana for halving the proportion of hungry people (FAO, 2015). Beyond these, the most recent Demographic and Health Survey has shown that Ghana has halved the proportion of underweight children, as expected by MDG Goal One on hunger indicator 1c (Ghana Statistical Survey, 2014). The evidence provided here suggests that Ghana is making progress in reducing malnutrition among vulnerable groups. Compared to other countries in the sub-region, this is largely the case. Nevertheless much more could be achieved, given that the absolute number of undernourished people in Ghana remains unacceptably high for a lower middle-income country. Furthermore, Ghana is endowed with relatively more resources to enable it to achieve even further improvements in nutrition. These resources include human resource capacity, a stable political environment and recent discovery of fossil fuel assets. It is also important to recognise that important challenges to the nutrition situation remain in Ghana, including high rates of sub-optimal child feeding, sub-optimal micronutrient status, household food insecurity (particularly among farm families), and low coverage of nutrition interventions. Another important concern regarding the nutrition of Ghanaians are the rapidly rising levels of obesity and associated diet-related non-com-

municable diseases, occurring in an environment that is increasingly promoting consumption of energy-dense, nutrient-poor diets, as well as inadequate physical activity.

Nutrition-sensitive research in Ghana

In order to address these challenges, multiple research programmes have been or are currently being implemented in order to understand the key drivers of improved nutrition in Ghana. Between 2004 and 2009, the ENAM project – a collaboration between University of Ghana, Iowa State University, and McGill University and supported by the Office of Agriculture and Food Security, Global Bureau, USAID (see www.glcrsp.ucdavis.edu) – was implemented across three ecological zones. The main goal was to enhance access and utilisation of animal source food among vulnerable families with children under five years. Using a community trial design, intervention communities received entrepreneurial and nutrition education plus microfinance to support the establishment of income-generation activities (IGA).

At the end of its lifecycle the ENAM project demonstrated a number of positive outcomes, including increased incomes from IGA, reduced risk of severe and moderate household-level food insecurity, improved nutrition knowledge among caregivers, increased frequency of animal source food consumption, and reduced risk of child growth faltering (African Journal of Food, Agriculture, Nutrition and Development, 2012), (Marquis et al, 2015). A key success factor of this study was the role of microfinance with education: the microfinance provided financial empowerment for the participants. A sub-study in 2007 identified credit unions and input credit

BOX 1 Baseline household agriculture and child nutrition linkages in the Nutrition Links Project (Aryeetey et al)

The Nutrition Links Project is testing the effect of integrated agriculture and nutrition strategies on livelihoods, nutrition and health status of infants in Ghana's Eastern Region. Logistic regression was used to determine relationships between infant nutrition (exclusive breastfeeding, diet diversity, Hb <11 g/dl, anthropometry), and household agriculture resource ownership (land, livestock) and practices (farming, home gardening) in the last year, with baseline data.

Only 57% of 1,081 households owned agricultural land but 77% cultivated food, 40% had a home garden and 79% owned livestock. Mean child age was 5.8+3.5 months. Wasting, underweight and stunting prevalence rates were 6%, 11%, and 12% respectively. Exclusive breastfeeding (24 hour recall) was 86% and 52% among infants <3 months and 3-6 months respectively. Only 24% of infants > 6 months were fed diets with four plus food groups in the past 24 hours.

Infants in households with home gardens were less likely to exclusively breastfeed ($OR=0.65$; $p=0.04$), but were also less at risk of underweight ($OR=0.53$; $p=0.01$). Land ownership was associated with lower risk of wasting ($OR=0.59$; $p=0.04$). It was concluded that, although agricultural activities are associated with better infant nutritional indicators, interventions are needed to improve infant and young child feeding practices in the Eastern Region.

BOX 2 Plans for 2014-2015 intervention activities, Nutrition Links Project

Infant intervention – Integrated, nutrition-based agriculture intervention

Of the 1,500 households with infants who are participating in the annual data collection, 302 are enrolled in the infant intervention activities. The nutrition-based agriculture intervention began in 2014 and offers intensive nutrition, health and agricultural training, along with provision of home gardens and small animal husbandry. As the intervention targets the household, other family members living in the household also benefit from this intervention.

Adolescent intervention – Integrated nutrition, education and finance

This intervention focuses on reducing anaemia among female school-aged children. Baseline assessment took place at the beginning of the school year in September-October 2014. Of the 1,500 households with adolescents (9-12 years) participating in the annual data collection, 750 are engaged in the adolescent intervention. The intervention benefits girls who have high rates of anaemia. In addition, since older girls (starting in primary grade 4) are less likely to stay in school and hence are disadvantaged with respect to their access to these programmes; the project is exploring options to encourage girls to complete primary grade 5. Increasing girls' education is one of the most effective ways to decrease child mortality.

For more information on the Nutrition Links Project, visit: www.mcgill.ca/cine/research/building-capacity-sustainable-livelihoods-and-health-ghana

among key strategies for helping caregivers to become financially empowered (Marquis et al [1]). Another key strength of the project was the use of participatory rapid assessment methods to identify the potential interventions to address nutrition (Marquis et al [2]).

Following the success of this intervention study the Nutrition Links project, supported by the Government of Canada, is currently extending the findings in a district-wide effectiveness study (Nutrition Links Project). The five-year project, inaugurated in 2014, is seeking to enhance health and nutrition status of vulnerable groups (households with young children and adolescents) by fostering collaborations and increased capacity for service delivery across government and non-government agencies in the Upper Manya Krobo District of the Eastern region (see Box 1 for baseline summary data).

The project focuses on service delivery related to nutrition, health, agriculture and livelihoods and aims to increase access to these services for the most vulnerable groups in the communities included in the study (see Box 2 for an outline of 2014-15 intervention activities). To achieve the outcomes indicated, specific activities include nutrition-sensitive agriculture, capacity building of health staff and community volunteers, and empowerment of households through training in nutrition, agriculture, health, and gender empowerment. This ongoing project is expected to yield evidence on the impact of service delivery enhancement on health and nutrition outcomes (the study protocol and findings will be published in full in a forthcoming peer-reviewed journal). A key strength of the project is the fostering of collaboration across both the health and nutrition-sensitive government and non-government agencies in the district.

Market-based interventions have been identified as important for addressing nutrition. In Ghana, a number of studies are being implemented to increase access to nutritious and safe foods through the private sector. In 2009 GNIP implemented a range of activities aimed at improving nutrition of children between six and 24 months using a market-based approach (Ghana Nutrition Improvement Project). The activities included development of a food product, assessing cultural and sensory acceptability of the product to consumers, efficacy testing to determine effects on nutrition and health and market analysis of affordability and distribution of the product. The project has only recently (October 2015) completed field activities for both the efficacy/affordability and distribution studies. It is anticipated that the findings will further advance contextual knowledge on how to utilise the potential of market-based solutions for addressing undernutrition among young children and other groups who are vulnerable to malnutrition. Beyond the GNIP, other market-based interventions on nutrition are



ongoing in Ghana, but many of these have not been evaluated. For example, since 2011 the Institute of Development Studies has been engaged in research, seeking to understand the role that markets play in individuals and household access to nutritious and safe foods (Institute of Development Studies). The study has focused on the effects of markets relative to the first 1,000 days. Its findings are yet to be concluded.

Financial commitment to nutrition-sensitive programming

Another important component of the nutrition-sensitive research in Ghana is the role that government plays in facilitating access to nutrition services. One of the ways to indicate government commitment to nutrition is to assess how much funding government has budgeted for nutrition actions in public sector financial allocation. This is an important area that has attracted much attention from the Scaling up Nutrition (SUN) Movement. However in many SUN countries there is no simple process for determining government budgetary allocation and eventual expenditure on nutrition. This is partly because nutrition actions often occur across multiple government agencies. Currently there are no established approaches to determining government national-level nutrition budget allocation and expenditure on nutrition-sensitive programmes such as water and sanitation, social protection, food and agriculture, etc. The SUN Movement has therefore supported the multi-stakeholder group in Ghana to use a simple and uncomplicated three-step approach (see Box 3). This exercise was initiated in Ghana in February 2015 and is ongoing. Prior to the assessment of budget allocation using the SUN three-step approach, the SUN Academic Platform assessed the national budget for fiscal year 2014 (the method used is as per SUN Movement Step 3, see Box 1) and reported that there was inadequate commitment to nutrition

Box 3 The three-step approach to budget analysis (SUN Movement)

A three-step approach was identified by the SUN Movement Secretariat as a way to report on nutrition-relevant allocations in national budgets. The process includes:

Step one – identifying nutrition-relevant budget allocations through a key word search.

Step two – clearly assessing which budget allocations are specific to nutrition, which allocations are related to nutrition, and those which are unrelated to nutrition.

Step three – attributing a weighting of the allocated budget to programs that are specific to nutrition (100%), such as a national nutrition programme in the budget; and a reasonable allocation to programmes that are related to nutrition (e.g. 25%), such as social safety net and early child development programmes.

For more information, including tools, visit: www.scalingupnutrition.org/resources-archive/financial-tracking-resource-mobilization/budget-analysis

Box 4 EVIDENT partnership

The Evidence-informed Decision-making in Nutrition and Health (EVIDENT) partnership is a global hub of North-South partners aiming to enhance evidence-informed decision-making and policy-driven research in health and nutrition. The network addresses the priority concerns and questions of decision-makers from low- and middle-income countries by providing reviews of evidence, health technology assessments and locally-appropriate guidance, and by facilitating the translation of evidence into policy. It aims to meet local needs and to avoid unnecessary duplication of research.

EVIDENT encompasses all issues that are at the forefront of global nutrition and health policy: stunting, underweight, maternal and child health, micronutrient deficiencies, obesity and non-communicable diseases (e.g. heart disease, cancer, diabetes, hypertension, etc.).

EVIDENT runs courses on evidence-informed decision-making (e.g International Course in Evidence-Informed Nutrition, South Africa, 2015; and Translation of Evidence into Country based Recommendations, Ethiopia, 2015), is developing a series of guidelines (Stakeholder Mapping and Engagement, Identifying and Prioritising Questions), and shares key relevant resources.

Partners include: Ethiopian Institute of Public Health; Ethiopia Institute of Tropical Medicine; Belgium (coordinating body); Makarere University, Uganda; National School of Public Health, Morocco; NICE International, UK; North-West University, South Africa; University of Abomey-Calavi, Benin; University of Ghana, Ghana; University of Ghent, Belgium; University of Sheffield, UK; Sokoine University of Agriculture, Tanzania; and Royal Tropical Institute, the Netherlands. EVIDENT is supported by a number of external scientific experts in knowledge management and health technology assessment.

For more details, include course locations and dates, visit www.evident-network.org

based on the provisions in the budget statement (Laar, Aryeetey, Akparibo & Zotor). In Ghana, nutrition-specific services are administered by the Nutrition Department, a sub-unit of the Ghana Health Service. Because the Nutrition Department has a low level of power within the Ghana Health Service, it does not receive adequate budgetary allocation. Nutrition-sensitive spending is distributed through other agencies (local government and rural development; water, works and housing; food and agriculture; and gender and social protection ministries; etc). The actual spending on nutrition by these sectors to increase the nutrition sensitivity of their programming is almost negligible. A key outcome of this study is that nutrition budgets should not be embedded in the total health budget as this diminishes their priority.

Research influencing policy-makers

The research activities described above are expected to feed into the national plan to address malnutrition through the SUN multi-stakeholder platform. In Ghana, this platform – the Cross Sectoral Planning Group (CSPG) – has been in existence since 2012 following Ghana's commitment in 2011 to scale up effective nutrition interventions towards reducing stunting among young children. The CSPG is coordinated by the national development planning commission and convenes working groups that include government (health and non-health sectors), UN agencies, business sector, bilateral development partners, academia and civil society. All these partners are contributing to implementing a national nutrition policy; this has been prepared and awaits completion of a costed budget prior to government endorsement. The working groups include resource mobilisation, policy development and review, capacity-building and research, monitoring and evaluation, and advocacy and communication. The plans of the CSPG are intended to be operationalised through the support of the National Nutrition Partner Coordination (NaNuPac), another multi-stakeholder platform that predates the CSPG. The NaNuPAC is focused on implementation aspects of nutrition service

delivery, while the CSPG concerns policy and strategic planning. The NaNuPac is convened by the Ghana Health Service.

The findings of the various studies indicated above need to be contextualised in the implementation of the national nutrition policy. The ENAM project has demonstrated the role of community mobilisation and the use of non-formal systems to enhance nutrition of families and particularly young children. The Nutrition Links project in the Eastern region is seeking to improve nutrition and livelihoods of poor and vulnerable families in the Upper Manya Krobo district using improved agriculture, business and health services. The current study will provide insight and useful lessons on how different government and non-government agencies can work together with traditional leaders and communities to improve nutrition. The findings from the market-based initiatives are likely to identify the roles and pathways by which private sector participation in nutrition can be maximised. All these findings, however, need to be plugged into a national nutrition evidence system that allows for reviewing not only the quality of the studies but the strength of the evidence from the studies. The University of Ghana is currently engaged in an international network seeking to support national efforts to set up a mechanism for evidence-informed priority-setting and decision-making (see Box 4). The aspiration of the CSPG is ultimately to coordinate local research so that it meets the needs of decision-makers. Ideally, the research should be relevant to ongoing programmes and eventually, when pulled together, should guide decision-making at the CSPG and NaNuPAC levels.

In conclusion, the nutrition-sensitive research activities indicated above make important contributions towards nutrition outcomes. It is important to actively engage with other sectors beyond those in health as part of efforts to improve nutrition. It is essential that nationally-driven research is coordinated and applied to enable evidenced country policy.

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Nusa Tenggara, Timur Province

SUN Movement experiences in Indonesia

By Nina Sardjunani and
Endang L. Achadi



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Location: *Indonesia*

What we know: Indonesia joined the Scaling Up Nutrition (SUN) Movement in 2011.

What this article adds: Joining the SUN Movement has strengthened political and policy commitment to nutrition across multiple sectors in Indonesia. The existing Strategic Policies and Action Plan on Food and Nutrition has aligned with the SUN Common Results Framework, with proactive advocacy and engagement across multiple ministries. Costing the nutrition-sensitive and nutrition-specific components of nutrition plans is well underway, albeit with some challenges. SUN-inspired networks and working groups (specific to Indonesian needs) have been developed. While Indonesia remains firmly committed to scaling up nutrition, challenges to putting plans into action include national constraints in food production and variety; emerging double burden of malnutrition; maintaining interest and securing commitment of stakeholders; regional capacity (related to decentralisation) and availability of resources.

Background

When Scaling Up Nutrition was raised by UN Secretary General Ban Ki-Moon in 2010, the SUN approach was highly relevant to the prevailing nutrition context in Indonesia. While undernutrition rates were still high, reflected particularly by prevalent stunting in children under five years old, overnutrition was increasingly becoming a significant concern. On 22 December 2011, the Republic of Indonesia joined the global SUN Movement with a letter of commitment from HE Endang Rahayu Sedyaningsih, the late Minister of Health, to the Secretary General of the UN. At the time, with support from the Ministry of Health and the Coordinating Ministry of People's Welfare, Indonesia began the First 1,000 Days of Life Movement and Bappenas (the Indonesian Ministry of National Development Planning) began to formulate a SUN Policy Framework to create the political and policy commitment. The resulting policy framework includes objectives

adopted from the World Health Assembly 2025 targets on nutrition, strategies and implementation phases of the Movement, as well as partnership in the Movement. The framework also regulates the monitoring and evaluation of the First 1,000 Days of Life Movement. In line with the SUN Policy Framework, Guidelines for Programme Planning were also formulated for local government, since nutrition-specific and nutrition-sensitive interventions are already decentralised in Indonesia.

SUN Movement in Indonesia

To obtain political and policy commitment from relevant ministries, the Coordinating Ministry of People's Welfare, Bappenas, and the Ministry of Health drafted the Presidential Decree on the National Movement to Accelerate Nutrition Improvement within the Framework of the First 1,000 Days of Life Movement, which was eventually approved by the President in 2013. Presidential Decree No. 42/2013 was

launched by the President in conjunction with the commemoration of World Food Day in West Sumatra in October 2013.

The Government of Indonesia develops a five-yearly National Medium Term Development Plan (RPJMN), in which each sector proposes its programme planning and budget. For RPJMN 2015-2019, all of the SUN principles are included as cross-sectoral issues. Currently, the National Action Plan on Food and Nutrition (RANPG), with its multi-sectoral approach, is in line with RPJMN 2015-2019 and is being finalised. For 2015-2019, the RANPG has been renamed the Strategic Policies and Action Plan on Food and Nutrition (KS-RAPG). The RANPG has been developed every five years since 2001. The latest RANPG, KS-RAPG, is aligned with the SUN Common Results Framework (CRF). In the KS-RAPG, the First 1,000 Days of Life policies and programmes are included as a priority area of focus.

From the outset, we were aware that nutrition needed to go beyond the health and agriculture sectors. Therefore the multi-sectoral approach of the RANPG engaged 13 ministries and two national boards/agencies, namely the Ministry of Home Affairs, Ministry of Health, Ministry of Agriculture, Ministry of Marine and Fisheries, Ministry of Education and Cultural Affairs, Ministry of Industry, Ministry of Trade, Ministry of Youth and Sports Affairs, Ministry of Communication and Information, Ministry of Women Empowerment and Child Protection, Ministry of Public Works and Public Housing, Ministry of Man Power, Ministry of Village and Regional Development, National Family Planning Coordination Board, and National Agency of Drugs and Foods Controls. Two ministries also coordinate the Action Plan. These are the Coordinating Ministry for Human Development, Society, and Cultural Affairs and the Coordinating Ministry for Economy and Maritime Affairs.

The difference between the current and previous RANPGs is that the current RANPG encourages all relevant sectors to work together to specifically address food and nutrition issues. This multi-sector, nutrition-sensitive approach was advocated in advance of the RANPG's development. Meetings and workshops were called by the Deputy Minister for Human Resources and Cultural Affairs of Bappenas, as Chair of the Technical Team. Advocacy meetings were held at least five times due to challenges in convening the right persons from all sectors at the same time. The series of meetings began with introductions and 'getting to know everyone'. This was followed by meetings with clusters of sectors to establish effective processes and ended with a final meeting comprising all sectors. The process has broadened sectors' understanding about multi-factorial causes of malnutrition and multi-stakeholder roles in improving nutrition.

In general in the RPJMN 2015-2019, each of the 15 sectors/agencies engaged already had programmes that were nutrition-sensitive, but were not recognised as such by the sectors until the advocacy meetings took place. For example, the Ministry of Public Works and Public Housing has a programme to build water and sanitation facilities; the Ministry of Industry and Ministry of Trade is in charge of food fortification programmes; the Ministry of Agriculture and Ministry of Marine and Fishery have programmes to ensure the availability and accessibility of agriculture and marine products, while the Ministry of Trade is in charge of stabilisation of food prices. In these cases, the ministries are not required to change the programme but now recognise the nutrition-sensitive aspect. For example, a subsidised rice programme for poor households has been implemented since 1998 and is now recognised as nutrition-sensitive. Sectors work together to identify indicators related to nutrition and agree which of these are key performance indicators to be monitored.

For example, the Ministry of Agriculture determines food diversity and food access as its indicators; the Ministry of Social Welfare uses coverage of National Social Security; the Ministry of Public Works and Public Housing uses improvement to sanitation and access to clean water indicators; and the Ministry of Education uses women's education as its indicator.

Stakeholder Networks of the Indonesia SUN Movement are already established under the SUN technical team. The UN Country Network, especially UNICEF, has been involved in the development of the KS-RAPG (CRF). Other networks – the SUN Business Network, Civil Society Alliance, and the Donor and UN Country Network on Nutrition – were informed about the KS-RAPG 2015-2019.

Budget process

Based on the Presidential Decree, the SUN Movement secretariat has been established and is based in Bappenas. The secretariat has been

development Matrix of RPJMN 2015-2019 was formulated that included each programme budget allocation. Finally, the Sector Development Matrix of RPJMN 2015-2019 was integrated into the National Action Plan. A common challenge is that nutrition-related activities are not stated in the national annual work plan document (RKP) and RPJMN. In such cases, the specific budget allocation for nutrition-related interventions is traced in the budget documents, and the programme and budget allocation adjusted when necessary.

Engaging other ministries on nutrition-sensitive planning

Presidential Decree No. 42/2013 mandated the establishment of a coordinating mechanism for a multi-stakeholder, high-level Task Force led by the Ministry of People's Welfare. This Task Force consists of multiple stakeholders and 13 line ministries at national level. The Decree led to the issuance of The Minister for People's



Nusa Tenggara, Timur Province

working with ministries and agencies to analyse the costs of national nutrition plans. Both nutrition-specific and nutrition-sensitive interventions in the food and nutrition programme plan are costed. First, the secretariat worked with the ministries to identify the relevant nutrition-specific and -sensitive programmes and activities. To ensure programme budgets were correct, data verification was conducted through multi-sectoral meetings using the SUN list of key words to determine specific and sensitive programme categories and associated costs identified. The programmes in question were discussed with each sector and a weighting scale agreed, based on the significance of the programme to nutrition improvement and using the SUN guidance in this regard. The weighting scale was used to adjust the cost of the programme (see www.scalingupnutrition.org for methodology details). Secondly, the Sector De-

Welfare Decree No. 11/2014 on the establishment of a Technical Team to facilitate coordination at the national level. This Decree mandated the Deputy Minister for Human Resources and Cultural Affairs of Bappenas as Chair of the Technical Team. The Decree of the Deputy Minister for Human Resources and Cultural Affairs Bappenas No. 37/2014 mandated the establishment of six Working Groups (Campaign, Advocacy, Training, Planning and Budgeting, Partnership and Environmental Risk Factor Study), supported by an Expert Team with stakeholders from Government, Business sectors, UN agencies, international development partners, community and social organisations, professional organisations, academia and mass media. Each working group convenes meetings to discuss their strategies and programme. Bappenas also convenes coordinating meetings to ensure the activities proposed are in line with the SUN

Policy Framework. The chairperson of the technical team in Bappenas is responsible for reporting annually to the Chairperson of the Task Force. Both Networks and Working Groups exist in Indonesia. The Networks reflect the SUN approach: government, UN, donor agencies and international agencies are grouped as one network; civil society organisations comprised of academia, professional organisations and NGOs as a second; and business as a third network. The Working Groups speak to the Indonesian context and function with support from the networks.

Certain sectoral activities, such as agriculture and public works, are categorised as important nutrition-sensitive activities. However, challenges in engaging other sectors on nutrition can occur when the SUN Movement is viewed as a new project with new or additional budget allocation needed. What can be difficult to get across is the idea that the SUN Movement aims to both improve coordination of what exists, as well as rollout and scale up new nutrition interventions

consumption diversification has been slow in Indonesia, which has led to dependence on certain food types. In addition, food access – which is still poor due to the decline in purchasing power caused by poverty and unstable food prices – has led to inadequate food consumption for many. Nutritional problems are inter-generational and the consequences are trans-generational. Therefore nutrition interventions must be coordinated across demographic groups;

- Indonesia is experiencing a double burden of malnutrition as evidenced by the increase in non-communicable diseases (NCDs). NCDs are not only the result of lifestyle, but more importantly are a consequence of malnutrition in the first 1,000 days of life and pre-pregnancy malnutrition. Low consumption of fruits and vegetables, high consumption of sugar, salt and high-fat food, coupled with low levels of physical activity in society, especially in urban areas, lead to increases in overweight and obesity

anaemia, low birthweight and exclusive breastfeeding prevalence. The results of the survey will be used to inform and help improve programme implementation.

Decentralisation

Commitment to the National Action Plan on Food and Nutrition at central level has not been replicated fully in all districts; it should be reflected in the Regional Action Plan on Food and Nutrition. Bappenas continues to develop the Guidelines for the Development of the Regional Action Plan on Food and Nutrition in order to assist local government to develop its own Action Plan, based on a multi-sectoral approach. This is a significant challenge in itself, because:

- The process of the development of the Regional Action Plan on Food and Nutrition requires a similar process to the development of the National Action Plan. This includes sensitising all relevant sectors at regional levels, selection of priority programmes/intervention based on local problem analysis and human resources capacity and other resources availability, creating a coordination and budgeting plan, and monitoring and evaluation;
- The Regional Action Plan on Food and Nutrition needs approval from the parliament; and
- There are over 500 districts/cities in Indonesia that need assistance from the central Government.

Conclusions and recommendations

The Government of Indonesia has taken the SUN Movement seriously. The Movement's launch corresponded with recognition of the current double burden of malnutrition situation in Indonesia. This response is evidenced by the release of the Presidential Decree, the launch of the SUN programme by the President himself, the development of relevant national documents and other actions. The multi-stakeholders approach has increased the awareness of all related sectors to their potential role in improving the nutrition situation in Indonesia. However, significant challenges remain, including maintaining interest (some forms of malnutrition are effectively invisible), commitment from all stakeholders, regional capacity and availability of resources.

Addressing malnutrition in Indonesia requires commitment from many stakeholders, so there is a need for strong championing at national level. The role of Parliament should therefore be enhanced, especially its role in developing laws on nutrition and nutrition-related issues and budget decisions. The commitment and coordination of the various interested networks must be intensified, especially the SUN Business Network and Civil Society Alliance, as well as Donor and UN Country Networks on Nutrition.

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Nusa Tenggara, Timur Province

or modified existing nutrition-sensitive programming, with a view to combatting all forms of malnutrition. Another considerable challenge is that nutrition problems are often invisible. Therefore, to obtain more support for nutrition programming, strong advocacy strategies are needed, particularly to convince the nutrition-sensitive sectors that change is necessary.

Implementation challenges

Putting plans into action

Although the RANPG is a comprehensive document, several challenges remain in putting the plan into action, including:

- Domestic food production capacity is increasingly limited due to land conversion, preponderance of small-scale farmers and fishermen, dominance of traditional technology and limited access to capital. This limits food availability and diversity;
- The process of food production and food

prevalence;

- Lack of knowledge leads to inadequate childcare and feeding practices, as reflected in the very low rate of exclusive breastfeeding among infants aged 0-6 months (38%); and
- Lack of access to clean water and lack of a healthy environment contribute to communicable diseases that cause malnutrition.

While dialogue with other networks has been progressing, it is not clear yet what activities these networks intend to promote and instigate. This is especially so for the SUN Business Network and the Civil Society Alliance. Networking efforts need to be accelerated.

In 2016, the Ministry of Health is planning to conduct the fourth Basic Health Survey (Riskesdas), which will include a number of nutrition indicators, i.e. stunting, wasting, overweight of children under five, undernutrition,

Briefing on the Bihar Child Support Programme, India

OPM, India

By Oxford Policy Management (OPM) India

Oxford Policy Management (OPM) is a development and research based consultancy company that has 30 years' experience in providing rigorous analysis, policy advice, management and training services to national governments, international aid agencies and other public sector and non-government organisations. OPM works across the policy cycle, including formative research and analysis, diagnostic and design work, strategic implementation support, the development of monitoring systems, and operational, process, programme and impact evaluations. In India, OPM has a full time office in Delhi and six states.

Oxford Policy Management (OPM)'s India office has supported the Government of Bihar to design, pilot and evaluate the Bihar Child Support Programme.

The Bihar Child Support Programme is implemented by the Social Welfare Department, Government of Bihar and funded by the Department for International Development (DFID). It is supported through the Bihar Technical Assistance and Support Team (BTAST) and by Oxford Policy Management.



Anganwadi Workers being trained on using the customised mobile phone application for BCSP

Location: Bihar, India

What we know: There is limited evidence within India of the impact of conditional cash transfers on nutrition outcomes. Existing schemes have implementation challenges.

What this article adds: The Bihar Child Support Programme is a pilot conditional cash transfer (CCT) within the Integrated Child Development Services (ICDS) Scheme introduced in Gaya District to test the viability and effectiveness of a CCT aimed at improving child nutrition outcomes. Women are registered at the end of the first trimester of pregnancy and are eligible to receive INR 250 per month until their child is three years old if certain conditions are met; bonus payments are possible (for birth spacing and child wasting outcomes). A mixed-methods impact evaluation will generate evidence on effectiveness, impact and relative cost-effectiveness. Operational reviews and monitoring data to date have found robust payment systems and indicate improvements in staff and beneficiary attendance, growth monitoring and ORS use. Impact evaluation results will be available in April 2016.

This article provides an overview of the Bihar Child Support Programme (BCSP), a pilot experiment that tests whether a CCT aimed at pregnant women and mothers of young children can help improve child nutrition outcomes. It is being piloted by the Social Welfare Department of the Government of Bihar in 261 Anganwadi centres. Findings will support the Government's consideration of scale-up in Bihar and may also help in strengthening existing centrally and state-funded CCT programmes. The sections below discuss the context for the programme, the programme objectives, the implementation design, the evaluation strategy and current project status, as well as the next steps.

The context

In recent years there has been immense interest in Bihar in combating child malnutrition. Child

malnutrition rates in the state have declined over the past decade but remain high in absolute terms. The Office of the Registrar General has been conducting Annual Health Surveys for the Ministry of Health and Family Welfare since 2010. The clinical, anthropometric and biochemical (CAB) Survey conducted in 2014 to supplement the Annual Health Surveys (Office of the Registrar General, 2010) found that 40.3% of children under five years of age were underweight, 52% were stunted and 19.2% were wasted. The provisional results of the Rapid Survey on Children 2013-2014 released by the Ministry of Women and Child Development show that these figures for children under three years of age in Bihar were 37%, 49% and 13%, respectively. Despite the decline, the rates of child malnutrition are still very high in absolute terms. This is not a problem peculiar to Bihar; malnutrition rates across all of south Asia are stubbornly high,

and higher than much poorer countries in sub-Saharan Africa. This is acknowledged to be the 'South Asian enigma'.

In Bihar, and across India, CCTs have been suggested as a potential policy instrument to address this problem, based on promising global experience (Lagarde, Haines & Palmer, 2009; Manley, Manley, Gitter, & Slavchevska, 2012). However, there is a limited evidence base within India of the potential merits of cash transfers. Therefore, there was need for pilot projects such as the Bihar Child Support Programme (BCSP), a CCT within the Integrated Child Development Services (ICDS) Scheme in Bihar aimed at improving child nutrition outcomes. It is hoped that this pilot can provide rigorous evidence of the potential effectiveness and value for money of cash transfers and help inform the debate at national and state levels. The BCSP is also an opportunity to develop a 'best-practice' standard of cash transfer implementation that can be a beacon to all other schemes, using cutting-edge technology. It was introduced to test a) the viability and b) the effectiveness of a CCT on child nutrition outcomes.

About the Bihar Child Support Programme

The BCSP is being implemented in two blocks in Gaya District. It began with a pre-pilot programme in August 2013, followed by implementation of the pilot, which began in September 2014 and will continue until at least April 2016. The pilot is testing two things:

- 1) Viability: Is it feasible for the State Government to implement on a reasonable scale the high-quality systems required to deliver a monthly CCT in a way that is realistically scalable and sustainable?
- 2) Impact: As a policy instrument, does a CCT have a significant impact on the uptake of ICDS services and adherence to nutrition-sensitive behaviours, and is this sufficient to improve child nutrition outcomes?

The pilot is set up to test different configurations of conditions to help understand which are most amenable to change as a result of a CCT. There is also a set of bonuses when a child turns two and three years old if a mother has not become pregnant again (to promote birth spacing) in one configuration, and if a child is not underweight (to promote mothers to undertake other complementary actions to promote positive outcomes). In total, a mother can receive up to INR 15,500 conditional on meeting all conditions throughout the duration of her programme enrolment.

Figure 1 Conditions associated with the cash transfer

Soft Conditions		Monthly Attendance at Village Health, Sanitation and Nutrition Days		Weight Gain Monitoring during Pregnancy		Child Growth Monitoring		Correct Treatment of Diarrhoea (ORS and Zinc)
Hard Conditions		Receipt of IFA Supplementation during Pregnancy		Birth Registration		Exclusive Breastfeeding under 6 months		Measles Vaccination

The Anganwadi centre worker is responsible for registering beneficiaries and recording their adherence to conditions, using a customised mobile phone application. Data are transmitted to a server, which generates payment lists. Payment lists are reviewed and approved by the Child Development Project Officer (CDPO) and District Programme Officer (DPO). Funds for the programme are held in the DPO's official bank account and an instruction is given to the bank to execute the payments, which are made through direct bank transfers using National Electronic Funds Transfer (NEFT). The State Government transfers funds in advance to the DPO based on utilisation certificates of previous expenditure. This ensures that cash is delivered on time (within 20 days of the end of the month), leakages and fraud are minimised through using banks' own systems of verification for enrolment and withdrawal, and transaction costs are kept low. The process is summarised in Figure 2.

Roles and responsibilities

The BCSP aims to support and strengthen ICDS service delivery. Anganwadi centre workers are at the centre of the BCSP, since they register beneficiaries and record adherence to conditions. In turn, the conditions support the effectiveness of the workers by increasing demand for their services and counselling. A Community Monitoring Group (normally an existing self-help group) is engaged to ensure full enrolment, accurate data recording and effective grievance redress. Female supervisors monitor the performance of Anganwadi workers, facilitated by the Management Information Systems (MIS) data generated by the project. CDPOs review

programme performance and verify payment lists at the block level. The DPO reviews programme performance and verifies payment lists at the district level and executes payment instructions to the bank. Project staff have been engaged on a temporary basis to support the CDPOs and DPO in their roles. The State Government has an overall oversight role and transfers funds to the DPO quarterly.

Evaluating impact

A mixed-methods impact evaluation is being undertaken alongside the pilot to generate evidence on the questions of effectiveness, impact and relative cost-effectiveness outlined above. A baseline population survey covering 6,600 households was undertaken in 2013 and a quantitative midline survey was completed in September 2015; these will be complemented by two qualitative studies (results will be available in April 2016).

The quantitative evaluation uses a quasi-experimental design, comparing blocks receiving treatment with matched blocks not receiving treatment. A separate block just receiving the technology underpinning the cash transfer is also included for evaluation purposes to see the relative importance of this compared to the demand-side incentive, as it is likely to independently improve outcomes through supply-side improvements.

The impact evaluation primarily seeks to ascertain whether there has been any change in the value of the evaluation indicators as a result of the BCSP monthly cash transfer. The impact evaluation is meant to be based on measuring these indicators both before the introduction of the BCSP monthly cash transfer (the baseline) and after its introduction. The end line, and changes in the value of the indicators in the treatment and control groups, will then be compared; this is a difference-in-differences approach.

The baseline and midline surveys were conducted in four selected blocks: two treatment blocks, one control block, and one pure control block.

Figure 2 Payment process of the CCT



- *Pure control block*: where there is no cash transfer or mobile phone application to improve service delivery;
- *Control block (with technology system)*: where there is no cash transfer but the Anganwadi workers will be using the mobile phone application to improve service delivery;
- *Treatment block 1 (Wazirganj)*: where there is cash transfer conditional upon soft conditions; and
- *Treatment block 2 (Atri)*: where there is cash transfer conditional upon hard conditions.

The potential 'pathways to impact' that the BCSP may have, which will be tested through the evaluation, include:

- **A resource effect**: whether the additional household income received due to the BCSP is translated into increased expenditure on food (and more nutritious food), healthcare and other pro-nutrition expenditures;
- **An empowerment effect**: whether the fact that the cash is transferred to the women improves her status within the household and her decision-making power, control over resources, and time use;
- **An incentive effect**: whether beneficiaries change their behaviours and seek out available services in order to receive the money; and
- **A social accountability effect**: whether beneficiaries pressure service providers to improve the accessibility and quality of services to enable them to meet the conditions.

The theory of change is summarised in Figure 3. Child nutrition outcomes, in addition to a whole range of output and outcome indicators, will be measured and compared across the four blocks.

Current status and findings

The BCSP started as a pre-pilot across ten Anganwadi centres in Sahora Gram Panchayat in August 2013 to test the implementation systems and was scaled up across two blocks, Atri and Wazirganj, in September 2014, covering 261 Anganwadi centres. A total of 6,095 beneficiaries



were enrolled by the end of August 2015; approximately 81% of eligible beneficiaries across the two blocks were enrolled. The remaining 19% include: the population covered by non-functional Anganwadi centres; those who migrate out for long periods of time (e.g. to brick kilns); those who were not interested in the scheme; and those who were unable to open bank accounts (consequently, the programme implementation team is facilitating account opening).

By the end of November 2015, a total of 7,504 beneficiaries were registered and 74% of them met their conditions and received payment. Payments initially suffered from delays and a high number of bounced-back payments (up to 18%), due to errors in transcription of bank account details, dormant accounts, and an inability of some rural bank branches to receive NEFT payments. With field-based support to check bounced-back payments, this was relatively easily solved, with bounced-back payments now under 1% of total payments and payment times down to under three weeks.

In general, the systems underpinning the CCT have been found to be robust. This is supported by a formal operational review of the programme that was undertaken in March to April 2015 for the period up to March 2015. MIS data suggests that:

- There has been a steady increase in the number of Village Health, Sanitation and Nutrition Days (VHSNDs) held across the

- programme area;
- The attendance of Auxiliary Nurse Midwives (ANMs) and Accredited Social Health Activists (ASHAs) and stock availability has improved considerably at VHSNDs; and
- This has translated into increased attendance, higher rates of pregnancy weight-gain monitoring, child-growth monitoring and greater receipt of IFA tablets by pregnant women.

Next steps

The formal impact evaluation of the BCSP entails a midline survey which was recently conducted in the August to September 2015 period in conjunction with two qualitative assessments. Further, a second follow-up operational review will be undertaken in 2016 to review the evolving and dynamic programme aspects. The evaluation population will include a range of stakeholders encompassing programme beneficiaries, ICDS functionaries (including Anganwadi centre workers), government officials, project implementation staff and banking correspondents.

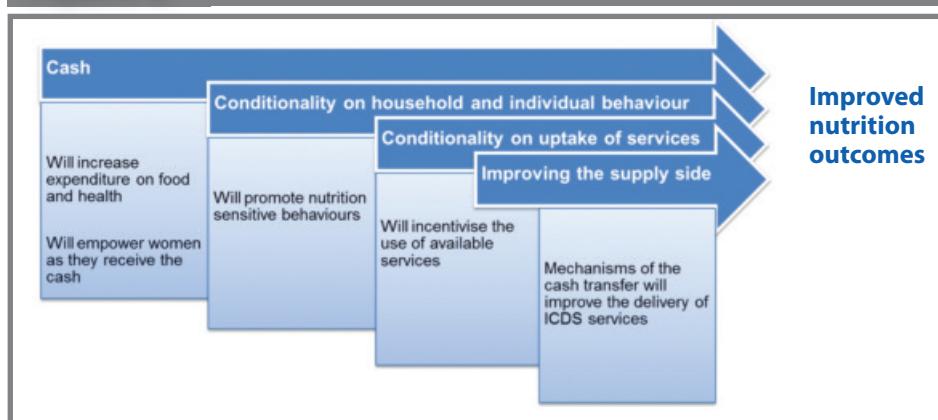
The impact evaluation report will be finalised by April 2016 and summarised in a future edition of Field Exchange. It will enable understanding of the impact of the pilot programme and inform any decision to scale up. It is hoped that the systems learning can be applied to other similar schemes, such as Indira Gandhi Matritva Sahyog Yojana (IGMSY), a maternity benefit programme introduced in 2010 by the Government.

For further information, please contact Tom Newton-Lewis, email: tom.newtonlewis@opml.co.uk.

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Figure 3 Summary of theory of change to improve nutrition outcomes through CCT



Nutrition incentives in dairy contract farming in northern Senegal

Summary of research ¹

IFPRI, Senegal, 2013



Pastoral children eating the fortified yoghurt

Location: *Senegal*

What we know: Seasonality plays an important role in milk production in Senegal; milk production is the cornerstone of nutrition, culture and livelihoods within pastoral communities.

What this article adds: A nutrition incentive (free micronutrient-fortified yogurt) accompanied by a behaviour change campaign was offered to pastoral milk suppliers of a Senegalese social business (Laiterie du Berger) to reduce variability in milk deliveries and improve children's nutritional status in supplier households. A cluster randomised control trial (RCT) was implemented over one year to test whether it worked. The nutrition incentive increased regularity of milk deliveries during the dry season to those contracts headed by a woman. Household milk consumption was not affected. The findings highlight that health-related incentives can trigger important behavioural responses; however, targeting women may only be effective where they have decision-making power. As a business model, the intervention was not cost-effective; however, from a public-health perspective, public-private partnerships may have logistical benefits for delivering health services in remote communities. It is notable that the incentive had a significant impact on increasing children's haemoglobin levels; detailed results will feature in a future publication and in Field Exchange.

Contract-farming arrangements are agreements between farmers and buyers, usually for high-value foods, wherein farmers agree to produce a given product and buyers agree to purchase it. Contract farming has the potential to solve many constraints faced by small farmers related to lack of information, market opportunities and credit. This paper documents the impact of a contract-farming scheme in northern Senegal that seeks to introduce a preventive health product in agricultural contracts. In particular, this study tests whether providing a micronutrient-fortified food product can lead to a more regular supply of milk delivered to a dairy processing factory in northern Senegal.

Milk production in the northern part of Senegal is dominated by the Fulani, who have a long nomadic pastoralist history. Livestock provide the Fulani with a source of income through milk and meat production, a source of prestige and social status, and an informal insurance device through which they sell their cattle during negative-income shocks. Seasonality plays an important role in milk production in the Sahel due to its semi-arid climate. Pastoralists and herds move daily and seasonally in search of

water and pasture. Senegal's livestock sector contributes 37% of agricultural value added and 5.5% to national GDP (FAO, 2005). However, milk production cannot keep up with the growing demand for dairy products and two thirds of the demand for dairy products is met by imported milk powder.

Intervention

In 2006, the Laiterie du Berger (LDB), a Senegalese social business, began to collect milk from pastoralist families near the town of Richard Toll in the Senegal River Valley. LDB's business model is to produce high-end products (mostly yogurts) for urban populations, based on fresh milk that it collects itself twice a day from households living within 50 km of its processing plant. The business has a social orientation and the long-term company objective is to contribute to generating additional milk-related earnings for mostly poor, semi-nomadic households in the area. In this setting, three potential factors that lead to irregular and costly milk delivery to the processing factory are: seasonality of milk production; credit constraints which lead to sub-optimal investment in inputs and risk coping strategies; and not directly compensating women for their labour.

In order to reduce the variability in milk production and improve the nutritional status of children in supplier households, a nutrition incentive was offered to milk suppliers of LDB. The nutrition incentive was delivery of free, micronutrient-fortified yogurt (MNFY) for children if suppliers delivered a certain amount of milk to the LDB over a certain number of days. The daily sachets of MNFY were manufactured by the dairy company using the milk collected from the dairy farmers. The yogurt was mixed with cereal and fortified with 2.1 mg of EDTA iron to address malnutrition of the study population and in particular the high rates of anaemia, which were 89% for children 6-23 months and 79% for children 24-59 months at baseline (Hidrobo, Quinone, Le Port et al, 2013).

The MNFY was delivered daily to milk collection points easily accessible to milk suppliers, and in particular women. A behavioural change campaign (BCC) was also conducted with all households in the study. Designed and implemented in partnership with the Cellule Contre

¹ Unpublished paper. Bernard, T., Hidrobo, M., Le Port, A. and Rawat, R. (2015) *Nutrition incentives in dairy contract farming in Northern Senegal*, 25 October 2015.

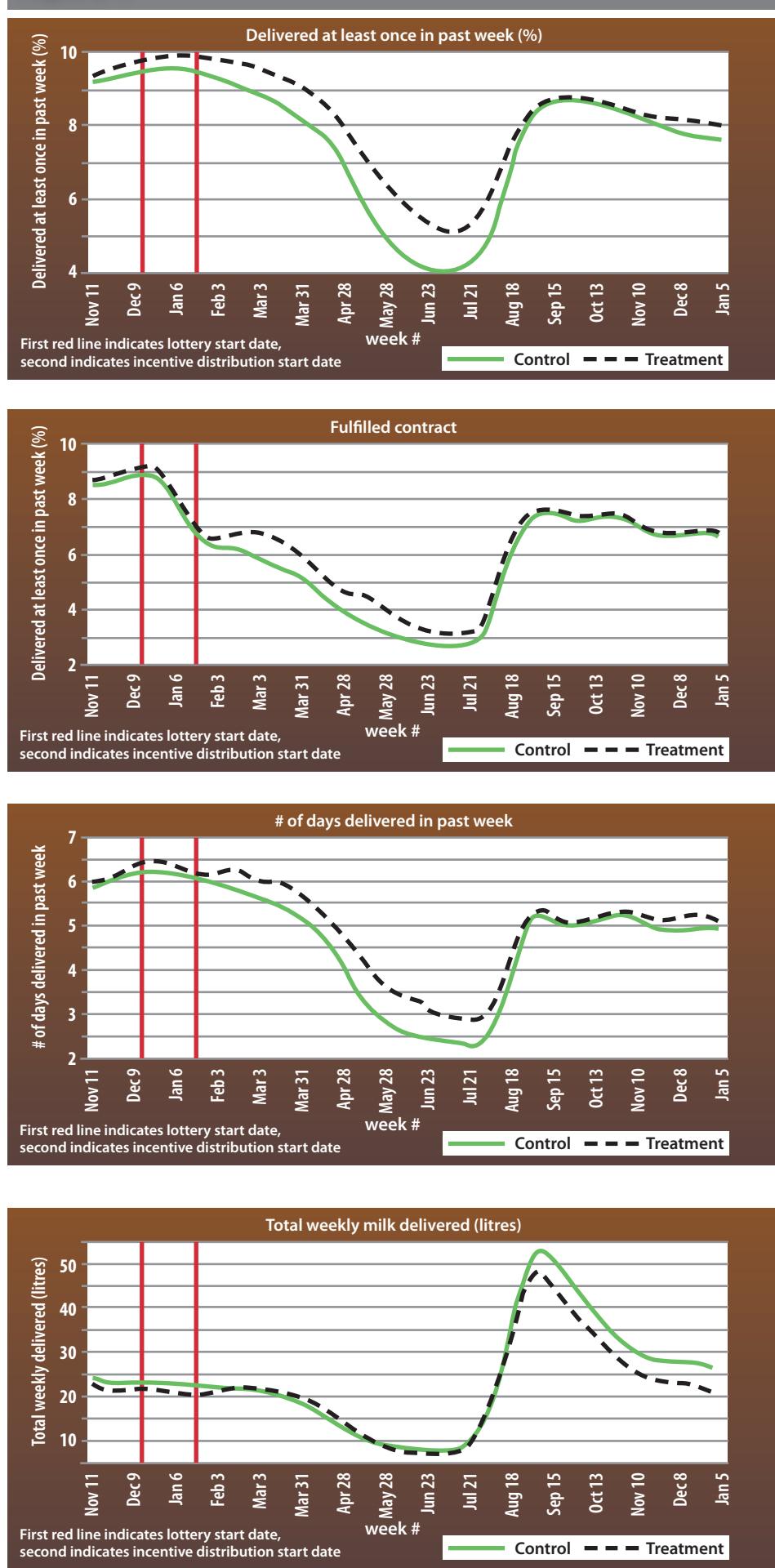
la Malnutrition (a unit in the Prime Minister's office coordinating all malnutrition-related interventions in the country), the BCC focused on optimal infant and young child nutrition, the importance of micronutrients, and the role that diverse diets and fortified food can play in delivering them, although the specific MNFY used in the study was not discussed (as advised by the ethics committee to avoid what could be considered product advertisement).

Research method

A cluster RCT was implemented to test whether this nutrition incentive improved children's nutritional status and increased milk deliveries. A total of 320 concessions (groups of three to seven households, usually related to each other), across four existing milk routes (Dagana 1, Dagana 2, Mouda, and Rosso) were randomised via a public lottery to either an incentive group or control group. During public lottery events, all suppliers were invited to sign a container-level contract ahead of the random draw committing them to deliver 0.5 litre/lactating cow/day accounting for the lactating cows of all households routinely delivering milk to this container. Suppliers also declared the number of children aged two to five years living in their household and contributing container households. For the incentive group, fulfilment of the contract in a given week triggered daily home delivery of MNFY for each child aged two to five years in the household the following week. In the control group, no incentive or penalty was given.

The authors collected household-level data before the start of the intervention in January 2013 (baseline) and again after the intervention in January–February 2014 (endline). A household questionnaire was administered to the head of household or spouse and contained information on the composition and demographics of the household, dwelling characteristics, food security, assets and preferences of the head of household. A questionnaire was administered to all mothers with children aged 24–59 months at baseline and included information on nutrition knowledge; knowledge about the incentive design; involvement and decision-making power with respect to milk production; and usage of milk within the household. Anthropometric measures and haemoglobin were also collected for all children aged 24–59 months at baseline; the incentive had a significant impact on increasing children's haemoglobin levels (full results will be available in a future publication). The total number of households included in the baseline survey was 445 (213 from the treatment arm and 232 from the control arm) and comprised all households that are milk producers for LDB and who agreed to be part of the study. Of these households, 98% or 437 were resurveyed at endline. Administrative data were collected by LDB and GRET (partner non-governmental organisation) on weekly milk delivery by container. This dataset includes information on the number of days the household delivered milk during that week and the quantity delivered each day, as well as the number of sachets of MNFY it received in that specific week.

Figure 1 Descriptive evidence (local linear regressions)



Results

Descriptive evidence on the evolution of milk production across treatment and control groups over time is presented in Figure 1 using four different outcome indicators: (1) whether the container delivered milk at least once in the past week; (2) whether the container fulfilled its contract that week; (3) the number of days it delivered milk that week; and (4) the total amount of milk it delivered that week.

These results show significant increases in the probability and frequency of delivery during the dry season, but only limited impacts on total amount of milk delivered. Baseline and endline household survey data support these results and link it to households postponing when lactating cows are sent on migration, thus resulting in more lactating cows staying near the home for milking and delivery. The incentive did not lead to increases in daily milking effort per cow; nor did it affect consumption patterns of milk within the household.

The authors also found considerable heterogeneity of impact. The effect was time-sensitive and mostly effective during the dry season, when households must decide when to go on seasonal migration and which cows to take. The impact on amount of milk delivered is also limited to those households where women hold the contractual relationship with the milk company and have greater control of milk-related decisions. For this sub-sample the impact is large, with the incentive leading to a 42% increase in milk deliveries over the year. This effect is largely mediated by having twice as many lactating cows present in the area near the home at the height of the dry season.

Results show that the ability to fulfil the contract and the treatment effect were largely seasonal, with over 80% of containers fulfilling the contract in December 2012 and dropping drastically to approximately 30% at the height of the dry season in July 2013. The effect of the incentive follows a similar pattern, with a higher probability of contract fulfilment in treatment than in control group from February 2013 through June 2013. Once the rains began in August and the contracts were no longer binding (both treatment and control groups are easily able to fulfil the contracts), the treatment effect disappears.

Results also show that the percentage of active containers decreased from nearly 100% being active at the start of the study to less than 50% being active by the end of June. Here also, the incentive increased the probability of a container being active, but only until the first rains. The average number of days of milk deliveries in a week also decreases from approximately six before the start of the study to approximately two at the height of the dry season, with those in the treatment group delivering more days from January through July than the control group. Consistent with seasonal patterns, mean milk production before the study is approximately 20 litres, drops to approximately 10 litres at the

IFPRI, Senegal, 2013



A milk truck

height of the dry season, and then spikes to over 40 litres during the rainy season.

Discussion

Innovations that help overcome the inherent difficulties of contracting with a large pool of small farmers in a poor-country setting can provide important avenues towards securing a viable contract-farming scheme. Results of this RCT show that the nutrition incentive increased regularity of milk deliveries, albeit limited to the dry season and to those contracts headed by a woman. The impact on milk deliveries is mainly driven by delayed cow migration in the dry season and thus longer lactation period of lactating cows. The authors find no extra effort per lactating cow as a result of the incentive, nor do they observe an impact in terms of milk usage.

Results are consistent with a household-bargaining model, where households decide whether to migrate with cows or stay delivering milk to LDB. The introduction of the incentive not only increased a household's utility from staying but, by targeting women, also increased women's bargaining power, particularly with respect to decisions over migration. Impacts are concentrated in households where women are in control of the milk contract, which is further consistent with bargaining models. In households where men are in charge of the contract and women have more limited control over milk production, women's response to the incentive is limited. What remains a puzzle is why men had a limited reaction to the incentive. A likely explanation is that men and women have similar preferences over children's health but have different preferences on migration. Given migration patterns and social norms, it is likely that preferences over migration differ, with more drawbacks to women migrating with cows.

Conclusions

Several conclusions are derived from the results. Firstly, health-related incentives to reward effort or commitment, which are commonplace in many professional contracts throughout the world, can also trigger important behavioural responses in poor and remote settings. Second, intra-household dynamics play an important role in the effectiveness of these incentives. While targeting women may lead to larger impacts, this is only the case in households where women have control and power over decisions.

Lastly, value chain logistics may be cost-effective in increasing access to preventive health services to remote rural populations in poor countries. In sub-Saharan Africa in particular, inhabitants of rural areas are at a large disadvantage in terms of both access to preventive health services and quality of the services. Distance either strongly increases the cost of health campaigns that directly reach out to the targeted populations or strongly reduces household willingness to visit doctors. This is particularly so for preventive health. The results suggest that, from the LDB standpoint, the increase in milk delivery generated by the incentive is not sufficient to cover the full cost of the incentive itself. This is largely due to the limited complier population, seasonal effectiveness and unit cost. From a public policy perspective, however, such a contract may prove efficient at reaching remote populations and opening avenues for public-private partnerships in preventive health and/or nutrition services within agricultural value chains in poor countries.

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The cost of a knowledge silo:

A systematic re-review of water, sanitation and hygiene interventions

Summary of research¹

Location: Global

What we know: Progress in achieving broad access to water, sanitation and hygiene (WASH) has been slow, particularly for sanitation. A series of systematic reviews of WASH interventions has been conducted, aimed at informing investment and programmatic decisions: all have been from a health perspective and focused predominantly on interventions' impact on diarrhoea.

What this article adds: The authors test the hypothesis that greater practical understanding of how WASH interventions work and can be made to work is gained when they are evaluated jointly from health and development perspectives. Twenty-seven studies from a systematic review of the impact of WASH interventions on diarrhoea morbidity (Waddington review) were re-reviewed from these two perspectives. In a first stage of review, the authors found evidence in the studies that interventions were more complex than the Waddington review indicated. They often involved more actions than acknowledged and resulted in substantial impacts beyond diarrhoea reduction; in many cases these were achieved by the unplanned actions of individuals, households or communities. In almost 45% of the studies, these additional actions and impacts would likely have affected the intervention's impact on diarrhoea, including its sustainability and equity, suggesting that the Waddington review mis-estimated these impacts. In a second stage, the authors identify evidence in these studies of six additional impact pathways relating to intervention complexity, direct multiple benefits of interventions, unintended negative consequences, people's actions favouring food and nutrition, diffusion of innovations within and among communities, and effects of local institutions.

While still tentative, these additional pathways suggest ways in which investments in WASH can more effectively support health and livelihood. The authors recommend at least one systematic review of literature on the different and multiple impacts of WASH interventions to put these suggestions on a firmer footing. Teams evaluating interventions should bring diverse perspectives to bear and have the flexibility to pursue evidence of other impact pathways that emerge. Strengthened research practice will maximise study insights.

Thanks to Michael Loevinsohn for reviewing this summary.

Progress in achieving broad access to WASH has been slow, particularly for sanitation. In 2011, some 2.5 billion people were living without access to improved sanitation facilities, and 770 million people were not receiving their drinking water from improved water sources, according to the Global Annual Assessment of Sanitation and Drinking-Water (The GLAAS Report). The report linked these persistent gaps to the toll of diarrhoea, the second leading contributor to the global burden of disease (World Health Organization, 2010). However, understanding this problem has been undermined by the continuing disconnect between the world of health and disease transmission and the wider development world, which considers more diverse perspectives, interests, power and rights. This disconnect hampers comprehensive diagnosis of the problem and the mounting of more effective actions to address it.

The dominant concern with the health and particularly the diarrhoeal impacts of WASH interventions has been reinforced by a series of systematic reviews (SRs), considered the cornerstone of evidence-based policy, aimed at informing investment decisions in the WASH sector. However, their preponderant concern with diarrhoea has not been balanced with SRs of the significant non-

health benefits of WASH interventions. These include more time for women and girls to pursue education, income generation, childcare and leisure; more water for kitchen gardens or other productive enterprises; livelihood and food security; saving money spent on private water supply; using these savings for food and other essentials; greater dignity and security with accessible, closed toilets; and increased attendance of girls at school when such facilities are available there. Thus, current SRs, taken together, provide an incomplete picture of the benefits of WASH interventions and limited insight into the contextual factors that can affect the achievement of impact.

Methods

The article's objective is to test the hypothesis: Can greater practical understanding be gained of the overall impacts of WASH interventions and how they are achieved when examined jointly from health and development perspectives? The authors re-review the studies that were included in the most comprehensive of the recent SRs, the 'Waddington review', a Cochrane-standard systematic review of water, sanitation and hygiene interventions' impact on child diarrhoea morbidity (Waddington & Snistveit, 2009). The authors employ the methods of 'realist review' which sees interventions as being based on 'programme theories'

which link their delivery to a desired outcome. It assumes that the outcomes actually produced by an intervention are influenced by many actors, not just the intervenors; that these actors respond to their social, political and natural contexts; and that outcomes – positive and negative – often go beyond those intended by the intervention's designers (Pawson, Greenhalgh, Harvey et al, 2005).

In a first stage of review, the authors searched for evidence in the papers of other impact pathways operating in addition to those assumed in the papers' programme theories and the Waddington review. The evidence was assessed with respect to three questions relating to these pathways and one overarching question that enabled the authors to test their hypothesis:

- (1) Does the intervention involve substantially more actions than considered by the Waddington review?
- (2) Are the intervention's impacts substantially understated if only the diarrhoea morbidity outcome is considered?
- (3) Are actions by individuals, households or communities substantially influencing the impacts experienced? and
- (4) Would these other impacts and actions substantially affect the level, distribution or sustainability of the diarrhoea morbidity outcome?

Authors evaluated the evidence supporting an affirmative answer to each question: 1) No indication; 2) Possible (substantial additional evidence needed); 3) More than possible (some additional evidence needed); or 4) Likely (little or no additional evidence needed).

In a second stage of review, the authors looked for regularities in the impact pathways they had found in the studies and deliberated on the 'middle range' and broader theories that could explain them. They described these regularities and explanations in terms of the context in which they occur, the mechanisms at play and the outcomes they produce: what realist review refers to as 'CMO configurations' (Wong, Greenhalgh, Westhorp et al, 2013).

Of the 65 studies that Waddington et al reviewed, the authors excluded 38 on the basis of limited descriptions of context, very restricted space in which people could exercise agency, and for practical reasons (three only available as abstracts and two unavailable in English). The remaining 27 studies describe research conducted between 1982 and 2009. Six were classified by the

¹ Loevinsohn M et al (2015). The cost of a knowledge silo: A systematic re-review of water, sanitation and hygiene interventions. *Health Policy and Planning* 30:660–674, first published online May 29, 2014 doi: 10.1093/hep/ctu039

Waddington review as randomised or cluster-randomised controlled trials and 19 as non-randomised controlled trials. Thirteen described hygiene, four water supply, three sanitation and seven multiple interventions.

Findings

The first stage of review judged that, at the 'more than possible' or 'likely' level, 22% of interventions involved substantially more actions than the SR's label indicated; 37% resulted in substantial additional impacts beyond reduced diarrhoea morbidity; and unforeseen actions by individuals, households or communities substantially contributed to the impacts in 48% of studies. In 44%, it was judged that these additional impacts and actions would have substantially affected the intervention's effect on diarrhoea morbidity, its level, social distribution or sustainability. These impacts and actions would likely be found to be more common in studies not so narrowly selected as were those the Waddington review drew on.

In the second stage of review, the authors identify six impact pathways each present in three or more studies and which were not considered by the original SR. The first relates to intervention complexity: agency staff add actions to an intervention in response to local circumstances; in some cases, interventions are sited where an earlier one had been implemented and build on its effects. In both cases, the intervention-as-experienced involves more than indicated by the label. An example is a Guatemalan program described by the Waddington review as "hygiene education" but which comprised 11 topics including nutrition (promotion of weaning foods, breastfeeding and agricultural diversification) and the recognition and treatment of diarrhoea, in addition to hygiene issues. The study only monitored hygiene behaviours and in relation to diarrhoea reduction (Torun, 1983). The intervention's impact on diarrhoea may be overestimated if the additional or prior actions are ignored.

The second impact pathway relates to the direct multiple benefits of interventions. By doing one thing, interventions may affect different causes of ill-being. For example, a water supply intervention in Buenos Aires connected shantytown households to the urban system, increasing the quality and reliability of the water they could access, contributing thereby to reduced diarrhoea burdens, and saving them time and money spent fetching and procuring water (Galiani et al, 2008). The non-diarrhoea benefits will likely be valued in their own right and may increase people's commitment to support and maintain the intervention, enhancing sustainability.

The third pathway relates to unintended negative consequences of interventions. Agencies make operational decisions on where and when to implement interventions affected by political influence, corruption and ease of access. The result may be an anti-poor distribution of benefits, exacerbating inequalities. In the Democratic Republic of Congo, diarrhoea incidence declined significantly in villages to which piped water was delivered compared with those relying on existing sources (Tonglet et al, 1992). Pipes were laid near main roads, apparently for ease during construction, which is also where higher socio-economic status households were concentrated. Thus, those least at risk of diarrhoea

captured most benefits. The intervention's impact was also overestimated because baseline differences between villages were not accounted for.

A fourth pathway was identified in several studies with evidence of unanticipated benefits from people using access to water for food and improved nutrition. Water supply interventions enable beneficiaries not only to avoid water-related diseases but also to irrigate kitchen gardens, throughout the year. Women started to do this as soon as the water arrived in Bangladesh rural water supply intervention (Hoque et al, 1996). In the Buenos Aires study described above, households diverted two-thirds of their savings from purchasing water to purchasing food (Galiani, Gonzalez-Rozada & Schargrodsy, 2008). The authors judged it possible that improved child nutrition resulted in both cases. This could have contributed to reduced diarrhoea morbidity but would be difficult to disentangle from the direct effect of increased access to water. Particularly in Buenos Aires, the reduction in diarrhoea, however it was produced, would have had a markedly pro-poor bias since these householders were among the most marginalised of the city's residents.

The fifth impact pathway relates to the diffusion of innovations. Interventions are implemented in communities whose members share information through social networks which often reach into neighbouring communities. In the Guatemalan study discussed above (Torun, 1983), the proportion of control households in which at least half of the 27 hygiene behaviours promoted were deemed adequate increased 120%. This was much less than the 560% increase in treatment households but evidence of spontaneous communication among villagers. This 'contamination' likely led to an underestimation of the intervention's impact on diarrhoea, which was calculated as the difference in morbidity between treatment and control households. But rather than considering this solely as an estimation problem, to be designed out or corrected for statistically, it is important to ask how people's agency can be enlisted to enhance the reach and sustainability of interventions.

The sixth and final impact pathway concerns local institutions. The Waddington review and most of the studies it draws on focus on individuals and households. They largely ignore the adaptive capacity for self-governance of the communities in which interventions are implemented. A few studies however show how emergent and existing institutions can influence the spread, adaptation

and retention of interventions. Pattanayak, Dickinson, Yang et al (2007) describe the development of local governance through norms against open defecation in Odisha, India. Experiential learning helps villagers to understand how they and their children are contaminated by open defecation, which often triggers disgust. Social persuasion adds to people's motivation to progressively improve their latrines or toilets. The poorest are often assisted from within or outside the community to improve their facilities. Related processes are being supported on a broader scale through Community-Led Total Sanitation (CLTS), an approach now being implemented in more than 50 countries.

Conclusions

This re-review provides an enlarged view of WASH interventions and their contexts. There is evidence that other interventions, previous or concurrent, sometimes influence the field in which the intervention and the evaluation operate. Multiple impacts, positive or negative, unforeseen by the intervention's designers, may be produced, affecting health and livelihood, many of them created or shaped by beneficiaries or by people beyond the intended reach of the intervention. These actions and effects suggest ways in which investment in WASH can better support health and livelihood. They also affect the Waddington review's conclusions regarding the impact of WASH interventions on diarrhoea, suggesting that these need to be revisited.

Taking account of the limitations of this re-review and the imperative for more joined-up policy across sectors, the authors recommend that donors and commissioning organisations support one or possibly more SRs of literature on the different and multiple impacts of WASH interventions on health and livelihoods.

More broadly, this study contributes important experience to the continuing debate on appropriate methods to evaluate and synthesise evidence on complex interventions. In building evidence, there is an urgent need for studies that can take the measure of operational situations as they exist. Evaluation teams should have the skills and flexibility to pursue evidence of other impact pathways that emerges during research: too often study authors were left to speculate on an unexpected result. Good research practice, such as ensuring baseline data, would have helped to draw more insights from many of the studies reviewed. Better research costs more but a large price is now being paid by not being able to make proper sense of what happens in interventions.

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Water for food security and nutrition

Summary of research¹



WaterAid/ Anna Karf, Sierra Leone

Location: Northern Ecuador

What we know: Safe and sufficient quantities of water are central to Food Security and Nutrition (FSN).

What this article adds: A comprehensive report on water for FSN was produced by the High Level Panel of Experts on Food Security and Nutrition (HLPE) for the WFS in 2015. Water is needed for drinking; sanitation and hygiene; to produce, transform, and prepare food; and for livelihoods, income generation and food accessibility. Sustainable management and conservation of water resources and supporting ecosystems are necessary. Water is under increasing stress through increased demand and unsustainable management. Water for FSN is determined by multi-level social, political and economic power relations and is most challenging for the marginalised. Efficiencies and improvements to rain-fed agriculture (primary global source of food production) and to irrigated systems (accounts for 70% of all water withdrawals) are possible. Water-scarce countries are particularly dependent on international trade for the importation of food and are affected by food price volatility and export restrictions. Water governance includes policy coordination that prioritises water for food security and public and private regulation. Detailed recommendations are made regarding sustainable management and conservation; integrated policy development; the vulnerable and marginalised; agricultural water management; trade; enhanced knowledge, technologies and management tools; and governance.

Thanks to Lyla Mehta for reviewing this summary.

In October 2013, the Committee on World Food Security (CFS) requested the HLPE to prepare a report on Water and Food Security, to feed into CFS's 42nd Plenary session in 2015. This report explores the relations between water, food security and nutrition, and ways for improved water management in agriculture and food systems and improved governance of water, for better food security and nutrition for all. The concept of water for food security and nutrition (FSN) covers safe drinking water and sanitation; water used to produce, transform, and prepare food; as well as the contribution of water uses in all sectors to livelihoods and income and as such, to food accessibility. It also covers the objective of sustainable management and conservation of water resources and of the ecosystems that sustain them, and that are necessary to ensure FSN for present and future generations.

Water is central to Food Security and Nutrition

At global level, irrigated agriculture accounts for seventy percent of all water withdrawals. Safe drinking water and sanitation are fundamental to the nutrition, health and dignity of all; inadequate access to safe drinking water, sanitation facilities and hygiene practices can undermine individual nutritional status. In most parts of the world, however, water is under in-

creasing stress. Population growth, rising incomes, changing lifestyles and increased livestock consumption, as well as demands from mining, for energy generation and for manufacturing, are increasing pressure on limited freshwater resources. Furthermore, unsustainable use and management are reducing terrestrial and aquatic ecosystem functions from land, fisheries, forests and wetlands, including their ability to provide food and nutrition.

Access to, and use of, water for FSN is determined by social, political and economic power relations at all levels. Securing access to water can be particularly challenging for smallholders, vulnerable and marginalised populations and women. Drinking water quality and associated food safety risks are important challenges in the global south and still have adverse impacts on both human and ecosystem health. In such countries, the potential to use waste water and desalinated water is currently undervalued and underused.

Managing water scarcities in agriculture and food systems

Improving water management in agriculture and food systems can be achieved by improving both water efficiency (how water is used) and agricultural water productivity in rain-fed and irrigated systems (the ratio of output to water

input). As rain-fed agriculture is the primary global source of food production, there is great potential to improve agricultural productivity through rainwater harvesting and supplemental irrigation. Livestock water productivity may be enhanced through better management of grasslands and rangelands and through livestock systems resilient to water stresses. Existing irrigation systems can be improved and revitalised to increase productivity and sustainability and cropping systems adapted to reduce the need for irrigated water. Appropriate water pricing can enable cost recovery in irrigation systems and increase efficiency.

Water-scarce countries are particularly dependent on international trade for the importation of food and are affected by food price volatility and export restrictions. Measures to improve the reliability of international trade can thus be seen as measures to cope with water scarcity and water used for agriculture in water rich countries contributes to ensure global availability of food.

Challenges of water governance for food security and nutrition

Water governance covers both water resources and water services and deals with competing policies, interests and actors coming from nu-



merous sectors, with different degrees of political or economic power. Policy coordination between the relevant sectors is necessary, which should involve national water policies that prioritise water for food security.

Many different actors, public and private, operate in water use and management. There is often confusion, and a need for clear rules and common understanding, on their roles and functions, the way they interrelate, their different responsibilities and how they can be made accountable. Regulatory oversight is needed to govern the important role of the private sector. Decentralised governance allows a better understanding of the need of users and state of the resource, but it is important that local organisations ensure equitable water access and that the setting up of specific institutions do not undermine existing practices that ensure access for weak and marginalised groups. Allocation systems must give adequate priority to water for food production, as well as for the basic needs of poor and marginalised populations.

At the global level, several international initiatives have emerged in recent years, including the Global Water Partnership (see www.gwp.org) and the World Water Council (see www.world-watercouncil.org). In addition, UN-Water (see www.unwater.org) has been created to strengthen coordination and coherence amongst the UN agencies, programmes and funds that have a significant role in tackling global water concerns. The human right to safe and clean drinking water and sanitation was recognised in 2010 by the United Nations General Assembly. It entitles everyone, without discrimination, to access to sufficient, safe, acceptable, physically accessible and affordable drinking water and to physical and affordable access to sanitation for personal and domestic use. The right to adequate food is also internationally recognised. The human right to safe drinking water and sanitation and the human right to food have close ties because safe drinking water and sanitation are crucial for health and good nutrition, and because access to water is indispensable for food producers, and the right to food of producers. It is important that these two rights are joined up in policy and practice. There are also considerations about the extra-territorial obligations of States to regulate the activities of third parties under their jurisdiction to ensure that they do not violate the human rights of people living in other countries.

Recommendations

The report includes a comprehensive list of recommendations, which are summarised here:

- 1. Ensure sustainable management and conservation of ecosystems for the continued availability, quality and stability of water for FSN.* States must ensure the conservation and sustainable management of landscapes and ecosystems and the preservation of the quality of water sources. States and other stakeholders must promote participatory mechanisms

for sustainable management of ecosystems and landscapes and consider co-management of water resources.

- 2. Ensure an integrated approach to water and FSN related policies.* States should develop a national integrated water resource management strategy that incorporates FSN concerns and is comprehensive across sectors; water must be integrated into national FSN strategies with coordinated cross-sectoral policy development and implementation. States should also undertake evidence-based assessments of actual and future water demand and plan accordingly, and use sex-disaggregated indicators on water. States and civil society organisations should strengthen the capacity of households to adopt water-saving practices and technologies.
- 3. Prioritise the most vulnerable and marginalised, including mainstreaming gender and addressing the specific needs of women.* States and stakeholders should ensure that men have equal access to water and other resources and information to enable them to meet their FSN requirements; infrastructure and technologies should be designed and implemented to improve water availability and access at household level; women and girls must be empowered through targeted interventions; and rural women's participation and representation in water governance strengthened. Private, public and public-private initiations are advised to ensure that no action related to water has negative impacts on water for FSN for vulnerable and marginalised peoples.
- 4. Improve water management in agriculture and adapt agricultural systems to improve their overall water efficiency and water productivity, and their resilience to water stresses.* States and other stakeholders must develop and implement adaptive water and agricultural strategies and action plans; use water management options to reduce water scarcity risks; increase the resilience of water systems to water stress; reduce risks to make rain-fed agricultural systems a more reliable option for farmers; invest in irrigation systems to improve water efficiency; and govern the sustainable management of groundwater.
- 5. Improve the contribution of trade to 'water for FSN'.* States must act to restore a transparent and accountable multilateral trading system that takes into account the needs of water-scarce countries, and must strengthen trade rules of food exports.
- 6. Devise and share enhanced knowledge, technologies and management tools related to water for FSN.* States and stakeholders must define global, national and local research agendas on water for FSN, enable innovations, and increase investments in research and innovation in key areas. They are also advised to build capacity for research, increase efforts to collect sex-disaggregated data on water for FSN, improve climate hydraulics modelling, improve monitoring systems, and facilitate knowledge exchange on best practices. International research organisations are advised to take a lead role in research and development initiatives on water for FSN.
- 7. Foster an inclusive and effective governance of water for FSN.* States must establish governance mechanisms to strengthen policy coherence in water for FSN; coordinate agriculture, land and water governance processes; ensure participation of all relevant actors, including the vulnerable, the marginalised and women; and ensure that all parties to contracts involving large-scale investments in land are held accountable for the impacts on natural resources and protect the rights of the vulnerable and marginalised to land, fisheries and water in the face of large-scale infrastructure development. In addition, stakeholders are advised to support communities to take ownership of water planning and management, and recognise and support community-based actors with regard to water conservation and sustainable use of water.
- 8. Promote a rights-based approach to governance of water.* The report recommends that states comply with their obligations under international human rights treaties and ensure the full and meaningful implementation of the existing right to safe drinking water and sanitation, as well as the right to food and related rights and guidelines. The CFS is advised to provide guidance to states in support of this; to address in their work means to strengthen the realisation of the right to drinking water and sanitation; and to explore the implications of the linkages between water and FSN on the realisation of human rights.

The presented report was well received at the CFS Session, with 20 strong endorsing comments from country representatives, civil society and UN agencies. The subsequent CFS recommendations have adhered to the structure of the HLPE report's recommendations.

The full report is available at: www.fao.org/cfs/cfs-hlpe/en/. The presentation to the HPLE by Prof. Lyla Mehta, the Project Team leader for the HLPE study on Water for food security and nutrition, is available at: www.fao.org/cfs/cfs-hlpe/news-archive/detail/en/c/336514/.

¹ HLPE, 2015. Water for food security and nutrition. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (WFS), Rome 2015.

Cash, food or vouchers?

Evidence from a randomised experiment in northern Ecuador

Summary of research¹

Location: Northern Ecuador

What we know: There is ongoing debate on the most effective form of food assistance: cash, food vouchers or food transfers.

What this article adds: A prospective randomised control trial (RCT) investigated the dietary impact and cost-effectiveness of cash, food vouchers and food transfers in refugee and host urban communities in northern Ecuador. Six transfers at monthly intervals over six months were made. In this context, all three modalities significantly improved the quantity and quality of food consumed: food transfers led to significantly larger increase in calories consumed; vouchers led to a significantly larger increase in dietary diversity; cash transfers increased food consumption. Food transfers were the least cost-effective modality of improving any outcome measure; vouchers were the most cost-effective means of increasing dietary diversity or caloric intake, though least preferred by beneficiaries; and cash was the cheapest way to improve welfare. Choice of assistance type depends on policy objectives.

Asistance in the form of cash is justified primarily on the grounds that it generates the largest welfare gains, as it allows beneficiaries to use these transfers as they see fit. Near-cash transfers, such as food vouchers and in-kind transfers, have the theoretical advantage that only those truly in need will take them up. Other arguments in favour of one form of transfer over another are circumstance-dependent. For example, the injection of cash into a local economy may cause food prices to rise and therefore have an adverse impact on non-beneficiaries living in the same locality. Despite ongoing debate on the most effective form of food assistance, little rigorous evidence exists that compares food assistance in the form of cash versus in-kind. This paper aims to add to the evidence base through the use of a randomised evaluation to assess the impacts and cost-effectiveness of cash, food vouchers and food transfers on the quantity and quality of food consumed in communities in northern Ecuador.

Responding to a request from the Government of Ecuador in April 2011, the World Food Programme (WFP) expanded its assistance to address the food security and nutrition needs of Colombian refugees and to support their integration into Ecuadorian communities. The new programme was designed as a prospective RCT and consisted of six transfers at monthly intervals

of cash, food vouchers or food transfers to Colombian refugees and poor Ecuadorian households. The objectives of the programme were threefold: to improve food consumption by facilitating access to more nutritious foods; increase the role of women in household decision-making related to food consumption; and reduce tensions between Colombian refugees and host Ecuadorian populations. The programme was implemented in seven urban centres in the provinces of Carchi and Sucumbíos. Participating households received benefits from April 2011 to September 2011. The value of the monthly transfer was standardised across all treatment arms at US\$40 per month per household. Nutrition sensitisation was a key component of the programme, aimed at influencing behaviour change and increasing knowledge of recipient households, especially with regard to dietary diversity. To ensure a consistent approach to knowledge transfer, a curriculum was developed by WFP to be covered at each monthly training.

The programme evaluation was based on random assignment. Randomisation was conducted in two stages: first, neighbourhoods were randomised to either the treatment group or the control group; second, all treatment clusters (geographical units within neighbourhoods) were randomised to cash, food voucher or food transfer. The baseline survey was conducted from March to April 2011 before the first transfers

were distributed. The follow-up survey was conducted approximately seven months later (October to November 2011), after the last of the six transfer distributions. In total, the baseline sample for the evaluation consisted of 2,357 households, of whom 2,122 were resurveyed at follow-up. Outcome indicators included household food consumption, based on the consumption of 41 food items seven days prior to the survey; caloric intake, calculated from the amount of food consumed by households multiplied by the energy value for each item; and dietary quality, measured using the dietary diversity index (DDI), household dietary diversity score (HDDS) and the food consumption score (FCS). To reduce the probability that impact estimates were confounded by differences in programme design, careful attention was paid to ensure that all aspects of the transfer programme, including transfer levels, transfer frequency and conditions attached to programme participation, were as similar as possible across modalities.

Results show that all three treatment arms significantly improve the quantity and quality of food consumed as measured by the values of

¹ Hidrobo, M., Hoddinott, J., Peterman, A., Margolies, A and Moreira, V. (2012). *Cash, food or vouchers? Evidence from a randomized experiment in Northern Ecuador*. IFPRI Discussion Paper No. 01234. Available at SSRN: <http://ssrn.com/abstract=2197461> or <http://dx.doi.org/10.2139/ssrn.2197461>

food consumption, per capita caloric intake and dietary diversity measures. The authors found no differences across treatment arms in the amount of the transfer that was used on food versus non-food expenditures. However, there were significant differences in the types of food consumed. In particular, food transfers led to a significantly higher increase in calories, while vouchers led to significantly larger improvements in dietary diversity. When food consumption was broken down into food groups, underlying patterns explaining these differences emerge. The larger increase in calories from the food arm is mainly due to significantly larger increases in consumption of cereals, which represent 41% of a household's caloric intake. The larger increase in dietary diversity from the voucher arm is mainly due to significantly larger increases in the number of days households consume vegetables, eggs, milk and dairy. These differences indicate that transfers of equivalent value and frequency are used differently on food. While food transfers increase food consumption, the increase is concentrated mainly on the food items that make up the food basket. Cash and vouchers also increase food consumption, but are used on food items that have fewer calories compared to the food items from the food transfer. The difference in food consumption between cash and vouchers is more subtle and most likely due to the limits placed on vouchers toward nutritious food and to flyers on how to spend the vouchers that were posted on supermarket windows. Differences in types of food available at the supermarkets versus central markets may be another reason for the differences in food consumption between cash and voucher recipients.

Differences across treatment arms also emerge in terms of impacts on the poorest households compared to the better off. In particular, food

led to significantly larger improvements for the poorest households compared to the wealthiest. On the other hand, cash and vouchers led to similar impacts across the wealth distribution. Consequently, food is more targeted to the poorest households and leads to larger increases in the value of food consumption and caloric intake than vouchers.

Costs were also analysed. The authors found that the marginal cost is US\$11.50 to provide a food transfer, US\$3.03 to provide a cash transfer, and US\$3.30 to provide a voucher. Given these costs and impacts, food is the least cost-effective means of improving all food consumption and dietary diversity outcomes. The direct comparison of cash versus vouchers is not as straightforward and ultimately depends on the specific objectives of policymakers. If the objective is to increase the value of food consumption, there is no difference between cash or food vouchers. However, if the objective is to increase dietary diversity or caloric intake, vouchers are more cost-effective than cash.

The authors caution that the findings are specific to urban populations with well-functioning markets and supermarkets; they may not hold in areas where supermarkets lack capacity to cater for more clients or lack a consistent supply of various food items. Moreover, the caloric intake of the targeted population is relatively high and not as vulnerable to weather shocks. Thus, the way in which beneficiaries spend the transfer may be different from that of populations with low food-energy consumption or populations whose food-energy consumption is more vulnerable to weather shocks, such as rural farmers.

In the context considered here, selecting the most appropriate form of assistance depends

on the objectives of the policymakers. If the objective of these transfers is simply to improve welfare, cash is preferable, as the modality that beneficiaries are most satisfied with and as the cheapest option. Given the budget available to WFP for this project, shifting from food to cash could have increased the number of beneficiaries by 12%. Moreover, cash allows for savings, which helps households smooth their food and non-food consumption. If the objective is to increase calories or dietary diversity, vouchers are the most cost-effective means of doing so, followed by cash. Although the voucher modality is the most cost-effective means of increasing caloric availability and dietary quality, it is the modality least preferred by beneficiaries. Thus, policymakers are faced with the trade-off of improving overall welfare or improving specific outcomes. The former gives recipients autonomy, while the latter restricts their choices in order to achieve specific objectives.

In conclusion, the authors state that all three treatment arms significantly improve the quantity and quality of food consumed as measured by the values of per capita food consumption, per capita caloric intake, and dietary diversity measures. Moreover, there is no evidence of increases in non-food expenditures. However, across treatment arms, differences emerge in the types of food consumed, with food transfers leading to a significantly larger increase in calories consumed and vouchers leading to a significantly larger increase in dietary diversity. Combining impact estimates with costing data, the authors conclude that, given the significantly higher costs of implementing food transfers, food is always the least cost-effective modality of improving any outcome measure, and vouchers are usually the most cost-effective.



A voucher used in a pilot project in Ecuador

Review of programmes integrating family planning with food security and nutrition

Summary of research



Location: Global

What we know: Family planning and reproductive health is an important underlying influence on nutrition of mothers and children.

What this article adds: USAID conducted a landscape analysis of 102 USAID-funded programme efforts to integrate family planning with nutrition and/or food security interventions. It found that family planning, nutrition and food security interventions are delivered as part of larger integrated packages, such as health and agriculture; are built into programme design; and involve a range of providers and platforms. Three models were identified: family planning education; family planning education and counselling; and family planning education, counselling, and commodity provision. Despite limitations (e.g. inadequate documentation of the integration process and lack of evidence of effectiveness), potential promising practices for integration were identified. Recommendations include: clearer definitions; harmonised reporting requirements; funding of rigorous research to test effectiveness of integration models; and development of guidance for programmes integrating family planning with nutrition or food security interventions.



The U.S. Agency for International Development (USAID) Multi-Sectoral Nutrition Strategy 2014-2025, launched in May 2014, aims to reduce chronic malnutrition as measured by stunting by 20% over five years. The foundation of this strategy is the growing body of evidence emphasising the need to enhance nutrition-specific interventions with multi-sectoral nutrition-sensitive interventions to tackle the underlying and systemic causes, as well as immediate causes, of malnutrition. Family planning and reproductive health are important interventions that are often overlooked in this context, but that have been prioritised in the USAID nutrition strategy. To date, there has been limited documentation on integrating family planning with food security and nutrition programming. In an effort to fill the evidence gap in this area, the Food and Nutrition Technical Assistance III Project (FANTA) con-

ducted a desk review to identify, review and synthesise related programmatic experiences, and to document lessons learned and promising practices to inform future programming.

The authors used multiple methods to obtain programme documents on integrated family planning programming for the review, including coordinating with USAID staff and relevant technical support projects; direct requests to programme staff; and searches on organisation and/or programme websites, Google, and USAID's Development Experience Clearinghouse website. In addition, telephone interviews were conducted with programme staff in the development of three case studies included in the review paper. The authors collated a wide range of materials, such as programme documents (including evaluation, annual, final and research reports), technical briefs, PowerPoint presentations and videos.

They identified 518 programmes for initial consideration for inclusion in the review. Each programme was screened to determine if it met primary inclusion criteria; if so, it was then screened for integration criteria. Screening was carried out by a team of 12 people using a 51-item screening tool. The screening process resulted in 102 USAID-funded programmes operating between 2003 and 2013 being included in the review.

Findings showed that family planning, nutrition and food security interventions are delivered as part of larger integrated packages, either as health packages or packages within

¹ Borwankar, Reena and Amieva, Shelly. (2015). *Desk Review of Programs Integrating Family Planning with Food Security and Nutrition*. Washington, DC: FHI 360/FANTA. http://www.fantaproject.org/sites/default/files/resources/FANTA-PRH-FamilyPlanning-Nutrition-May2015_0.pdf

other sectors, such as agriculture and livelihoods. Family planning and nutrition or food security interventions are primarily built into programme design from the onset as part of a larger health package, especially maternal, newborn, and child health; integrated management of childhood illness (IMCI); or food security and livelihood packages, rather than being integrated after programmes are already underway.

The authors identified three models of family planning integration into nutrition and food security programmes. These include: (Model 1) family planning education (used in 18.6% of programmes); (Model 2) family planning education and counselling (used in 17.6% of programmes); and (Model 3) family planning education, counselling and commodity provision (used in 63.7% of programmes). Referrals for family planning services were also found in all three models.

A range of platforms are used for integrated service delivery across all three models identified. For family planning services, examples of platforms are mobile clinics and rally posts (central spots where parents come with their children for growth monitoring, immunisation, and other basic services). Other kinds of platforms include farmer field days and nutrition rehabilitation sessions. Some family planning services are targeted to specific lifecycle contact points, for example during antenatal care, birth and discharge, postpartum care, or childhood programmes. More often, however, programmes adopt a continuum-of-care approach that targets several or all contact points. A range of providers are used in the delivery of integrated family planning programmes, some of which are community-based (e.g. community health workers,

volunteers and groups), and some of which are facility-based (including private and government health workers).

The authors recognise the limitations of the documentation of integrated family planning programmes. The review had a broad scope: to carry out a landscape analysis of programme efforts to integrate family planning with nutrition and/or food security interventions. It captured a broad range of integration strategies across health and multi-sectoral programmes. However, the large scope and the heterogeneity in the types of programmes, including the interventions and outcomes measured, posed challenges in the analysis and synthesis of findings. Specifically, the review revealed weak programme documentation on the integration process; limited information on the process of referral to family planning services; variation in measurement of family planning across programmes; and an evidence gap on the effectiveness of different family planning models. This underscores the need for stronger programme documentation on the integration process and more systematic monitoring and evaluation efforts to capture the success of integrated programmes.

The findings nevertheless reveal potential promising practices for integration. Programmes could build on existing platforms (such as farmer field days, nutrition weeks and growth monitoring sessions) to help reduce costs, achieve rapid results, and prime communities for expanded services. Programmes could focus on the 1,000-day period (from pregnancy until the child is two years old) through a continuum-of-care model to allow programmes to reach mothers at critical times for both nutrition and family planning. The right timing of promotion messages will ensure that messages are

not too early or too late for the behaviour being promoted. Home visits offer an opportunity for nutrition and family planning counselling that can be tailored to individual needs and also provide an opportunity to target and involve family members who influence uptake of nutrition and family planning practices being promoted. Ensuring multiple contacts also seems to be important. Multiple contacts must happen at community and facility level to facilitate integration by helping to reinforce consistent messages, meet increased demand generated at the community level, and enable provision of a greater mix of contraceptive methods. Integrated programmes should also engage men as well as women. Gender integration is a critical component to overcoming barriers women face not only in using family planning but also in adopting optimal nutrition behaviours and reaching their full potential in the agricultural and economic sectors.

The review findings point to several recommendations for consideration by USAID in their efforts to further strengthen and promote nutrition and family planning integration or food security and family planning integration more systematically. Recommendations include: define family planning and nutrition integration and family planning and food security integration, including success for this type of integration; harmonise reporting requirements; ensure adequate funding and time for implementation of integrated programmes; fund rigorous research focused on testing effectiveness of integration models; develop guidance for and provide technical assistance to programmes integrating family planning with nutrition or food security interventions; and promote dialogue and cross-learning across health and multi-sectoral programmes.



Review of the micronutrient impact of multi-sectoral programmes focusing on nutrition

Summary of research¹



Location: Global

What we know: Common strategies to combat micronutrient deficiencies involve supplementation and fortification, breastfeeding promotion, behaviour change and communication on complementary feeding, and reducing infectious diseases.

What this article adds: A recent paper reviewed the evidence regarding the micronutrient (MN) impact of multi-sectoral programmes that combine targeted nutrition interventions with poverty-alleviation, food security enhancement, and/or income-generating approaches. Programmes reviewed were conditional cash transfers (CCTs), microcredit with education (MCE), and agricultural interventions. The authors found limited evidence of CCT impact on children's MN status, more consistent evidence on anthropometry, and some impact on health. No conclusions were possible on MCE impact due to a dearth of information. Agriculture impacted most notably on vitamin A status; few agriculture interventions assessed impact on child anthropometry. The majority of programmes improved household income, food availability and access. Better design, implementation and evaluation is needed to strengthen the evidence base and yield more effective programmes.

Millions of people in low- and middle-income countries suffer from MN deficiencies as a consequence of monotonous diets based on plant-based staple foods. MN deficiencies affect the survival, health, development, and wellbeing of individuals, especially children and women of reproductive age. The most commonly used strategies to combat MN deficiencies are MN supplementation and fortification, breastfeeding promotion, behaviour change and communication (BCC) strategies to improve complementary feeding practices, and health interventions aimed at reducing infectious diseases. Common to all of these strategies is the fact that they address the immediate causes of MN malnutrition. The sustainability of these direct MN interventions, however, is questionable if they do not simultaneously address key underlying and basic determinants of malnutrition. Malnutrition is rooted in poverty, food insecurity, gender inequity, and lack of access to health and other services. The failure to address these underlying and basic causes of malnutrition, or the global context

in which malnutrition occurs, is likely to weaken the long-term impacts of interventions limited to addressing the immediate determinants of nutrition.

This paper reviews the evidence regarding the MN impact of multi-sectoral programmes that combine targeted nutrition interventions (those that address immediate causes), with poverty alleviation, food security enhancement, and/or income-generating approaches (underlying and basic causes). Three types of programmes reviewed are CCTs, MCE and agricultural interventions. The review uses a programme theory framework to synthesise evidence of impact, as well as evidence regarding potential pathways of impact of these programmes.

The authors located papers through literature searches, discussions with colleagues and by checking reference lists of identified articles. Five articles were identified that reviewed CCT programmes. All five programmes evaluated provided a basic cash transfer and were controlled before and after designs, with the ex-

ception of a cross-sectional study from Brazil. Another five articles were selected that evaluated MCE, all of which included a health or nutrition education component and assessed impact on at least one nutrition outcome. The impact of programmes promoting agricultural production have been comprehensively reviewed in four previous reviews, which included many of the same studies and had similar conclusions. The authors summarised the results of these reviews, which altogether included 37 studies (18 evaluated home-gardening interventions; ten evaluated programmes promoting animal production; and nine evaluated both). The authors synthesised the above papers and summarised results in terms of their impact on child MN status and anthropometry, immediate determinants (food and nutrient intake and health) and finally, underlying and basic determinants.

¹ Leroy, J.L., Ruel, M., Verhofstadt, D.A. (2008). The micronutrient impact of multisectoral programs focusing on nutrition: Examples from conditional cash transfer, microcredit with education, and agricultural programmes. Innocenti Review, 5 November 2008.

Impact on child micronutrient status and anthropometry

Overall, the authors found limited evidence of an impact of CCT programmes on children's MN status. Three of the five programmes reviewed assessed impact on haemoglobin. Only one of them (Mexico) documented modest improvements in mean haemoglobin and in the reduction of anaemia. The Mexico programme was also the only one that included the distribution of a fortified food to participating mothers and children; the Nicaragua programme provided iron supplements and the Honduras programme did not have a specific iron intervention. Positive impacts on child anthropometry (height in particular) were much more consistent across studies and were of meaningful size. Given the low prevalence of energy deficiency in the diets in Latin American countries included in the CCT review, the authors hypothesise that at least some of the positive effects of these programmes on linear growth could be due to (unmeasured) improvements in growth-enhancing MNs, such as zinc.

The review of MCE programmes highlights the dearth of information on the impact of these programmes on nutrition. No programmes assessed impact on MN status and the few programmes that measured child anthropometry showed little evidence of impact. Overall, insufficient information and the lack of rigour in the evaluation designs prevent any firm conclusion on the impact of MCE programmes on child MN status or anthropometry.

Agricultural interventions showed a more consistent picture of impact on MN status, particularly on vitamin A, as this was the most common nutrient targeted. Two out of four home-gardening programmes in the study that measured serum retinol reported positive relationships between the intervention and higher serum retinol concentrations. The addition of animal production to home-gardening programmes to address the problem of low bioavailability of MN in plant foods did not strengthen the evidence of an impact on either vitamin A or iron status. Few agriculture interventions assessed impact on child anthropometry, and of those approximately half documented an impact on at least one indicator.

Impact on immediate determinants (food and health)

The impact of CCTs on child food and nutrient intake was measured in only two studies: A Mexico programme, which showed positive impacts of the fortified food on iron, zinc, and vitamin A intake; and a Colombia programme, which showed an increase in the consumption of animal products and vegetables, probably as a result of increased income from the cash transfer. The review of MCE programmes shows some evidence of the impact of the education intervention on child feeding practices and dietary intake. Several of the horticulture and

animal production interventions also documented improvements in child dietary intakes; either MN intakes or consumption of the micronutrient-rich foods targeted by the programme.

Improvements in child health, usually measured by recall of morbidity symptoms, was found to improve in all but one CCT programme. Health was not evaluated in the MCE programmes. Findings from the few agriculture studies that evaluated child health suggest a small protective effect. It must be noted, however, that only the CCT programmes are specifically designed to improve health through the health conditionality element.

Impact on underlying and basic determinants

The review of impact pathways confirms that the large majority of programmes reviewed (CCT, MCE and agriculture interventions) did achieve their fundamental objective of improving household income, food availability and access. Many of the programmes also documented that they not only increased household energy availability (i.e. increasing the quantity of food), but also improved access to high-quality, micronutrient-rich foods such as animal-source foods, dairy products and fruits and vegetables.

Many of the programmes also documented having achieved impact in terms of empowering women and increasing their access to, and control over, resources. Empowering women is one of the key mechanisms to ensure that gains in household resources translate into greater benefits for children. The impact of education and BCC on women's knowledge and improved feeding and health-seeking practices, however, was assessed only in the MCE studies, where it was found to be positive. The agricultural literature also shows that globally, programmes that include an education/BCC component are more effective at improving nutrition than those that focus narrowly on production.

Only CCT programmes assessed impact on utilisation of healthcare services, as regular

health visits are the key conditionality for households to receive programme benefits. The review shows a significant impact of CCTs on the use of preventive health services (e.g. growth monitoring, well-baby clinic attendance), but evidence regarding impact on immunisation rates or curative healthcare utilisation is mixed.

Conclusions

Many programmes do not measure impact on MN; of those that have, the evidence is mixed. This may in turn reflect a number of factors, including poor evaluation design. The authors' overall assessment of the literature on CCT, MCE and agricultural programmes is that they have enormous potential to contribute to reducing childhood MN deficiency and under-nutrition, but that this potential is yet to be realised. Currently, the main constraints identified by the authors that limit the effectiveness of these programmes include problems of design (especially of their nutrition package), the lack of conceptualisation and documentation of the programmes' potential pathways of impact, the lack of measurement and understanding of facilitating factors and constraints to implementation, and their often weak evaluation designs. CCTs are an exception with regard to evaluation designs, as several of these programmes have been evaluated using state-of-the-art, randomised evaluation designs and rigorous analytical methods.

The authors conclude that, given the enormous potential of reviewed programmes to address immediate, underlying and basic determinants of child under-nutrition, it is fundamental that an evidence base is generated that will allow for the design and implementation of more effective programmes. A first step in doing so is to adopt a programme theory framework to identify, evaluate, and document the multiple impact pathways by which these programmes can improve MN nutrition. Only then will these programmes achieve their full potential in improving nutrition and generate the information needed for scalability and replicability in other contexts.



Inter-sectoral coordination for nutrition in Zambia

Summary of research¹

Location: Zambia

What we know: The level of inter-sectoral coordination needed to address underlying causes of malnutrition is difficult to achieve and often lacking.

What this article adds: Concern Worldwide facilitated a unique initiative in a district of Zambia to improve multi-sectoral understanding and align activities on nutrition. A District Development Coordinating Committee (DDCC) was formed, focused on addressing stunting. Using this platform, a creative approach was used that has nurtured mutual supportive learning; several inter-sectoral developments have resulted and roll-out of the DDDC is now planned for 14 pilot districts. Upwards advocacy has strengthened the role of the National Food and Nutrition Commission (NFNC) as the national-level forum for experience-sharing to inform advocacy, planning and implementation. Facilitation, sustained support and commitment from an external agent have been instrumental in successes; there are lessons for the Scaling Up Nutrition (SUN) Movement.

The underlying determinants of nutritional status are adequate food, health and care. The goods and services related to these will be available from a range of sectors, which means inter-sectoral coordination is key to addressing malnutrition. However, the nutrition community in general has not yet managed to foster this necessary level of coordination. The authors of a recently-published paper suggest that several barriers exist, including low political commitment and space for new ways of working; limitations of existing routines and structures within sectors; weak coordinating bodies; lack of human resources; and inadequate strategic, management and technical capacity.

The authors present the example of Zambia, where the estimated national prevalence of stunting among children under five years of age is 45%. There is currently very little national or sub-national level inter-sectoral coordination for nutrition in Zambia. Against this backdrop, the non-governmental organisation (NGO) Concern Worldwide facilitated a unique initiative in the Mumbwa District of the country to coordinate ministries and NGOs involved in the provision of nutrition-related services. This paper describes the process of establishing this initiative, as well as subsequent learning and challenges.

In February 2012, Concern Worldwide began bringing together relevant ministries and civil society organisations under the DNCC in order to improve understanding and align activities for nutrition at local level. To do this, the DNCC set out to build on the strengths of existing actors, systems and capacities to facilitate a shift in how stunting is understood and addressed, so that co-ordinated strategies and joint interventions for stunting prevention can occur.

This process was strongly informed by 'Theory U', which promotes a creative, learning approach

that moves from changing the perceptions of participating actors to experiential learning and sharing; to transforming actors' sense of responsibility for change; and ultimately to acting on this. In practice, this has involved bringing together carefully selected, relevant actors in Mumbwa to share, understand and learn from each other's experiences and perceptions.

An important aspect of the coordination process was the acceptance of the DNCC meetings as a space for learning, sharing and reflection, and that multiple perspectives are something of value. As a result, a common understanding of stunting has emerged. This was exemplified when the DNCC developed a 'problem tree' analysis of stunting in Mumbwa, as seen from a multi-sectoral perspective, and a 'solution tree' to guide responses. The exercise revealed a number of overlapping themes that enabled the DNCC to identify areas of possible collaboration. Having reviewed and agreed this analysis, DNCC members travelled to a village two hours by road from Mumbwa town to engage with community members. This resulted in the DNCC adjusting the problem tree to reflect aspects of stunting that the community felt were important. This process helped DNCC members gain a deeper understanding of the realities of people most affected by stunting, and achieve a deeper engagement with one another about how to address these realities.

Since its inception, the DNCC has participated in 'upwards advocacy'. There is currently little inter-sectoral coordination in Zambia at national level. However, with the momentum created by the SUN Movement, the NFNC (as the national steering body for nutrition) is ideally located to become a force for nutrition advocacy, planning and implementation. Recognising this, the DNCC prioritised a national-level forum, whereby the emerging experiences from Mumbwa could be shared. Concern Worldwide facilitated a national

meeting in October 2012 for this purpose, with support from the DNCC and engagement from the relevant national actors. The DNCC shared experiences from local level; as a result, the committee was identified as a possible model for co-ordination across Zambia. The NFNC now intends to replicate the committees in 14 pilot districts.

Several inter-sectoral programming developments have emerged through the DNCC. These include a clear commitment from actors to work together, share ideas and information, keep each other informed, and attend meetings. This type of commitment cannot be taken for granted as numerous disincentives exist within individual government ministries to avoid working outside their core mandates. Other developments include attempts to recognise and include new stakeholders in the district who may have a bearing on addressing undernutrition. For example, recognition among DNCC members of the importance of women's land rights in addressing undernutrition led the DNCC to invite the Ministry of Lands to join the committee. Another tangible example of inter-sector collaboration was the sharing of vehicles, fuel and staff for cooking demonstrations, which each Ministry was undertaking separately but is now combining. There has been criticism that progress has been slow and more coordinated strategies and joint interventions should have taken place. However, the authors state that, as undernutrition is socially, dynamically and generatively complex, it will take time for effective solutions to emerge.

Another challenge is how to raise the issue of coordination and alignment to address undernutrition higher up the Government's agenda. Part of the answer may lie with the SUN Movement, while another lies with securing high-level champions within the key line ministries to advocate for change. However, the experience of the DNCC shows that, while structures are important, sufficient attention must also be paid to the individuals involved in the coordination process and to the quality of relationships and interactions between them. In this example, the concerted support and commitment of an external agent (Concern Worldwide) from the outset was invaluable in making this happen. These will be key points to address as similar committees are replicated under the SUN Movement.

The authors conclude that the creation of a DNCC, while slow and difficult at times, was useful and sustained facilitation has built trust and mutually supportive learning between diverse stakeholders. While recognising that it will take time for fully effective and implementable solutions to emerge, the DNCC is a potentially durable and effective way of addressing undernutrition in Zambia in the long term.

¹ Drimie, S., Chakrabarty, S.K., Dube, C., Smit-Mwanamwenge, M., and Rawat, R., Harris, J. (2014). Inter-sectoral coordination for nutrition in Zambia. In 'Turning rapid growth into meaningful growth: Sustaining the commitment to nutrition in Zambia'; ed. Jody Harris, Lawrence James Haddad and Silke Seco Grütz. Pp. 1-9. Brighton: Institute of Development Studies (IDS). www.ids.ac.uk/publication/turning-rapid-growth-into-meaningful-growth-sustaining-the-commitment-to-nutrition-in-zambia

Complementary food hygiene:

An overlooked opportunity in the WASH, nutrition and health sectors



Summary of research¹

Location: Global

What we know: Poor food hygiene may account for a substantial proportion of diarrhoeal diseases and contribute to malnutrition among infants and young children in developing countries.

What this article adds: A recent review highlights that public health interventions have not adequately addressed the food contamination pathway, a risk heightened during the complementary feeding period (6-24 months). Evidenced risk factors for food contamination concern unhygienic food preparation and feeding, and environmental contamination due to lack of sanitation and contaminated water. Three SHARE funded studies are contributing evidence (Bangladesh, Nepal and Gambia); however, major knowledge gaps remain regarding behaviour change, transmission pathways, effects on child health and how to scale up successful interventions. Recommendations include better integration across the nutrition, health and WASH sectors, mainstreaming of food hygiene, and more consistent monitoring and surveillance of complementary food contamination.

Poor food hygiene may account for a substantial proportion of diarrhoeal diseases among infants and young children in developing countries. However, most of the information on food hygiene in low-income countries derives from expert opinion and biological plausibility rather than robust epidemiological evidence. This briefing paper documents the contribution of Sanitation and Hygiene Applied Research for Equity (SHARE) to narrowing the evidence gap, highlights opportunities for future research, and offers insights that could influence policy and improve programming in the water, sanitation and hygiene (WASH), nutrition and health sectors globally.

Diarrhoeal diseases are the second leading cause of death for children under the age of five globally (Liu et al, 2012). Diarrhoeal diseases also increase the risk of malnutrition. While it is important for an infant's development to complement breastmilk with appropriate solid foods from the age of six months, complementary feeding can provide a key transmission pathway to diarrhoeal disease through unhygienic preparation and feeding of complementary food, which exposes infants to pathogens of faecal

origin. This is supported by evidence that the incidence of diarrhoeal disease is higher in children after complementary feeding is initiated (Barrel and Rowland, 1997).

Interventions to improve public health have not adequately addressed this food contamination pathway; although hygiene is high on the WASH sector agenda, interventions have often been limited to hand-washing with soap. The authors suggest that this neglect is down to the prioritising by health institutions of vertical disease-management programmes over horizontally-integrated public health efforts; the greater emphasis placed by the nutrition sector on dietary intake than on food hygiene; the lack of solid evidence on the effect of food hygiene interventions on child health outcomes; and the lack of guidance on best practice for securing sustainable food hygiene behaviour change in various settings.

The authors lay out existing evidence that links unhygienic food preparation and feeding to an increase in the level of microbiological contamination in food and increased risk of diarrhoeal disease. Factors that may lead to food-borne contamination include hot climate, poor storage practices, insufficient cooking

time, time elapsed between meal preparation and feeding, and use of unsterilised and dirty feeding bottles for children. There is also some evidence identifying risk factors and associated behaviours including environmental contamination due to lack of sanitation; use of contaminated water to wash serving utensils; not washing hands prior to cooking and feeding; consumption of food that has been spilled on the floor; and use of dirty cloths for wiping hands and utensils. The hygiene practices of mothers have been found to be related to a high level of bacterial contamination of drinking water and complementary foods, and the home has been identified as an important location for acquiring food-borne diseases. Evidence also shows that improving socially or culturally engrained practices is challenging and requires going beyond purely supply-led interventions and addressing structural determinants of hygiene practices.

Clear gaps remain in the literature. In particular, there is a lack of epidemiological studies

¹ Guatam, O.P., Esteves Mills, J., Chitty, A. and Curtis, V. (2015). Policy Brief: Complementary Food Hygiene: An overlooked opportunity in the WASH, nutrition and health sectors, March 2015. LSHTM and SHARE.

that characterise pathogen transmission through food and that establish how this differs across settings. There is also a lack of evidence about which factors, or behaviours, pose the greatest risk of food contamination and should therefore be targeted by interventions. In 2010, SHARE provided funding for three studies in Bangladesh, Nepal and the Gambia to plug some of these important evidence gaps. Evidence from the study in Bangladesh showed that food contamination can be reduced using a Hazard Analysis and Critical Control Point (HACCP) methodology at the household level. This is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product (Islam et al, 2013). The study in Nepal, meanwhile, successfully tested a simple and scalable food hygiene intervention targeting multiple behaviours that could be implemented in a community setting through health, WASH and nutrition programmes (Gautam, 2014). Results for the Gambia study will be available in 2015.

Evidence from these studies is already contributing to changes in policy and practice. However, major knowledge gaps remain in the following areas:

Behaviour change: We need clever new ways, informed by socio-ecological approaches to behaviour change, such as those piloted in Nepal, to secure sustainable food hygiene behaviour change.

Transmission pathways: We need to understand fully all the transmission pathways of all of the major enteric pathogens, including through complementary foods, in different settings so as to be able to better target our interventions.

Child health: The effect of food-borne contamination on child health during the critical window of complementary feeding needs to be better understood, in particular the relationship between food-borne pathogens and malnutrition. This would inform policy at national and international level.

Scale up: Further development and testing of strategies for scaling up complementary food hygiene interventions, such as that trialled in Nepal, are also required. Scaling up interventions, and the cross-sectoral collaboration associated therein, would lead to better outcomes for children and would increase the benefits from investment in nutrition, health and WASH.

While our knowledge remains incomplete, the current state of evidence suggests that the successful improvement of safe food hygiene practices can help to reduce or eliminate complementary food contamination, resulting in the prevention or control of diarrhoea and malnutrition. The authors put forward the following recommendations that they suggest will have a major impact on ensuring this:



Mothers publicly committing to practise food hygiene behaviours in the Nepal food hygiene intervention study.

Food hygiene interventions must be carefully designed based on scientific principles of behaviour change. Evidence from other sectors suggests that simply lecturing and messaging is not effective; programmes that creatively target emotions and the settings in which behaviour takes place are likely to be more successful.

There must be better integration across the nutrition, health and WASH sectors nationally and internationally, and food hygiene should be mainstreamed. Ongoing, post-2015 development discussions provide the perfect setting and crucial range of stakeholders required for such efforts. Guidelines formulated could then be adapted to the national context through a participatory process that engages all relevant stakeholders.

High quality research in this area that addresses identified evidence gaps must continue to be funded and carried out.

There needs to be better, more consistent monitoring and surveillance of complementary food contamination and its causes across the sectors concerned. Joint-sectoral indicators must be established and food hygiene components should be included in demographic health surveys, national-level nutrition plans, health sector information management systems, and ongoing WASH monitoring mechanisms. Furthermore, disease surveillance mechanisms should disaggregate according to the different pathogens that can cause food-borne infection.

Governments, donors and practitioners must increase their financing of complementary food hygiene interventions as these are critical to child health and development.

Financial increases must be accompanied by better targeting and greater efforts to ensure financial absorption. Greater attention must be paid to, and targeting should reflect, the disease epidemiology and transmission pathways of food-borne infections. Furthermore, financial increases should go hand-in-hand with improved budget execution and relevant human resource capacity-building.

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Impact of an integrated agriculture and nutrition and health behaviour change communication programme for women in Burkina Faso

Summary of research ¹



WFP/Anne Poulsen

Location: Burkina Faso

What we know: The agricultural sector has great potential to contribute to improving nutrition. However, current evidence of agriculture's impact on child nutrition is limited.

What this article adds: A randomised controlled trial (RCT) assessed the impact (anaemia, wasting and diarrhoea among children aged 3 to 12.9 months) of Helen Keller International's (HKI) two-year integrated agriculture (homestead food production) and nutrition and health behaviour change communication programme (BCC) in Burkina Faso. When implemented by members of a health committee, there were significant improvements in wasting (marginal), diarrhoea, and anaemia, especially among the youngest children. Plausibility is supported by significant improvements that were also found in women's agriculture production, infant and young child feeding (IYCF) practices and household dietary diversity.

This paper summarises the results of a randomised controlled trial (RCT) that assesses the impact of HKI's two-year integrated agriculture (homestead food production) and nutrition and health BCC programme in Burkina Faso. The study assesses the impact of the programme on anaemia, wasting and diarrhoea in infants and young children.

Anaemia and acute undernutrition are widespread among young children in Burkina Faso. Anaemia is nearly universal at 92% among children younger than five years of age (the highest prevalence in the world). Burkina Faso also has the highest prevalence of moderate-to-severe anaemia (45% among children six to 23 months of age) and the highest prevalence of wasting (14%) in sub-Saharan Africa. Undernutrition and anaemia share several risk factors, including illness and energy and micronutrient deficiencies. Lack of access to high-quality foods, especially tied to seasonal variations and water shortages; sub-optimal IYCF; and poor hygiene and sanitation practices likely contribute to energy and micronutrient deficiencies and increased exposure to pathogens that cause diarrhoea and other infections.

The 2013 Lancet series on maternal and child nutrition emphasises the need to address the underlying determinants of malnutrition through multi-sectorial, nutrition-sensitive programmes, alongside nutrition-specific programmes, in order to improve nutrition in the first 1,000 days of life (Black, Victora, Walker et al, 2013). Agriculture is one sector that has great potential to contribute to improving nutrition. However, current evidence of agriculture's impact on child nutrition is limited, due to weaknesses in programme targeting, design and implementation. The aim of this study is to strengthen this body of evidence.

Method

The authors use a cluster RCT to assess the impact of the HKI programme, which integrates agricultural production activities with a strong nutrition and health BCC strategy with the explicit goal of improving children's nutritional outcomes. Agricultural production activities included input distribution (e.g. seeds, saplings, chicks and small gardening tools) and agriculture training provided by four female village farm leaders at demonstration farms. The BCC strategy included communication on women's nutrition, anaemia prevention and control, iodine

intake, prevention of vitamin A deficiency, breastfeeding practices, complementary feeding practices and nutritional care for sick and severely malnourished children. Participating women received home visits twice per month from either an older woman leader (OWL) from within the community or a health committee (HC) member, with links to health services. The two types of actors were selected to understand how the effectiveness of the BCC strategy may vary according to the type of actor delivering messages.

The authors used a longitudinal design and followed the same households, mothers and children over the two-year programme implementation period. The baseline study was conducted between February and May 2010 (when children were 3 to 12.9 months of age) and the endline survey was conducted between February and June 2012 (when children were 24-39.9 months of age).

¹ Olney, D.K., Pedehombga, A., Ruel, M.T. and Dillon, A. (2015). A 2-year integrated agriculture and nutrition and health behavior change communication programme targeted to women in Burkina Faso reduces anaemia, wasting, and diarrhoea in children 3-12.9 months of age at baseline: a cluster-randomized controlled trial. *Nutr. 2015* 154:6 1317-1324. doi:10.3945/jn.114.203539



WFP/Anne Poulsen

Agriculture in the Sahel Region, Burkina Faso

Outcomes of children were measured including anthropometry (stunting, wasting and underweight), mean haemoglobin (Hb) (anaemia defined as Hb < 11 g/dL, severe anaemia as Hb < 7.0 g/dL) and diarrhoea prevalence. In order to establish plausibility of findings, data were also collected on intermediary outcomes along hypothesised programme impact pathways, from agricultural production to consumption of nutrient-rich foods and from maternal acquisition of knowledge to adoption of optimal IYCF and health practices.

Fifty-five villages in four departments in Gourma province were randomly assigned to three groups as follows: 1) control group that received no interventions from HKI ($n=25$ villages), 2) treatment group that received the agricultural production intervention with the BCC strategy implemented by OWLs ($n=15$ villages), and 3) treatment group that received the same agricultural production with the BCC intervention implemented by HC members ($n=15$ villages). Data were collected at baseline and endline on household demographic and socioeconomic characteristics, gender-disaggregated asset ownership and value, agricultural production, household dietary diversity, health and nutrition knowledge (maternal recall), and IYCF practices. In order to measure anaemia, capillary blood from a finger prick sample was used immediately to measure Hb. For anthropometric measures, trained staff measured weight with the use of an electronic scale whereby weight (to the nearest 100g) was first taken for mother and child and secondly for the mother alone, the difference being the child's weight. Recumbent length of children < 2 y of age and standing height of children > 2 y of age was measured to the nearest 0.1 cm with the use of a wooden length board. Length/height-for-age Z-score (HAZ), weight-for-age Z-score (WAZ) and weight-for-length/height Z-score (WHZ) values were calculated using the 2006 WHO growth standard.

Results

In the 55 villages, 1,767 households participated in the baseline survey, and of these 1,481 participated in the endline survey. The HFP programme had a marginally significant impact on improving mean Hb among children aged 3-12.9 months at baseline living in HC villages compared with control villages ($P = 0.06$). This difference was larger and statistically significant among children aged 3-5.9 months of age at baseline ($P = 0.02$). In addition, there was a greater decrease in the prevalence of anaemia ($P = 0.02$) among these younger children in HC villages than in control villages. A statistically significant difference was also found in the reduction of diarrhoea among children 3-12.9 months of age living in HC villages compared with control villages. A similar trend was seen among children living in OWL villages compared with control villages, although the difference between the two groups was smaller and was

only marginally significant. Programme impacts on anthropometric measures were restricted to a marginally statistically significant ($P = 0.08$) greater decrease in the prevalence of wasting among children 3-12.9 months of age at baseline in the HC villages than in the control villages.

The plausibility of findings is supported by statistically significant positive impacts on intermediary outcomes along the programme impact pathways in HC villages compared with control villages. This included increases in women's agriculture production and health-and nutrition-related knowledge and practices, including IYCF practices and in household dietary diversity. The authors suggest that larger impacts on these intermediary outcomes and on children's nutrition and health outcomes would have been achieved with earlier and longer exposure to the programme.

Conclusions

The authors conclude that HKI's two-year integrated HFP and BCC programme when implemented by members of a health committee significantly improved several child outcomes, including wasting (marginal), diarrhoea, and anaemia, especially among the youngest children. This is the first cluster RCT of an HFP programme that documents statistically significant positive effects on these child nutrition outcomes. The authors argue that modest impacts achieved over a two-year period are meaningful and hold promise for future investments in integrated agriculture and nutrition programmes.

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WFP/Anne Poulsen

Doing cash differently:

how cash transfers can transform humanitarian aid

Summary of research¹

Location: *Global*

What we know: Humanitarian aid is increasingly provided in the form of cash assistance. Unconditional and multi-purpose cash programming allows beneficiaries to choose what resources to procure, making the intervention, by definition, multi-sectoral.

What this article adds: A recent report of the High Level Panel on Humanitarian Cash Transfers evidences that humanitarian cash transfers can be provided to people safely, efficiently and accountably. Cash is spent sensibly by recipients and makes limited humanitarian resources go further. Greater use of unrestricted cash assistance has multiple advantages in terms of efficiencies, speed of response, monitoring, value for money, meeting needs, autonomy of affected populations and accountability. Expansion of the use of cash transfers should be accompanied by specific measures to catalyse wider change and better coordination of the humanitarian system and related institutional architecture. Twelve recommendations are made centred on greater and more efficient cash transfers (with strong, locally accountable systems) and different funding streams (to enable reform and realise opportunities).

This report of the High Level Panel on Humanitarian Cash Transfers explains why giving aid directly in the form of cash is often a highly effective way to reduce suffering in places experiencing humanitarian emergencies and to make limited humanitarian aid budgets go further. The panel describes the problem of a widening gap between humanitarian need and humanitarian assistance and presents the evidence and experience of humanitarian cash transfers. The panel urges the humanitarian community to give more aid as cash and argues for a more coordinated system of cash transfers that will precipitate broader reform of the humanitarian system. Finally, the report presents twelve clear recommended actions of the panel for actors in the humanitarian community.

The ‘humanitarian system’ comprises a web of humanitarian aid agencies, donor governments and national organisations that employs over 450,000 people and spends about USD25 billion per year. Most humanitarian aid is spent in protracted crises, rather than on quick-onset disasters. 89% of humanitarian aid goes to places that have required humanitarian funding for more than three years, and 66% of humanitarian aid is spent in places that have needed it for eight years or more. The humanitarian system is being stretched and the gap between needs and funding is widening. Humanitarian organisations have traditionally supported crisis-affected people

with physical commodities: food, shelter, water, tents, clothing and medical help. However, with changes in technology, growing access to financial services, greater urbanisation and the emergence of government safety nets, unprecedented opportunities now exist to reach people in new ways.

Cash transfers are among the most well-researched and rigorously-evaluated humanitarian tools of the last decade. The Panel identified more than 200 resources and studies, including randomised control trials, which evaluate the effectiveness of cash transfers. These provide evidence about the feasibility, cost and effectiveness of cash transfers in humanitarian settings. This evidence is compelling and shows that, in most contexts, humanitarian cash transfers can be provided to people safely, efficiently and accountably. Furthermore, people spend cash sensibly, both women and men often prefer cash over other forms of assistance, and cash is no more prone to diversion than in-kind assistance, especially when delivered through digital payments. Evidence also shows that local markets have responded to cash injections without causing inflation, cash transfers have generated positive impacts on local economies and cash can be delivered in increasingly affordable, secure and transparent ways.

Cash transfers can also make limited humanitarian resources go further. It usually costs less to get cash transfers to people than in-kind



¹ ODI Centre for Global Development. (2015). Doing cash differently: how cash transfers can transform humanitarian work: Report of the High Level Panel on Humanitarian Cash Transfers. September 2015

BOX 1 The 12 recommendations of the high-level panel on cash transfers

A. More cash transfers

1. Give more unconditional cash transfers. The questions should always be asked: 'why not cash?' and 'if not now, when?'
2. Invest in readiness for cash transfers in contingency planning and preparedness.

B. More efficient cash transfers, delivered through stronger, locally accountable systems

3. Measure how much aid is provided as cash transfers and explicitly distinguish this from vouchers and in-kind aid.
4. Systematically analyse and benchmark other humanitarian responses against cash transfers.
5. Leverage cash transfers to link humanitarian assistance to longer-term development and social protection systems.
6. Capitalise on the private sector's expertise in delivering payments.
7. Where possible, deliver cash digitally and in a manner that furthers financial inclusion.
8. Improve aid agencies' data security, privacy systems and compliance with financial regulations.
9. Improve coordination of cash transfers within the existing system.
10. Implement cash programmes that are large-scale, coherent and unconditional, allowing for economies of scale, competition and avoiding duplication.

C. Different funding to transform the existing system and open up new opportunities

11. Wherever possible, make humanitarian cash transfers central to humanitarian crisis response as a primary component of Strategic Response Plans, complemented by in-kind assistance if necessary.
12. Finance the delivery of humanitarian cash transfers separately from assessment, targeting and monitoring.

assistance because aid agencies do not need to transport and store relief goods. A four-country study comparing cash transfers and food aid found that 18% more people could be assisted at no extra cost if everyone received cash instead of food (Margolies & Hoddinott, 2014). As the scale of cash grows and it becomes more efficient, it will become even cheaper.

In the light of this evidence, the Panel concludes that greater use of humanitarian cash transfers in the settings where they are appropriate, without restrictions and delivered as electronic payments wherever possible, would: align the humanitarian system better with what people need; increase the transparency of humanitarian aid; increase accountability of humanitarian aid, both to affected populations and to the tax-paying public in donor countries; reduce the costs of delivering humanitarian aid and so make limited budgets go further; support local markets, jobs and incomes of local producers; increase support for humanitarian aid from local populations; increase the speed and flexibility of humanitarian response; increase financial inclusion by linking people with payment systems; and, most importantly, provide affected populations with choice and more control over their own lives. The Panel urges the humanitarian community not to use the rare and usually temporary cases where giving people cash is not the best option as bad excuses for not using cash in the majority of cases where it is appropriate. Humanitarian actors should use cash as the benchmark against which other forms of humanitarian aid are judged and should always ask: Why not cash? If not now, when?

The humanitarian system has made some important progress towards using cash transfers.

Although we do not know the exact amounts, the Panel estimates that cash and vouchers together have risen from less than 1% in 2004 to around 6% of total humanitarian spending today. UN agencies, the Red Cross movement, international and southern non-governmental organisations (NGOs) and governments of disaster-affected countries have all provided cash transfers in a variety of challenging contexts. Left to its own devices, the use of cash transfers may continue to increase, but the panel warns that progress will be far too slow. Furthermore, change will be inhibited by the institutional architecture in which humanitarian agencies currently operate.

A coordinated expansion of humanitarian cash transfers offers the attractive prospect of helping to accelerate long-overdue changes in the humanitarian system to break down counterproductive divisions between clusters, improve coordination, reduce costs, work more closely with the private sector, make humanitarian aid more transparent, and make the system more accountable to its beneficiaries. However, unless we take conscious steps to avoid it, the humanitarian system is likely to reproduce its existing structural problems in the delivery of cash. For example, in Lebanon in 2014, more than 30 different aid agencies provided cash transfers and vouchers for 14 different objectives, ranging from winterisation and food to legal assistance. An expansion of the use of cash transfers should therefore be accompanied by specific measures to catalyse wider change and better coordination.

The panel puts forward 12 recommendations, displayed in Box 1, that chart the steps needed to accelerate the use of cash transfers and realise the broader benefits of their greater use. The first recommendation – to give more unconditional cash transfers – allows beneficiaries to choose what resources to procure, making the intervention, by definition, multi-sectoral and with the potential to address the underlying causes of malnutrition (nutrition-sensitive).

The panel conclude that host governments, donor governments, international and local NGOs and UN agencies should all seize this opportunity to bring about more rapid and substantial reform, in the service of our collective humanitarian goals.

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Cash transfers and child nutrition

Summary of research¹

Impact of cash transfers on care practices have not been well studied



and diverse food. Evidence from Latin America demonstrates similar results (see below).

Evidence also points to positive impacts in terms of resources for health, particularly in terms of preventive healthcare visits and antenatal care-seeking. For example, in Kenya households spent more on healthcare after two years of exposure to the Hunger and Safety Net Programme (Oxford Policy Management, 2012), and in Malawi beneficiaries of the Mchinji Social Cash Transfer were more likely to receive care when sick compared to non-beneficiaries (Adato & Bassett, 2009). Studies on programmes in Latin America found positive results for preventive health visits and there is some evidence of a significant effect of CT programmes on the number of prenatal procedures in Mexico (Barber & Gertler, 2008).

There is also evidence of positive effects on better hygiene and on the probability of using improved sanitation or water resources. For example, beneficiary households of the Malawian Mchinji Social Cash Transfer were more likely to take a bath, use soap and brush their teeth on a daily basis (Miller, Tsoka, & Reichert, 2008). Households with a pensioner receiving the old-age pension in South Africa were more likely to have a flush toilet and less likely to report an off-site water source (Case, 2004).

Location: Global

What we know: Cash transfer (CT) programming is an expanding form of social protection that has potential to improve child nutrition.

What this article adds: A recent UNICEF report examined the available evidence of the impact of CTs on the underlying and immediate determinants of nutritional status considering food security, health and care pathways. There is positive evidence from sub-Saharan Africa and Latin America regarding impact on household food security resources, on healthcare access, and on aspects of hygiene and sanitation. Impact on care practices and empowerment is under-studied. Evidence of impact on dietary intake, health status and nutritional status is limited, with little data, mixed results and little exploration of pathways. In conclusion, evidence of impact on immediate determinants is particularly limited. Research gaps include CT impacts on children's dietary diversity, caregiver behaviours, intra-household violence, and stress.

Childhood malnutrition remains a significant global problem with an estimated 162 million children under five suffering from stunted growth. CT programmes are an important method of providing social protection and have the potential to contribute to the improvement of child nutrition. Both the number and size of CT programmes have increased considerably in the last two decades and conservative estimates now suggest that around one billion people currently have access to CT programmes in the developing world (Barrientos, 2013). This paper aims to provide a comprehensive overview of the impacts of CT programmes on the immediate and underlying determinants of child nutrition, including the most recent evidence from impact evaluations in sub-Saharan Africa.

The paper adopts the UNICEF extended model of care conceptual framework of child nutrition. In this framework, by making additional financial resources available in the household, there are three main pathways through which CTs may impact the underlying determinants of child nutrition for food security, health, and care. In Figure 1 the colour green represents the pathways through which a CT programme

may affect nutritional outcomes for children, while pink represents a potential mediating effect and blue represents a potential moderating effect. For example, the child's dietary intake is mediated by the caregiver's feeding practices and feeding styles; household food security is moderated by the availability and price level of food and by external shocks.

The paper argues that through extra resources for food security, health and care, CT programmes have the potential to positively impact the child's health status and the child's nutritional intake to determine the nutritional status of the child. The paper then tests this by examining available evidence of the impact of CTs on the underlying and immediate determinants of nutritional status and direct effects on nutritional status (as measured by anthropometry).

There is strong evidence that CT programmes have a positive effect on resources for food security. In all of the African countries and programmes reviewed, household consumption increased and the majority of the additional income from the transfer was spent on food, with most households improving their diet diversity through the purchase of more nutritious

In terms of the impact of CT on resources for care, this is an area that is generally under-studied. The broader literature suggests a clear relation between nutritional outcome and caregiver feeding behaviours and practices, but there is very little evidence of this impact in the literature reviewed. There is, however, strong evidence that CT programmes improve the mental health of beneficiaries, including reducing levels of stress, and may decrease domestic violence, although more evidence on the impact of CT programmes on domestic violence is needed as results are mixed. For example, a study in Ecuador found that a national CT programme decreased psychological violence for women with higher than primary school education, but for women with lower education the effect depended on the relative level of education compared to her partner and there was an increase in emotional violence in households where the woman's education was equal to or more than her partner's (Hidrobo & Fernald, 2012).

There is qualitative evidence on the impact of CT programmes on women's empowerment, which creates an important mediator for care; however quantitative evidence generates a more heterogeneous picture (van den Bold, Quisumbing & Gillespie, 2013), possibly linked to the difficulty in measuring the concept of empowerment through a survey.

The review identified evidence of the impacts of CT programmes on the two immediate determinants of child nutritional status, dietary

¹ de Groot, R., Palermo, T., Handa, S., Ragno, L.P. and Peterman, A. (2015). *Cash Transfers and Child Nutrition: What we know and what we need to know*. Innocenti Working Paper No.2015-07, UNICEF Office of Research, Florence.

intake and health status. The few studies that directly look at children's dietary intake (as opposed to household diet diversity or other household measures) found no increase in caloric intake of young children, while one study found an increase in the number of days children consumed more nutritious food. This could point to unequal distribution of marginal increases in food resources in the household, especially when household-level measures of diet diversity improve as a result of a CT programme. In terms of children's health status, the evidence is mixed. Some studies found a significant reduction in common children's illnesses, such as diarrhoea and acute respiratory infections, while in other cases no significant effects were found. Similar mixed findings appear for vaccination coverage. The only study that investigated children's levels of a stress-related biomarker, children's cortisol levels, found a significant reduction due to the CT programme.

The review also examines the evidence related to the direct impact of CT on child nutrition status, measured as height-for-age (HAZ), weight-for-age (WAZ) or in some cases weight-for-age (WHZ). A positive impact on child nutrition outcomes was found in several countries. For example, the old-age pension in South Africa was associated with increased height-for-age (HAZ) in young girls (Duflo, 2000) and children in general (Case, 2001). In addition, longer exposure to the South African Child Support Grant during the first 36 months of life (66% versus 1%), increased children's HAZ-scores with 0.25 standard deviations (SD) (Aguero, Carter & Woolard, 2009). After two years of operation the Zambian Child Grant Programme was associated with an increase of 0.196 WHZ-score among children aged three to five (American

Institutes for Research, 2013). In Sri Lanka the effect of Samurdhi on children under five exposed to the programme since birth ranged from 0.4-0.5 SD in terms of HAZ-score, with larger effects for children under three (Himaz, 2008). Results from other countries are mixed. For example, in Malawi there was no significant impact of the Mchinji Social Cash Transfer programme on WAZ-scores, but the evaluation found a significant reduction in the prevalence of underweight after one year (Miller et al, 2008). Studies in other countries have found no significant impact of CTs on child nutritional status. For example, a study on Bono Solidario, a CT programme in Ecuador, found that although the transfer seemed to improve children's nutritional status, this impact was no different to an ordinary household income effect on height and weight (Leon & Younger, 2007). The evidence of direct impact of CT programmes on children's nutritional status is therefore mixed. In most cases, the pathways of impact are not analysed and it is therefore unclear why some CT programmes have a significant impact on nutritional outcomes and others appear to have a mixed or zero impact.

Overall, the evidence points to a lack of knowledge on the pathways of impact or non-impact and more research is needed. Additional research is needed from the sub-Saharan Africa region as much of the non-impact results come from Latin America. The impacts on the two immediate determinants of child nutritional status, child dietary intake and health status, are also inconclusive. Child dietary intake is often overlooked as most studies focus on the household-level impacts of CT programmes. For health status, the pathways of impact are again unclear. Some studies have found positive impacts on

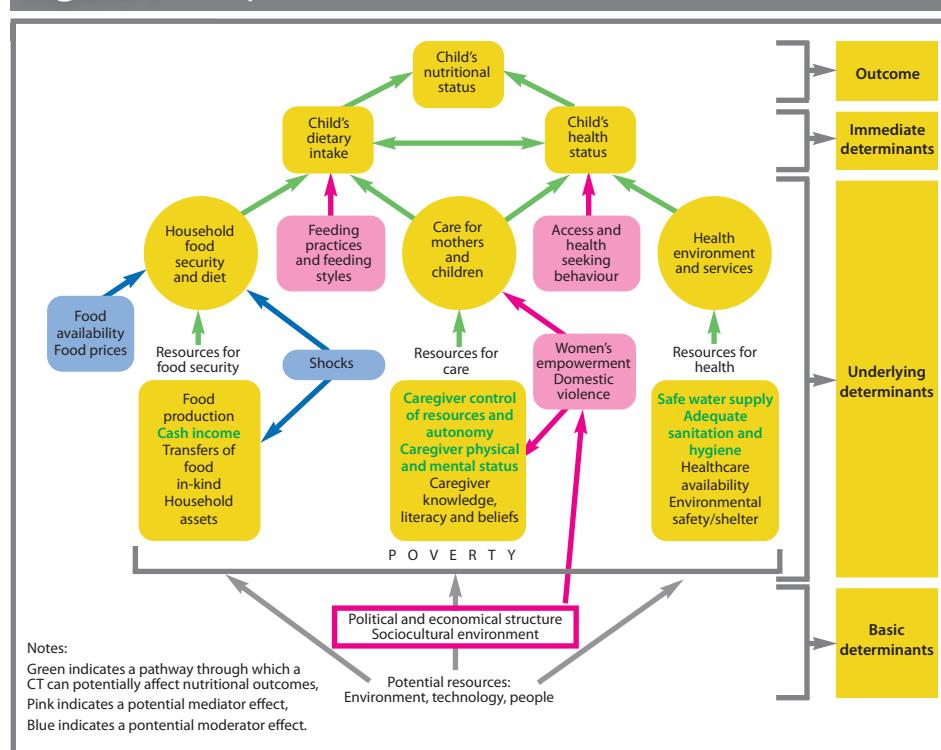
the reduction of common diseases, while others find no effects. It is unclear which underlying mechanisms cause these mixed results.

The authors conclude that, in terms of underlying determinants, there is strong evidence that CT programmes have an impact on food consumption, food security, household diet diversity, the uptake of preventive health services, and caregiver physical health. CT programmes therefore have a role in increasing resources for food, health and care. However, the evidence to date on the immediate determinants of child nutrition is mixed with respect to whether CTs can positively impact growth-related outcomes among children, particularly in sub-Saharan Africa. Key gaps that should be addressed in future research include CT impacts on more proximate nutrition-related outcomes such as children's dietary diversity, as well as caregiver behaviours, intra-household violence and stress, all of which have implications for child health and wellbeing.

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Figure 1 Conceptual framework of the determinants that affect child nutritional status



Links between household agricultural production and nutrition

Summary of research¹



Location: Nigeria, Uganda, Ethiopia, Zambia, Mozambique, Tanzania and Nepal

What we know: It is generally accepted that agricultural development will improve household food and nutrition security but direct evidence of pathways is lacking.

What this article adds: A special issue of *The Journal of Development Studies*, featuring eight studies from Africa and South Asia, supports the hypothesis that household agricultural production has direct and important linkages with dietary patterns and nutrition. The analysis reflects challenges in establishing a link, e.g. which variables, data and methods to use. The main pathways of influence include income from agriculture; consumption of own production (or some combination of these); and factors linked to gender (women's social status and empowerment in agriculture). Commercialisation of agriculture may not impact on or may negatively affect child nutrition. Livestock production emerged as particularly linked to nutrition. Effects will be determined by local conditions.



Global, national and local policies and programmes for agricultural development are recurrently justified based on their alleged role in improving food and nutrition security. However, strikingly little evidence is available to prove that a direct, household-level link between agricultural production and improved nutrition exists. A recent special issue of *The Journal of Development Studies* systematically and empirically tests whether a relationship between household agricultural production and nutrition can be found. Eight featured studies examine the relationship between agricultural production (crops or livestock), household dietary diversity, and children's (and in some cases maternal) diet and anthropometric outcomes across countries in sub-Saharan Africa and south Asia (Nigeria, Uganda, Ethiopia, Zambia, Mozambique, Tanzania and Nepal). The introductory article, featuring highlights of each study and overall conclusions, is summarised here.

The main pathways through which expanded agricultural production can influence nutrition at farm-level include income from agriculture; consumption of own production (or some combination of these); and factors linked to gender.

Increased household income from any activity, including agriculture, can alter the amount, composition and quality of food consumed and facilitate the purchase of health and nutrition-related goods and services. However, on the basis of previous evidence, the authors assert that the commercialisation of agriculture and the resulting shift away from staples to cash crops have not necessarily resulted in improvements in children's nutritional status and can have negative nutritional consequences. Recent research, looking specifically at child nutrition outcomes, mirrors this view and shows that, while income is important, the Millennium Development Goal of halving the prevalence of underweight children is unlikely to be met through income growth alone. Where there are market imperfections, agricultural production by a household can influence household consumption, depending on what is produced and seasonal factors. The authors suggest that the mechanisms by which these effects occur are mediated by gender relations within the household, including women's social status and empowerment in agriculture. Policies and programmes that seek to use agriculture as a direct means to improve food security and nutrition of agricultural households implicitly assume

that these household-level effects exist and that their magnitude is economically meaningful.

The authors of this article summarise challenges in establishing a link between agriculture and nutrition at farm level. Firstly, there are challenges in identifying the right set of variables to analyse. Studies may focus on production diversity or types of agricultural products, and on nutrition inputs (e.g. dietary diversity or dietary intake) and/or nutrition outcomes (e.g. anthropometric measures). The selection of variables may be limited if using data not collected specifically to analyse the agriculture-nutrition link. There are also challenges associated with the use of appropriate data and methods to establish an agriculture-nutrition link. For example, national data sets provide broader validity, but tend to allow less detailed examination of local issues compared to case studies. The benefit of experimental data is that it is easier to establish a causal relationship between agriculture and

¹ Carletto, G., Ruel, M., Winters, P. & Zezza, A. (2015). Farm-level Pathways to Improved Nutritional Status: Introduction to the Special Issue, *The Journal of Development Studies*, 51:8, 945-957 www.tandfonline.com/doi/abs/10.1080/00220388.2015.1018908#Vf_FXN9Viko

Table 1 Summary of results of eight studies

Association/Impact between agricultural and nutritional outcomes	
Ethiopia (Hoddinott et al.)	Positive, quite large effects of cow ownership on child intake and nutrition for children 6-24 months: 16-29% higher probability of consuming dairy (depending on product), increase in height-of-age z-scores by 0.2 standard deviations, reduction in probability of stunting by 5.5% (up to 13% in some age brackets).
Nigeria (Dillon et al.)	Positive for agricultural revenues (10% increase leading to 1.8% more dietary diversity). Positive but biased (no valid instruments) for crop diversity (10% increase leading to 2.4% increase in dietary diversity)
Mozambique (de Brauw et al.)	Positive; stronger on Vitamin A density, weaker on others, but higher with participation intensity. Different by programme components (vines + extension; promoter vs meeting only)
Tanzania (Slavchevska)	Positive; small effects of crop value on anthropometric outcomes of preschoolers and children 5-9 years old. Particular effects for children less than 2-3 in female-headed households. Increased BMI from crop production among adolescents (ages 10-19). Ownership of large livestock ownership limits BMI of adolescents.
Uganda (Azzarri et al.)	Positive impact of livestock ownership on consumption for different animal source foods (varies by type), except for the cattle-beef nexus (no impact). Small rumiant ownership decreases wasting and underweight among 24-59 months old. Large rumiant ownership increases the probability of underweight for children 24-59 months old.
Zambia (Kumar et al.)	Positive on dietary diversity for households and children age 6-23 months; stunting down for children 24-59 months. Impact reduced when controls for preventive health care are included.
Nepal (Shively et al.)	Positive association between agriculture and nutrition for all children. Small, positive association for commercialisation, only for younger children.
Nepal (Malapit et al.)	Production diversity at household level strongly associated with mothers' and children's dietary diversity and children's weight-for-height z-scores. Engagement in the community, control over income, reduced workload, and the overall empowerment score are positively associated with better height-for-age z-scores, and a lower gender parity gap improves children's diets and long-term nutritional status. Women's empowerment also mitigates the negative effect of low production diversity on maternal and child dietary diversity and height-for-age z-scores.

nutrition; however experiments have well-known limitations. Observational data play an important role in trying to understand the farm-nutrition relationship, but identifying a causal impact between agriculture and nutrition outcomes can be difficult. Notwithstanding the substantial variation in measures, methods and approaches, eight papers in this special issue all trace some associations between agricultural production and diets or nutrition outcomes. The authors synthesise the results of each study in turn (see Table 1 for summary findings).

One study looks at the impact and intensity of participation in a biofortification (β-carotene-rich orange sweet potato) programme on vitamin A density, micronutrient adequacy and diversity of children's diet in Mozambique (De Brauw, Fozenou & Moursi, 2015). In this study, the authors are able to trace positive impacts of programme participation on all outcomes, particularly on vitamin A density; there is increased impact with greater intensity of participation in the programme.

Two papers study the impact of engagement in agriculture and crop production diversity on dietary diversity, anthropometry outcomes and consumption of specific food groups in Nigeria (Dillon, McGee & Oseni, 2015) and Zambia (Kumar, Harris & Rawat, 2015). Both studies find positive associations between crop and dietary diversity; the Zambia study also shows a positive association between crop diversity and height-for-age Z-scores (HAZ) in children aged 24 months and older.

Three papers look at the role of livestock ownership in improving diets by increasing consumption of animal-source foods. One study from Ethiopia shows a strong effect of household cow ownership on increased frequency of milk and dairy consumption among young children (Hoddinott, Headey & Dereje, 2015). Data from Uganda show a positive association between livestock ownership and the consumption of a range of animal source foods (Azzarri, Zezza, Haile et al., 2015). Data from Tanzania show that ownership of large livestock holdings is associated with lower odds of stunting among pre-schoolers and that children aged five to nine from pastoralist households are better nourished (Slavchevska, 2015).

Two papers that use data from Nepal, one from a nationally-representative survey (Shively

& Sununtnasuk, 2015) and one from the baseline survey for an impact evaluation of a multi-sectoral nutrition programme (Malapit, Kadiyala, Ousumbina et al., 2015), find associations between production diversity and dietary diversity, and between production diversity and nutrition outcomes (HAZ in the Shively study and weight-for-height Z-score in the Malapit study). While identification issues prevent these two studies from making causal claims, these studies go beyond a general link between agriculture and nutrition to look more specifically into agricultural commercialisation (Shively et al., 2015) and the mediating role of women's empowerment (Malapit et al., 2015). Shively et al use data from Nepalese agricultural households to detect a positive, if small, association between market orientation and HAZ for children under two. In this case, increased income generated by agricultural sales more than offsets possible adverse impacts associated with less food being available for own consumption. Authors of the second Nepal study find that women's engagement in the community, control over income, reduced workload and the overall empowerment score are positively associated with better maternal nutrition. Control over income is also associated with better child HAZ and a lower gender parity gap improves children's diets and HAZ.

Taken together, the authors of the introduction to this special issue support the hypothesis that household agricultural production has direct and important linkages with household dietary patterns and the nutrition of individual members. The magnitude of the impacts varies, probably as a result of differences between the studies with regard to several key factors, such as commodities, contexts and location and the intensity of programme participation. While links to crop production and diversity of production are found to matter in certain contexts, livestock production seems also to emerge as particularly important and positively linked to nutrition. The results suggest that support to agriculture can play a direct role in promoting nutrition, but that the effects might not be as dramatic as anticipated and depend on local conditions. The papers also highlight the limits of available data in precisely measuring farm-level causal relationships between agricultural production and nutrition. The authors conclude that there is a need to devote more efforts to filling the data gaps that make such analyses so difficult in the developing world.

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WASH interventions and their effects on the nutritional status of children

Summary of research¹



Location: Global

What we know: Water, sanitation and hygiene (WASH) interventions are frequently implemented to improve health and reduce infectious diseases and may be linked to child development outcomes, including nutrition.

What this article adds: The strength of evidence linking WASH with child nutrition was investigated in a review of 14 randomised and non-randomised studies from ten low- and middle-income countries. The (poor quality) evidence suggests a small benefit of short-term WASH interventions in children under five years of age; specifically solar disinfection of water, provision of soap, and improvement of water quality. The gap in rigorous evidence will be bolstered by five large RCTs underway. Questions remain on long-term adherence, optimal timing and required duration of WASH interventions for optimal impact.

Globally, an estimated 26% of children (165 million) under the age of five suffer from chronic undernutrition manifested as stunting, and 8% (52 million) suffer from acute undernutrition manifested by extreme thinness or wasting. The largest numbers of undernourished children live in South Asia and sub-Saharan Africa. The two immediate causes of childhood undernutrition are inadequate dietary intake and infectious diseases such as diarrhoea. The integral role in health of safe water, sanitary disposal of human waste and personal hygiene has long been recognised. WASH interventions, such as provision of clean piped drinking water, enhanced facilities for excreta disposal and the promotion of hand-washing with soap are frequently implemented to improve health and reduce infectious diseases and may be linked to child development outcomes. The objective of this review is to assess the strength of evidence linking WASH interventions with measures of child nutritional status and to identify research gaps.



The review includes evidence from randomised and non-randomised interventions designed to (1) improve the microbiological quality of drinking water or protect the microbiological quality of water prior to consumption; (2) introduce new or improved water supply or improve distribution; (3) introduce or expand the coverage and use of facilities designed to improve sanitation; or (4) promote hand-washing with soap after defecation and disposal of child faeces and prior to preparing and handling food, or a combination of these interventions, in children aged under 18.

Method

Two review authors independently sought and extracted data on childhood anthropometry, biochemical measures of micronutrient status, and adherence to, attrition of and costs of the study interventions either from published reports or through contact with study investigators. The authors calculated mean difference (MD) with

95% confidence intervals (CI) and conducted study-level and individual-level meta-analyses to estimate pooled measures of effect for randomised controlled trials (RCTs) only.

Results

Fourteen studies from ten low and middle-income countries involving a total of 22,241 children at baseline, and nutrition outcome data for 9,469 children, are included in this review. All studies included children under five years of age at the time of the intervention. The review included five RCTs, one three-year follow-up of a cluster-RCT, and eight non-randomised studies with comparison groups. Studies included various WASH interventions either singly or in combination that aimed to improve the quality and quantity of water and improve sanitation and hygiene.

Study duration ranged from six to 60 months. Measures of child anthropometry were collected

in all 14 studies and nine studies reported at least one of the following Z-score anthropometric indices: weight-for-height (WHZ), weight-for-age (WAZ) or height-for-age (HAZ). None of the included studies were of high methodological quality as the nature of the intervention was not masked from any participants.

Study-level and individual participant data meta-analysis was limited to data from five cluster-RCTs with durations of 9–12 months. Meta-analysis including 4,627 children identified no evidence of an effect of WASH interventions on WAZ (MD 0.05; 95% CI -0.01 to 0.12). Meta-analysis including 4,622 children identified no evidence of an effect of WASH interventions on

¹ Dangour, A.D., Watson, L., Cumming, O., Boisson, S., Che, Y., Vellemann, Y., Cavill, S., Allen, E., Uauy, R. (2013) *Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children*. Cochrane Database Syst Rev, 8. CD009382. ISSN 1469-493X.

WHZ (MD 0.02; 95% CI -0.07 to 0.11). However, meta-analysis including 4,627 children showed that WASH interventions (specifically solar disinfection of water, provision of soap and improvement of water quality) had a slight but significant effect on HAZ in children under five (MD 0.08; 95% CI 0.00 to 0.16). In sub-group analysis of data from cluster-RCTs, there was some evidence to suggest a difference in effect by gender and age group, with girls more responsive than boys in weight and height growth to WASH interventions; height growth more responsive to WASH interventions in children under 24 months; and weight growth more responsive to WASH interventions in children aged 25-60 months.

Adherence to study interventions was reported in only two studies (both cluster-RCTs) and ranged from low (< 35%) to high (> 90%). Study attrition was reported in seven studies and ranged from 4% to 16.5%. Intervention cost was reported in one study in which the total cost of the WASH interventions was USD 15 per inhabitant. None of the studies reported differential impacts relevant to equity issues such as gender, socioeconomic status and religion.

Conclusions

The authors conclude that available evidence from meta-analysis of data from cluster-RCTs with an intervention period of 9-12 months is suggestive of a small benefit of WASH interventions (specifically solar disinfection of water,

Box 1

RCTs underway on WASH interventions and nutrition outcomes

Clasen T., Boisson S., Routray P., Cumming O., Jenkins M., Ensink J.H.J., et al. The effect of improved rural sanitation on diarrhoea and helminth infection: design of a cluster randomised trial in Orissa, India. *Emerging Themes in Epidemiology* 2012;9 (1):7.

Johns Hopkins Bloomberg School of Public Health. Sanitation, Hygiene, Infant Nutrition Efficacy Project (SHINE). <http://clinicaltrials.gov/ct2/show/NCT01824940>.

Innovations for Poverty Action. WASH Benefits Bangladesh: A Cluster Randomized Controlled Trial of the Benefits of Water, Sanitation, Hygiene Plus Nutrition Interventions on Child Growth. <http://clinicaltrials.gov/show/NCT01590095>; Innovations for Poverty Action.

WASH Benefits Kenya: A Cluster Randomized Controlled Trial of the Benefits of Sanitation, Water Quality, Handwashing, and Nutrition Interventions on Child Health and Development. [www.clinicaltrials.gov/ct2/show/NCT01704105](http://clinicaltrials.gov/ct2/show/NCT01704105).

Global Scaling Up Handwashing Project.

<http://www.wsp.org/global-initiatives/globalscaling-handwashing-project>.

www.wsp.org/global-initiatives/globalscaling-sanitation-project.

provision of soap, and improvement of water quality) on length growth in children under five years of age. The quality of evidence is generally poor and the overall estimates presented are based only on meta-analyses of data from interventions of relatively short duration (9-12 months) from only a small selection of WASH interventions. These estimates are therefore not applicable to the effect that wider WASH interventions may have on child nutritional status.

The authors also conclude that this review has identified the paucity of rigorous evidence

evaluating the effect of WASH interventions on child nutritional status. Five large RCTs are underway which will contribute significantly to the existing evidence base linking WASH interventions to child nutritional status outcomes (see Box 1). Further research questions relate to the mechanism of action of the WASH interventions. There is no evidence on long-term adherence to WASH interventions, the optimal timing of interventions in childhood or the required duration of interventions to have the greatest impact on childhood nutrition outcomes.

Is reliable water access the solution to undernutrition?

Summary of research¹

Location: Global

What we know: Irrigation interventions have the potential to reduce undernutrition by impacting food security, nutrition and health.

What this article adds: A recent systematic review identified multiple pathways of irrigation impact on the underlying causes of malnutrition. There is evidence (largely from Africa) of positive impact on food security, including increased productivity and availability of food, improved dietary quality, and increased income (via cash crops). Negative impacts include monocropping. More rigorous evaluations of the impact of irrigation interventions on nutrition outcomes are needed; evidence is lacking. Recommendations are made on how to make irrigation interventions more nutrition-sensitive.

Interventions aimed at increasing water availability for livelihood and domestic activities have great potential to counter various determinants of undernutrition by improving, for example, the quantity and diversity of foods consumed within the household, income generation and women's empowerment. However, current documented evidence on the topic is spread across many different publications. This paper aims to

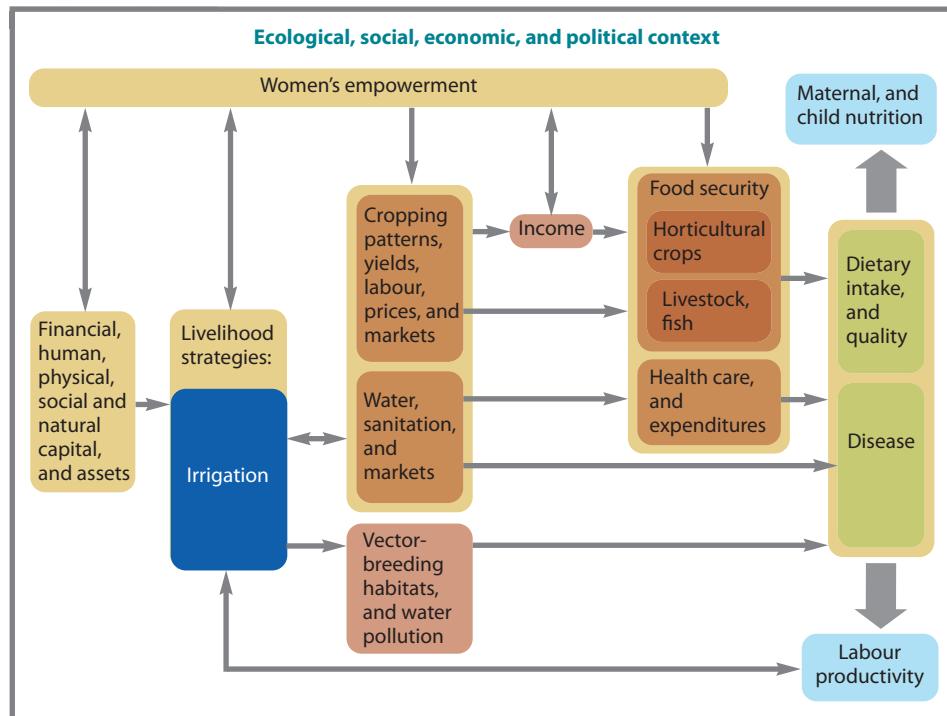
connect the dots by reviewing the literature available on the linkages between irrigation and food security, improved nutrition, and health.

The review begins with an exploration of the main pathways involved, displayed in Figure 1. Irrigation can improve dietary diversity (through increased agricultural productivity and crop diversification); provide a source of income (from

market sales via increased production and employment generation, particularly during dry seasons where labour requirements are low);

¹ Domènech, L., (2015). *Is reliable water access the solution to undernutrition? A review of the potential of irrigation to solve nutrition and gender gaps in Africa south of the Sahara*. IFPRI Discussion Paper 1428. Washington, D.C.: International Food Policy Research Institute (IFPRI). <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/129090>

Figure 1 Impact pathways from irrigation to better nutrition and health



provide a source of water supply and improve sanitation and hygiene; and provide an entry point to strengthen women's empowerment (through increased asset ownership and increased control over resources). To test the impacts of irrigation on nutrition, health and gender outcomes through these pathways, the author conducted a literature review on the available evidence. Gender variables are given special consideration because women's roles in agriculture and within the household are considered a critical determinant of nutrition and health outcomes.

A systematic keyword search of peer-reviewed papers and grey literature yielded 27 papers for review. Almost all of the included studies focused on countries in sub-Saharan Africa, except for five that studied Asian cases. Dams and canal irrigation were the main type of irrigation evaluated in 12 studies, while small-scale private irrigation was evaluated in eight studies. Micro-irrigation technologies were the main focus of five studies, home gardens of four studies, and irrigation with wastewater was the focus of one study. Information on the main features of the irrigation system was missing from two studies.

Findings show that there is evidence that irrigation interventions can positively impact underlying causes of malnutrition through multiple pathways, including increased productivity and availability of food supplies and improved diets (in quantity and quality). For example, a study in Ethiopia documented that farmers using irrigation systems produced crops twice and sometimes even three times per year, compared to a single cropping season with rain-fed agriculture (Aseyehegn, Yirga & Rajan, 2012). Several of the studies showed that irrigation can lead to increased production of cash crops, providing additional income to the household and greater

potential for the purchasing of nutritious food. Many studies also showed that irrigation can boost fruit and vegetable production, which can increase household consumption and may also be sold for additional income. This can, in turn, lead to increased food availability in the community and increased household purchasing power. There is also evidence of a positive effect on food security. For example, one study in Malawi documented that 70% of households stated that they were food insecure (defined by not having enough food to last until the next harvest) but that after the adoption of an irrigation scheme, only 9% of households reported experiencing food insecurity (Mangisoni, 2008). Other studies, however, showed mixed or inconclusive results, while some showed that irrigation can lead to monocropping and therefore have potentially negative consequences on underlying causes of malnutrition. Some studies showed that irrigation can increase livestock productivity (through increased water for livestock drinking, bathing and livestock feed availability), although others found no significant impact.

While there is evidence of the effect of irrigation on agricultural production and increased food supplies, the pathways linking nutritional and health gains with irrigation remain under-studied. Findings on this relationship were inconclusive. The author attributes this in part to the fact that few studies include comprehensive measures of anthropometry, morbidity, and clinical indicators. Many of the studies included in the review had methodological weaknesses. In some cases, sample sizes were too small to provide conclusive evidence. Self-selection bias and lack of comparable controls were also limitations in several studies. However, it may be difficult to avoid self-selection bias in irrigation studies because randomisation of beneficiary

households is often not feasible in irrigation interventions. Some studies tried to solve the problem with the use of propensity score matching methods. Finally, most studies did not collect panel (longitudinal) data and therefore were unable to control for unobservable effects.

The author concludes that more rigorous evaluations of the impact of irrigation interventions on nutrition outcomes are needed. Developing evidence will be important for the successful implementation of future irrigation projects, especially in Africa south of the Sahara, where the potential to expand irrigation is large and where recent projections indicate that childhood undernutrition prevalence will continue to rise over the next two decades. The author makes six recommendations for designing more nutrition-sensitive irrigation interventions: (1) food security and nutrition gains should be stated goals of irrigation programmes; (2) training programmes and awareness campaigns should accompany irrigation interventions to promote nutrient-dense food production and consumption as well as minimisation of health risks; (3) multiple uses of irrigation water should be recognised in order to improve access to water supply and sanitation, and livestock and aquatic production; (4) women's empowerment and women's participation in irrigation programmes should be promoted; (5) homestead food production should be encouraged; and (6) policy synergies between different sectors (agriculture, nutrition, health, water supply and sanitation, education) should be sought.



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Impact of a homestead food production programme on household and child nutrition in Cambodia

Summary of research¹

Location: *Cambodia*

What we know: Food-based strategies such as homestead food production have the potential to increase micronutrient intake and improve the health and nutritional status of women and children.

What this article adds: Cambodia's homestead food production programme increased household production and consumption of micronutrient-rich foods and maternal and child intake of some foods but did not significantly improve maternal/child anthropometry or anaemia. Lack of nutrition/health impact may be due to other factors such as limitations regarding the dietary diversity indicator to reflect micronutrient intake; care practices and illness; programme and evaluation designs; and targeting. Using programme impact pathways to plan monitoring and evaluation would greatly strengthen the quality of evidence.



As food prices increase, poor households are usually forced to cut back their consumption of high-quality foods such as fruits, vegetables, dairy products, eggs and meat to protect their consumption of calories from staple foods. This in turn can substantially decrease their already marginal consumption of micronutrients such as vitamin A, zinc and iron, which are essential for optimal health and development. Women and young children, who have particularly high requirements of several micronutrients for growth and reproduction, are particularly susceptible to the negative effects of micronutrient malnutrition. Food-based strategies such as homestead food production have the potential to increase micronutrient intake and improve the health and nutritional status of women and children through various pathways, including increased household production for own consumption, increased income from the sale of products, and improved social status of women through greater control over resources.

In this paper, the authors examine the results of an evaluation of a homestead food production programme in Cambodia that was supported by Helen Keller International (HKI) between October 2005 and May 2007. The programme works with local non-governmental organisations to create village model farms that serve as distribution points for seeds, seedlings, saplings, poultry and animals and as training centres for homestead food production activities

and nutrition education. Women are the primary recipients and receive homestead food production inputs, training in homestead food production activities and nutrition education. Each village model farm typically serves about 40 households which are divided into two groups of about 20 women each. Each group appoints a leader who is responsible for organising monthly meetings for the purposes of distributing homestead food production inputs, training and nutrition education. The homestead food production programme presented in this paper operated in one province in Cambodia with 35 village model farms serving 1,400 households.

The aim of this study was to evaluate the impact of the homestead food production programme in Cambodia on household production and consumption of micronutrient-rich foods and on maternal and child health and nutrition (intake of micronutrient-rich foods, anthropometry, haemoglobin and anaemia prevalence); and to assess pathways of impact on maternal and child health and nutrition.

Methods

HKI employed two cross-sectional surveys, one at baseline (October 2005) and another at endline (May 2007). Both surveys used a pre-coded, structured questionnaire that included questions about food production, food consumption and income from homestead food production along with socioeconomic and demographic indicators

and maternal and child intake of micronutrient-rich foods. Each survey included 500 households, consisting of 300 households that participated in the intervention and 200 control households. Analysis of results was carried out using t-tests and chi-square tests. Using endline data and multivariate analyses, the authors examined the pathways of impact of the programme on maternal and child health and nutrition.

Results

Intervention and control households were similar at baseline in sociodemographic characteristics, but more intervention households owned animals, earned income from homestead food production and produced and consumed micronutrient-rich foods. At endline, some of these differences had widened with more vegetables produced and dark-green leafy vegetables, yellow and orange fruits and eggs consumed; greater household dietary diversity; and lower prevalence of fever amongst children (all significant). The frequency of consumption of some micronutrient-rich foods was higher among mothers in the intervention group compared to the control group at endline, although there was no significant difference in dietary diversity score between the two groups. There were no

¹ Olney, D. K., Talukder, A., Lannotti, L.L., Ruel, M.T., and Quinnod, V. (2009). Assessing impact and impact pathways of a homestead food production program on household and child nutrition in Cambodia. *Food and Nutrition Bulletin*, Vol. 30 (4): 355-69.

other differences between the groups in maternal and child health and nutrition. Greater household production of fruits and vegetables was associated with greater household dietary diversity, which was associated with dietary diversity among mothers and children. However, dietary diversity was not associated with other maternal and child health and nutrition outcomes.

Discussion

The authors propose that the lack of evidence of impact on maternal or child anthropometric measures or anaemia prevalence in this study may indicate that dietary diversity is not a useful indicator of micronutrient intake in this population if the quantities consumed are too small and micronutrient and/or energy intakes continue to be limiting. However, it is also possible that the potential impact that increasing dietary diversity may have on improving health and nutrition outcomes could be diluted by other factors, such as illness and suboptimal care and feeding practices.

Irrespective of whether or not dietary diversity is a useful indicator, the authors suggest that the lack of evidence of such impact may indicate programme design issues associated with a true lack of effect and/or weaknesses in the evaluation that precluded observing any impact on nutrition. With regard to the first, results of

the study point to the need to focus on improvements in particular components of the homestead production programme. Examples include small-animal production and effective behaviour change communication to promote adoption of optimal nutrition and health practices, e.g. greater use of animal source foods; intra-household allocation of resources; traditional care and feeding practices; food preferences; and determinants of access to, and use of, healthcare and services. The programme should also focus its health and nutrition intervention package on children under two years of age as the critical window, rather than on the under-fives. Other potential programme consequences to explore include altered disease exposures from different agricultural practices (e.g. zoonotic diseases) and water management (e.g. irrigation and malaria); changes in women's time allocation; the importance of proximity to home and children for women involved in agricultural production; and the changing roles and intra-household dynamics resulting from women's acquiring greater access to resources.

The authors also assert that the evaluation design for Cambodia's homestead food production programme could be improved. Weaknesses in the evaluation design include lack of comparability between groups at baseline;

failure to control for self-selection of households into the intervention; and collection of baseline and endline data during different seasons. A better-designed evaluation could address issues of adequacy and plausibility and could provide relatively strong evidence of a programme's impact. In addition, the use of a programme theory framework may be useful in identifying and analysing programme impact pathways to help reveal how impact is achieved, help design an effective monitoring and evaluation strategy, and generate information to contribute to a stronger evidence base of programme impacts.

Conclusions

Cambodia's homestead food production programme increased household production and consumption of micronutrient-rich foods and maternal and child intake (or frequency of intake) of some foods. However, household-level benefits from the programme did not translate into significant improvements in maternal and child health and nutrition. Weaknesses in the evaluation design prevent drawing firm conclusions about the programme impacts. The authors conclude that a careful redesign and rigorous assessment of the programme using a programme theory framework would help realise its true potential to improve maternal and child health and nutrition outcomes.

Large-scale intervention to introduce orange sweet potato in Mozambique increases vitamin A intake

Summary of research¹

Location: *Mozambique*

What we know: Vitamin A deficiency is associated with increased risk of morbidity and mortality and ocular disorders in pregnant and lactating women and infants and children, particularly in Africa.

What this article adds: A randomised, controlled-effectiveness study of a large-scale intervention to promote household-level orange sweet potato (OSP) production and consumption was conducted in rural Mozambique (144 villages). It involved integrated agricultural, demand creation/behaviour change and marketing components tested at two levels of intensity (one-year versus three-year interventions). Both OSP and vitamin A intakes were found to be greater in both intervention groups and OSP was the dominant source of Vitamin A. There were no major differences in the impact on OSP or vitamin A intakes between less and more intensive interventions. The authors conclude this is a viable, acceptable, scalable intervention in vitamin A-deficient communities.

Vitamin A deficiency is associated with increased risk of morbidity and mortality, and ocular disorders such as night blindness, xerophthalmia and blindness, affecting infants, children and women during pregnancy and lactation. African regions account for the greatest number of pre-school children with night blindness and for more than one quarter of all children with sub-clinical vitamin A deficiency (WHO, 2009). Beta-carotene-

rich OSP has been shown to improve vitamin A status of infants and young children in controlled efficacy trials and in a small-scale effectiveness study with intensive exposure to project inputs (Low, Arimond, Osman et al, 2007). However, the potential of this important food crop to reduce the risk of vitamin A deficiency in deficient populations depends on the ability to distribute OSP vines and promote its household production and consumption on a large scale. In rural

Mozambique, the authors conducted a randomised, controlled-effectiveness study of a large-scale intervention to promote household-level OSP production and consumption using integrated agricultural, demand creation/behaviour change and marketing components.

¹ Hotz, C., Loechl, C., de Brauw, A., Eozenou, P., Gilligan, D., Moursi, M., Munhauwa, B., van Jaarsveld, P., Carrquiry, A., and Meenakshi, J.V. (2012). *British Journal of Nutrition* 108, 163-176. doi:10.1017/S0007114511005174 www.ncbi.nlm.nih.gov

An intervention to introduce household-level cultivation of OSP was implemented between 2006 and 2009 in 144 selected villages from four districts of Zambezia Province in Mozambique. The intervention reached more than 12,000 farm households, divided into smaller clusters (around 100 households) for observation. The intervention integrated three components. An agricultural component supported the distribution of vines as planting material for OSP and provided training for improved production practices. A demand creation/behaviour change component included education on maternal and child health and nutrition topics targeted to women in participating households, and a campaign for the general public to raise awareness of the benefits of OSP through community drama, field-day events, and radio spots and programmes. Finally, a marketing and product development component included training for OSP traders, urban and rural market development for the sale of OSP, and establishment of distinct market stalls selling and providing information on OSP within the general area.

The intervention tested two models of differing intensity for comparison. In the first year, all three intervention components were implemented in the same manner in both model one and model two communities. In the low-intensity model (model two), the farmer group/household-level activities and support from agriculture and nutrition extensionists did not continue beyond the first year of implementation. In the high-intensity model (model one), training sessions were continued in the second and third years, with some adjustment according to needs and preferences. In both models, communities received additional vine distributions and exposure to the broader marketing and promotional components each year.

The primary nutrition outcomes were OSP and vitamin A intakes by children aged 6–35 months and three to five-and-a-half years, and women. The baseline nutrition survey was conducted in November to December 2006, before OSP vines were distributed, and the follow-up

survey in May to June 2009 during the sweet potato harvest season. Surveys consisted of 24-hour recall interviews to measure dietary intake of women, food frequency questionnaires with mothers to recall the foods consumed by their children in the last seven days, and weight and length/height measurements of women and participating children.

Results showed that, at follow-up, OSP intake was significantly greater in model one and model two groups relative to the control for all three age groups. Net increases in OSP intakes for model one were 46g, 48g and 97g per day for younger children, older children and women respectively. Model two showed similar results. At follow-up, vitamin A intakes were also significantly higher in the model one and model two groups compared with the control groups for all age groups. Increases in vitamin A intake for model one were 263mg, 254mg and 492mg retinol activity equivalents per day among the younger children, older children and women, respectively. The net change in mean vitamin A intakes of the intervention groups relative to the control represented increases of 63%, 169% and 42% among reference children, young children and women, respectively. These net increases were equivalent to approximately 74%, 118% and 55 % of the corresponding Estimated Average Requirements (EAR) of vitamin A for the same groups, representing a substantial increase in dietary vitamin A. At follow-up, OSP was the dominant source of vitamin A in the diet in the model one and model two groups combined, providing 71–84 % of all total vitamin A across all groups. Specifically, among reference children, OSP provided 80% of total vitamin A in the intervention groups combined; smaller proportions of vitamin A were derived from green leafy vegetables (11%), yellow sweet potato (3%), and orange fruits and vegetables, such as pumpkin and papaya (2%). Similar results were observed for other age groups.

Results show that there were no major differences in the impact on OSP or vitamin A intakes

between lower intensity (one year) and higher intensity (three year) models, indicating that the magnitude of impact observed in the present study was not compromised by the less intensive intervention. This suggests that additional project inputs to supervise and support the village-level promoters in repeating agriculture and nutrition education sessions through the second and third years of the intervention did not translate into additional impact in the amount of OSP consumed, vitamin A intake, or the prevalence of inadequate vitamin A intake. The authors suggest that this is an important finding as the additional cost of maintaining direct, community-level contact by project staff beyond the first year of intervention is not justified in these OSP-producing areas; maintenance of district-level activities and mass media may be sufficient to maintain behaviour change after the first year.

The authors conclude that the present large-scale intervention to introduce and promote OSP was successful in incorporating OSP into the diet of women and children, and in significantly increasing the adequacy of vitamin A intakes. OSP is an acceptable, local food source of vitamin A that can easily replace currently-grown white or yellow sweet potato varieties. The promotion of OSP in rural, sweet potato-growing areas in Mozambique can provide a meaningful source of additional vitamin A in a population where vitamin A deficiency is persistently high. Furthermore, the authors found no differences between a more intensive and a less intensive intervention design, indicating that future interventions to introduce OSP as a source of vitamin A in sweet potato-producing areas of Mozambique can use less intensive intervention models.

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Farmers in Mozambique, 2015

Field Articles

The potential of nutrition-sensitive Conservation Agriculture: lessons from Zambia

Conservation agriculture field in Lui Wanyau, Senanga

By Anne Marie Mayer, Marjolein Smit-Mwanamwenge and Carl Wahl



Anne Marie Mayer works as a freelance nutritionist specialising in the links between agriculture and nutrition. She holds a PhD in International Nutrition with Soil Science and Epidemiology from Cornell University. Her current interests include community value chains for nutrition, nutritional quality of foods, and links between nutrition and sustainable agriculture.

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Carl Wahl is the Conservation Agriculture (CA) Coordinator for Concern Worldwide, Zambia. A former U.S. Peace Corps volunteer, he has lived and worked on CA and agroforestry adoption in over 20 districts of Zambia.



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Carl Wahl, Zambia 2015

Location: Zambia

What we know: Conservation Agriculture (CA) is a means to sustainably increase food production; how to integrate nutrition considerations into agricultural CA practices is not well researched.

What this article adds: A study by Concern Worldwide explored pathways for nutrition-sensitive CA in Central and Western Provinces of Zambia, based on literature review, key informant interviews and focus group discussions. Potential nutrition impacts identified were: increased own production and consumption of CA crops (cereals and legumes); livestock products and vegetables; increased time availability and agricultural diversity that could contribute to improved infant and young child feeding practices; purchase of other foods through income generated; and improved soils yielding more nutritious food. .

Introduction

Conservation Agriculture (CA) is an agricultural system based on three basic principles: minimum tillage (or minimum technical disturbance); maintenance of soil cover; and crop rotation, usually with legumes. CA has shown to increase productivity, build resilience and protect the soil. However, CA research and implementation is largely production-oriented and there is little evidence in the literature as to how CA currently impacts household nutrition or how it might be adapted to become more nutrition-sensitive.

CA in Zambia is a means to sustainably increase food production, but it is being promoted against a backdrop of very high rates of undernutrition. At 40%, Zambia has one of the highest prevalences of childhood stunting in the world (Central Statistics Office, MoH Zambia (2014); acute malnutrition remains static at around 6% of children; and obesity is on the rise. Determinants of undernutrition at the household level include income poverty; lack of access to sufficient and diverse foods; poor feeding and childcare practices; gender inequality; poor access to clean water; and lack of access to sanitation and quality health services. Therefore, while complex and multi-sectoral interventions are required to address chronic malnutrition, it is clear that agriculture has the potential to increase incomes and improve nutrition through increased production of a diversity of nutrient-rich foods; an opportunity to contribute to a reduction in undernutrition that is currently unrealised.

In 2015, a study was undertaken by Concern Worldwide in Zambia to inform how agricultural interventions based around CA practices can integrate nu-

trition considerations. The study premised that the pathways to nutrition-sensitive CA are likely to lie through: 1) increases in production; 2) promotion of nutritious crops (particularly in the legume rotation); 3) using the delivery platforms and mechanisms to shape demand for nutritious foods related to infant and young child feeding, maternal nutrition and household food and nutrition security; and 4) gendered impacts on women's time for caring practices. The study process and findings aimed to engage multiple stakeholders in order to illuminate opportunities for those implementing and funding CA interventions to utilise CA to improve household diets (and thus contribute to improved nutrition) and advance the situation for women.

Concern Worldwide is an international, humanitarian non-governmental organisation (NGO) that has been working in Zambia since 2002 with extremely poor people in some of the most challenging agro-ecological conditions in the country. While supporting sustainable livelihoods, women's empowerment and reduction of risk from HIV/AIDS and natural disasters, Concern has developed technical strengths in climate-smart agriculture; in particular concerning CA and the linkages between agriculture and nutrition (see www.concern.net/rain).

Study method

The study was conducted in March-April 2015 and comprised a literature review followed by key informant interviews to establish the key questions and areas of focus. Subsequently, qualitative focus group discussions (FGDs) were held with farmers in Central and Western Provinces of Zambia. Eight (four female and four male) FGDs were conducted with CA adopters and two case studies were de-

veloped from each province (a total of 126 participants). Key informants included promoters of CA, technical staff in the Ministry of Agriculture and Livestock, Ministry of Health and representatives of NGOs. Findings were subsequently shared, discussed and reviewed with stakeholders in Lusaka.

The study was conducted in close collaboration with the Conservation Farming Unit, which has led CA promotion in Zambia since it was founded in 1995. Currently, the CFU works in 20 districts across Zambia, supporting over 2,000 lead farmers to demonstrate, train and promote CA principles to over 180,000 follower farmers. CFU also promotes the uptake of inputs and equipment through the private sector to enable faster uptake of CA by the small-scale farming sector.

The study drew on guidelines and theoretical models that have been developed over the past few years to help understand the links between agriculture and nutrition. Evidence is emerging as to how agriculture can contribute to improved nutrition outcomes for children and adults. These models are helpful when trying to understand how CA might improve nutrition and incorporate nutrition considerations, or how to make changes towards nutrition-sensitive CA. The UN Food and Agricultural Organization (FAO) has developed ten key principles for improving nutrition through agriculture (FAO, 2013), which were used to structure the recommendations from the study and IFPRI and others have described how potential pathways can enable agriculture to contribute to reductions in undernutrition (Headey, Chiu & Kadiyala, 2011).

Findings

Food production

Household food production can be critically important to the diets and nutrition of women and children (Kumar, Harris & Rawat, 2015). Literature shows that CA has a positive impact on household food security in terms of improvements in maize security (Nyambose & Jumbe, 2013), but also on the production and consumption of legumes (groundnuts, soybeans, cowpeas) (Nyanga, 2012). All FGDs clearly reported that CA increased their production and consumption of both maize and legumes, particularly groundnuts and beans. The main challenges of growing more legume crops were the limited access to seeds and markets. Farmers also indicated that CA increased their time availability, which was used to grow more field crops (e.g. maize, cassava, sweet potatoes, groundnuts) and for vegetable gardening, increasing both food availability and food diversity. Evidence from Zambia suggests that greater agricultural diversity is associated with greater dietary diversification and those households with greater agricultural diversity have fewer stunted children (Kumar, Harris & Rawat, 2015).

Agricultural income

Agricultural income can be used for immediate or future household needs, including food and non-food purchases to support a healthy diet and life (Herforth & Harris, 2014). Most FGD

participants reported increased incomes since practicing CA. The extra income was spent on food purchases (e.g. sugar, fish, meat, cooking oil, rice, tea, flour, refined maize meal and instant cereal products), productive resources, school fees, livestock (milk and draught) and increasing agricultural labour. While the addition of a variety of foods (including animal-sourced foods) may meet a nutrition gap and improve household dietary diversity, overconsumption of certain foods such as sugar, meat and refined cereals could contribute to the increasing problem of overweight. The Demographic Health Survey showed that 23% of women are overweight in Zambia (Central Statistics Office, MoH Zambia, 2014). The use of income for productive resources, purchase of animals and enterprises has the potential to improve nutrition through increased availability of food or other pathways. If income is spent on school fees, there could be a long-term benefit for nutrition because education levels of children contribute to prevention of malnutrition throughout the life course.

Women's empowerment

Gender equality and women's empowerment are now widely recognised as important determinants of child nutrition (Smith & Haddad, 2015). In Concern's experience, the majority of primary beneficiaries and adopters of CA are women, so there is a high potential for women to link increased agricultural productivity under CA to nutrition, provided they are able to make and influence decisions and control resources.

The amount of time or labour women spend on agriculture can affect their own health and energy expenditure. In addition, caring practices (such as breastfeeding and meal preparation) can be affected adversely where women's labour

burden is heavy (Reid & Chikarate, 2013). Women indicated during the FGDs that CA increased their time availability, which enabled them to breastfeed more frequently, prepare more healthy and diverse meals, and take time to rest. Women reported to have increased the diversity of the diets of their children by adding groundnuts to infant porridge and by purchasing additional food items such as sugar, cooking oil and animal-sourced foods. However, the diet diversity of most of these children is still not meeting World Health Organization (WHO) recommendations of at least four food groups daily. Nutrition-promotion activities and demonstrations of food preparation could optimise infant and young child feeding practices based on the additional food production and food purchases achieved by CA.

Women in Zambia tend to have greater control over groundnuts as these are seen as "women's crops". Groundnuts can be used for both home consumption and provide income with a potential positive impact on nutrition (Nyange, Johnsen et al, 2012). The use of intercrops and crop rotations in CA with vegetables and pulses, when under the management of women, is likely to contribute to household food security and diversify consumption.

Increased time availability has the potential to improve nutritional outcomes of both the woman herself and her children. The women indicated that time availability was increased by the use of herbicides and mulches that reduce weeding demand. There was also the opportunity to spread out labour for land preparation over a longer period of time under CA, compared to conventional practices. However, stakeholders contested that overall CA may not always decrease

Figure 1 Pathways between agriculture and nutrition (Herforth & Harris, 2014)

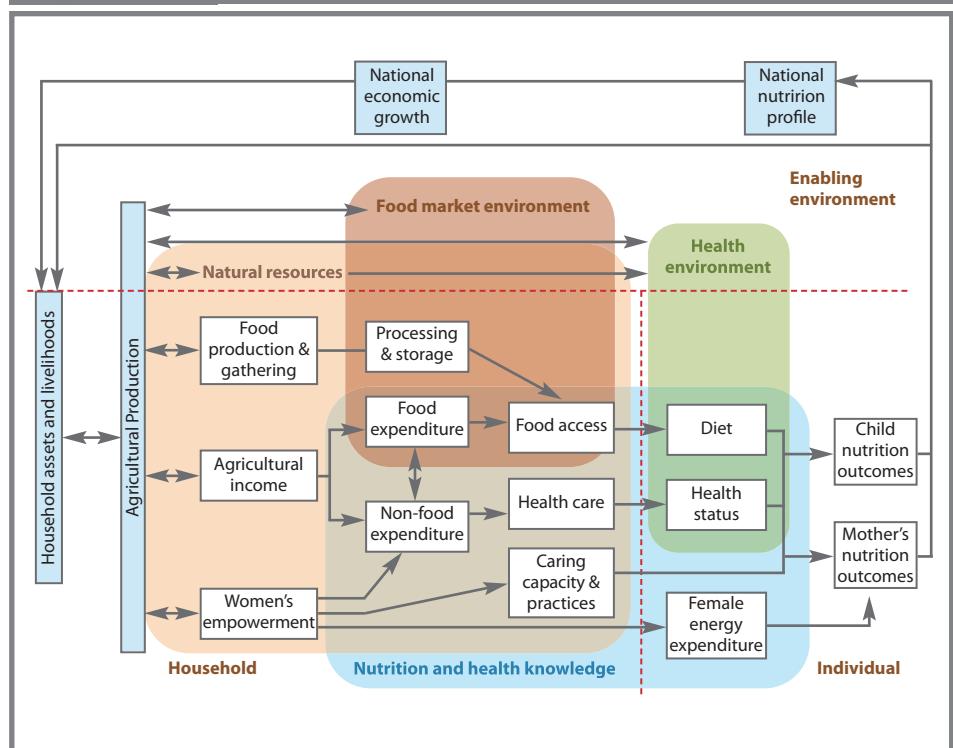


Table 1 Summary recommendations to increase the nutritional impact of CA programming

1. Incorporate explicit nutrition objectives and indicators into their design
Include specific dietary-related nutrition objectives into CA projects and means of verification, M&E systems to include agricultural diversity and consumption indicators, and mitigation of possible harm by introducing testing for herbicides and mycotoxins.
2. Assess the context at the local level
Consider the impact of labour demands on women. Different agro-ecological zones need tailored CA approaches and farmers must be encouraged to experiment with cropping systems.
3. Target the vulnerable and improve equity
Women and poor farmers need to be included in CA and provided with access to necessary inputs if they are unobtainable.
4. Collaborate and coordinate with other sectors
CA to work with other sectors to identify synergies and gaps in addressing causes of malnutrition.
5. Maintain or improve the natural resource base
CA is well designed to improve natural resource base, particularly conservation of soil and water use and the integration of trees.
6. Empower women
Women need to be targeted for technical support as they are gatekeepers for nutrition and are often underserved by extension and other agriculture support services. Recruitment of female extension staff for CA promotion, consideration of appropriate labour-saving tools and inclusion of actions that promote gender equality in CA interventions can support women's empowerment.
7. Facilitate production diversification and increase production of nutrient-dense crops and small scale livestock
Crop rotations/intercropping with legumes is one of the pillars of CA. There is potential in diversifying cereal crops and the use of nutritious intercrops and groundcover crops. The nutritional quality of food produced by CA needs investigation through research.
8. Improve processing, storage and preservation
Support is needed on post-harvest handling of cereals and legumes to extend supply for household and sale. Aflatoxins testing and measures to reduce contamination are important as well as attention for post-harvest processing methods that retain nutrients.
9. Expand markets and market access for vulnerable groups, particularly for marketing
The market for legumes and access to appropriate seed needs support because these are limiting production.
10. Incorporate nutrition promotion and education
Support to improve utilisation and processing foods is needed to improve infant and young child feeding practices and raise awareness on healthy diets. Risk of overweight and healthy food choices should be taken into account in promotional activities.

labour and increase time availability as making planting basins or holes (where there is no access to draught animal power) is heavy work, and not ploughing can increase weed burden. Both weeding and hoe-based conservation agriculture are traditionally seen as women's work and this is an area that requires further investment, including expanding affordable access to ripping (a form of tillage) services and other labour-saving equipment.

Natural resources

In theory, improvements in soil fertility lead to improved nutritional quality of foods (Lal, 2009). Links between CA and nutritional quality of foods could be mediated through soil improvement; for example, the pH of the soil affects nutrient uptake by plants; arbuscular mycorrhizal symbiosis (a relationship between plant roots and fungi that enhances uptake of nutrients by plants) could be better preserved in minimum tillage practices (Antunes, Franken, et al, 2012), and better nutrient uptake by plants and the additional soil organic matter could improve nutrient content of grains (Baraski, Srednicka-Tober, et al, 2014). CA projects could theoretically reduce mycotoxin contamination by promoting various measures, such as use of lime, farmyard manure and crop residues. Any gains in nutritional value of crops achieved by these means need to be maintained post-harvest through nutrient-retaining methods of storage, processing and cooking. A potential risk with CA practiced in Zambia is contamination of food with herbicides where these are used; they are also a potential hazard for farm workers.

Potential impacts on nutrition from Conservation Agriculture

Based on the testimonials of CA farmers, dietary and nutritional improvements resulting from CA could include

the following: 1) Increased own production and consumption of CA crops (cereals and legumes); 2) Increased time availability and increased agricultural diversity that could contribute to improved infant and young child feeding practices; 3) Increased production of livestock products and vegetables due to additional time available; 4) Purchase of other foods with extra income derived from CA; and 5) Possible improvement of nutritional quality of food grown on improved soils.

Possible negative consequences may arise from the increased consumption of highly processed foods and excess animal products through food purchases and through herbicide contamination.

Recommendations and programme implications

Table 1 provides a summary of recommendations to increase the nutritional impact of CA programmes based on the research and structured under the FAO key programming principles for improving nutrition through agriculture. Concern Zambia is taking these principles on board within current programmes that work with smallholder farmers and promote CA. Activities include the promotion of legumes and access to legume seed, inclusion of activities to promote gender equality, linking to government service providers for the delivery of nutrition behaviour change communication, considering diet diversity as a potential outcome of agriculture interventions, and promoting diversification of production.

The full Concern Worldwide Zambia report and research brief can be found at <https://www.concern.net/resources/potential-nutrition-sensitive-conservation-agriculture-zambia-full-report-and-brief>.

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Use of a two-stage approach to identify intervention priorities for reduction of acute undernutrition in Abaya district of Ethiopia

By Katja Siling, Asrat Dibaba and Mark Myatt



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Location: Ethiopia

What we know: Good, context-specific information is key to selection and design of effective nutrition-sensitive programming.

What this article adds: In 2014, World Vision piloted an approach in Abaya, Ethiopia that combined data from a case-control study and a cross-sectional survey to identify probable and important causes of undernutrition to inform nutrition-sensitive programming. A matched case-control study identified probable causes (exposures) and their strength of association; access to safe drinking water and infection (i.e. diarrhoea, cough, malaria) were identified as the probable main contributors to undernutrition in children. A cross-sectional survey assessed their prevalence; this was used to estimate population attributable risk that informed selection of water, sanitation and hygiene (WASH) and health interventions. In Abaya it was estimated that interventions targeting diarrhoea, cough, lack of mosquito nets and poor access to safe drinking water could help prevent 92% of severe acute malnutrition (SAM) cases if they are 80% effective and have at least 50% coverage. The two-stage approach is relatively cheap, quick, and can be tailored to programme needs; cost data can be added.

Undernutrition is a major cause of mortality in children and it is also an underlying cause of child deaths associated with other illnesses, such as pneumonia and malaria (Laura, Caulfield, de Onis et al, 2004). Infectious diseases, food security, feeding practices, water and sanitation, and access to health service all impact the nutritional status of children and adults. An integrated and multi-sectoral response addressing a broad range of the determinants of undernutrition is, therefore, more likely to be effective in decreasing the incidence, prevalence, and severity of undernutrition than any single intervention. We might term this integrated approach “nutrition-sensitive programming”. Nutrition-sensitive programming holds great promise for improving nutritional outcomes and enhancing the coverage and effectiveness of nutrition-specific interventions (Ruel & Alderman, 2013). Such an approach to programming is endorsed by an increasing number of humanitarian organisations and non-governmental organisations (NGOs) aiming to reduce the incidence of malnutrition and its sequelae.

In this article we describe a two-stage approach to providing information needed for planning *nutrition-sensitive programming*, which we define as the selection and design of practicable interventions against probable and important causes of undernutrition. By combining data from a case-control study and a cross-sectional survey we can identify probable important causes

of undernutrition and assess the likely impact of interventions. World Vision (WV) piloted this approach in April-May 2014 in Abaya district in Oromia region of Ethiopia, where undernutrition in children under five years remains a significant problem. The objective of the pilot was to prioritise interventions and inform programme strategies for the prevention of undernutrition in children. This article describes the methods used and our experiences with this pilot.

Probable causes

Most epidemiological studies are observational. This means that they find associations between exposures (putative causes) and outcomes (disease). An observed association may point to a real cause or may be due to chance, bias, or confounding (i.e. due to an association between a factor and exposures that are more directly associated with the outcome of interest). The effects of chance, bias and confounding can be minimised by careful design and execution of studies (i.e. in terms of sample size, clear and appropriate definitions for cases and controls, instrument design, data-quality, supervision, stratification, and matching). A number of data-analytical techniques (e.g. stratified analysis, logistic regression, conditional logistic regression) are available that can identify and control for confounding. Case-control studies have considerable advantages in terms of practicability (e.g. cost, rapidity) and statistical power over other study designs. A matched

Table 1 Adjusted odds ratios for the largest risk factors for undernutrition

Exposure	Adjusted OR (95% CI)
No access to safe drinking water	8.5 (1.9; 37.5)
Recent diarrhoea	13.5 (3.4; 53.7)
Recent cough	4.9 (1.5; 16.0)
Not sleeping under a mosquito net	6.2 (1.8; 21.8)

case-control design for nutrition causal analysis has been developed and tested as part of the SQUEAC (semi-quantitative evaluation of access and coverage) toolbox (Nwayo & Myatt, 2012), (Ratnayake, Tesfai & Myatt, 2013), (Tesfai, Ratnayake & Myatt, 2013).

Important causes

The *importance* of a cause is determined by both (1) the strength of the association between an exposure and the outcome of interest, and (2) the prevalence of that exposure. It is measured by the *population attributable risk* (PAR):

$$PAR = \frac{p(RR - 1)}{p(RR - 1) + 1}$$

where RR is the *risk ratio* associated with an exposure (this is a measure of the strength of association between an exposure and an outcome) and p is the prevalence of exposure in the population.

The PAR provides an indication of the amount of the incidence of disease that can be attributed to a specific exposure or the percentage reduction in the incidence of a disease that could be expected in a given population if the exposure were eliminated entirely.

Probable and important causes

Identifying probable and important causes is, in the approach described here, a two-stage process:

1. A matched case-control study identifies probable causes (exposures) and their strength of association with the outcome of interest (undernutrition).
2. A cross-sectional survey estimates the prevalence of the identified exposures (probable causes).

Stage one: Matched case-control study

A semi-quantitative causal analysis combining qualitative investigation and a matched case-control study was carried out with the aim of identifying probable causes of undernutrition following the SQUEAC causal analysis method (Ruel & Alderman, 2013), (Nwayo & Myatt, 2012), (Ratnayake et al, 2013). The qualitative stage collected data from a wide range of informants (i.e. village leaders, community health workers, mothers, fathers, WV staff) using a variety of methods (i.e. semi-structured interviews, informal conversations, focus group dis-

Table 2 The prevalence of risk factors for undernutrition identified in stage one

Exposure	Adjusted OR (95% CI)
Recent diarrhoea	18.8% (10.1%; 29.9%)
Recent cough	17.0% (11.3%; 22.6%)
Not sleeping under a mosquito net	48.25% (40.23%; 55.56%)
No access to probable safe drinking water	11.07% (4.62%; 18.28%)

cussions) and identified a number of potential risk factors/exposures for further investigation. The quantitative stage was a matched case-control study. Thirty-four cases (current SAM cases) were recruited from health centres delivering Community-based Management of Acute Malnutrition (CMAM) services and from the community by active case-finding. Cases were matched with 136 controls (children without SAM, moderate acute malnutrition (MAM), or global acute malnutrition (GAM) based on age and sex (i.e. four matched controls for each case). The following potential risk factors were positively associated with undernutrition in a bivariate analysis and further investigated:

- No access to safe drinking water
- Household without livestock
- Household hunger
- Inadequate meal frequency
- Inadequate dietary diversity
- Recent fever
- Recent diarrhoea
- Recent vomiting
- Recent cough
- Not sleeping under a mosquito net
- Short birth interval

These potential risk factors for undernutrition were entered into a conditional logistic regression model and non-significant variables were removed using stepwise backward elimination. Birth interval as a risk factor was not included in the model due to there being too many missing values.

After removal of non-significant variables from the model, the final model contained only variables with significant and independent associations with being a case. These were:

- No access to safe drinking water
- Recent diarrhoea
- Not sleeping under a mosquito net
- Recent cough

The strengths of the association between these exposures and SAM were calculated using the odds ratio (OR) (see Table 1).

These findings suggest that access to safe drinking water and infection (i.e. diarrhoea, cough, malaria) are the probable main contributors to undernutrition in children in Abaya woreda (district). Contrary to expectations, agricultural factors such as land ownership, number of improved agricultural practices used, variety and type of crops grown, livestock holdings,

number of income sources, etc. were not significantly associated with undernutrition.

Stage two: Cross-sectional survey

A cross-sectional survey using rapid assessment method (RAM) was conducted immediately following the case-control study with the view to assessing the prevalence of risk factors for undernutrition identified in stage one (see Table 2).

Carers of 262 children from 16 garis (villages) in eight intervention kebeles (sub-districts) were interviewed. Four teams of two data collectors completed the RAM survey in five days. This was longer than anticipated, primarily due to market days and poor accessibility due to a combination of difficult terrain and heavy rainfall.

Combining the information: Population attributable risk

OR is a good measure of effect but, when choosing the intervention that will have the biggest effect on the outcome, the prevalence of the risk factors in the population should also be considered. For example, an exposure strongly associated with the disease but of low prevalence in the population may cause fewer cases than an exposure that has a smaller effect but is more common in the population. PAR combines effect, size and prevalence of exposure to provide information that can inform prioritisation of interventions.

An estimate of the RR is required to calculate the PAR, but a case-control study provides estimates of the OR. It is possible to estimate risk ratios from cross-sectional survey data, but such a survey would be very expensive because it would require a very large sample size to provide sufficient statistical power to identify probable causes. When dealing with rare conditions such as SAM, the OR and RR are very similar to each other (Greenland & Robins, 1988), so our solution was to estimate RR from a case-control study by using SAM (i.e. a rare condition compared to GAM), so that the OR can be used to estimate the RR as a case-definition.

The information from the matched case-control study and the RAM survey were combined to calculate the PAR and estimate the proportion of SAM cases that might be prevented if the identified exposures were removed (see Box 1).

In our case, if the exposures diarrhoea, cough, not sleeping under a mosquito net and not drinking safe water were eliminated, up to 70%, 40%, 72% and 45% of SAM cases respectively could be avoided. This assumes complete elimination (i.e. 100% effective interventions delivered with 100% coverage). Such high levels of effectiveness and coverage are not usually achievable, so the PARs usually overestimate what can be achieved.

The maximum effect of the interventions eliminating all of the exposures can be estimated using a combined PAR. Summing the exposure-specific PARs often results in a combined PAR > 1. This is an impossible and meaningless value.

BOX 1 PARs associated with each exposure

$$PAR_{\text{Diarrhoea}} = \frac{0.188(13.5-1)}{0.188(13.5-1)+1} = 0.70$$

$$PAR_{\text{Cough}} = \frac{0.17(4.9-1)}{0.17(4.9-1)+1} = 0.40$$

$$PAR_{\text{No mosquito net}} = \frac{0.483(6.2-1)}{0.483(6.2-1)+1} = 0.72$$

$$PAR_{\text{Drinking water}} = \frac{0.111(8.5-1)}{0.111(8.5-1)+1} = 0.45$$

BOX 2 "What if?" elimination of the exposure assuming 80% effectiveness and 50% coverage of interventions

If the coverage of each intervention was 50% and the efficacy of each intervention was 80%, we would expect a 40% (i.e. 50% of 80%) reduction in each of the exposures.

The "what if" prevalences would be:

$$P_{\text{Diarrhoea}} = 18.8 + (1 - 0.4) = 11.3$$

$$P_{\text{Cough}} = 0.17.0 \times (1 - 0.4) = 10.2$$

$$P_{\text{No mosquito net}} = 48.3 \times (1 - 0.4) = 29.0$$

$$P_{\text{Drinking water}} = 11.1 \times (1 - 0.4) = 6.7$$

The "what if" PARs would be:

$$PAR_{\text{Diarrhoea}} = \frac{0.113(13.5-1)}{0.113(13.5-1)+1} = 0.59$$

$$PAR_{\text{Cough}} = \frac{0.102(4.9-1)}{0.102(4.9-1)+1} = 0.28$$

$$PAR_{\text{No mosquito net}} = \frac{0.29(6.2-1)}{0.29(6.2-1)+1} = 0.60$$

$$PAR_{\text{Drinking water}} = \frac{0.067(8.5-1)}{0.067(8.5-1)+1} = 0.33$$

The "what if" effect of a combined intervention would be:

$$PAR_{\text{Combined}} = 1 - (1 - 0.59)(1 - 0.28)(1 - 0.60)(1 - 0.33) = 0.92$$

About 92% of SAM cases could be prevented.

Curative programmes will still be required, although they may be reduced in scale.

The problem is that cases that could be avoided by removing either one or another exposure are counted more than once. The combined PAR indicating the proportion of undernutrition that can be attributed to all exposures is better estimated using a multiplicative model:

$$\begin{aligned} PAR_{\text{Combined}} &= 1 - (1 - PAR_1)(1 - PAR_2) \dots (1 - PAR_n) \\ &= 1 - (1 - PAR_{\text{Diarrhoea}})(1 - PAR_{\text{Cough}}) \dots (1 - PAR_{\text{no mosquito net}})(1 - PAR_{\text{Drinking water}}) \\ &= 1 - (1 - 0.70)(1 - 0.40)(1 - 0.72)(1 - 0.45) \\ &= 0.97 \end{aligned}$$

It is important to note that 0.97 (i.e. 97% of cases avoided) is the maximum effect of the interventions, given 100% effectiveness and 100% coverage. Partial elimination of the exposure may be modelled by varying the exposure parameter p in the PAR formula (see Box 2).

The combination of the resulting sets of information (i.e. strengths of probable causes of undernutrition and the prevalence of those causes) in the PAR allowed WV to identify a set of potentially impactful interventions to reduce undernutrition in Abaya woreda. This analysis suggests the sets of interventions listed in Table 3.

Discussion

PARs can be ranked by likely effect of the intervention; effective and high coverage intervention against the exposure with the largest PAR will have the largest impact in reducing the incidence and prevalence of malnutrition. In Abaya, interventions targeting main causes of malnutrition (diarrhoea, cough, lack of mosquito nets and poor access to safe drinking water) could help to prevent 92% of SAM cases if they are 80% effective and have at least 50% coverage.

The advantage of this two-step approach to prioritising interventions is that it is relatively cheap, quick and identifies exposures associated with the most life-threatening form of undernutrition (SAM rather than MAM). The sample size required for a case-control study is considerably smaller than a sample size needed for a cross-sectional survey with the same statistical power. The survey can assess a small number of exposures and because the prevalence estimate does not need to be made with great precision, it can be done quickly and cheaply. A SMART survey could have been used instead of RAM; however due to limited time and financial resources, RAM was chosen as the preferred method because of its rapidity and lower cost.

This approach can be further tailored to address the needs of the organisation. Uncertainty can be incorporated by using the confidence intervals associated with the estimates of effect and prevalence of exposure. "What if?" scenarios can be modelled to explore the impact of incomplete coverage and efficacy of interventions and linear optimisation (linear programming) techniques can help with the selection of optimal sets of interventions. The information can feed into the programme management cycle and be used for designing and reviewing interventions. For organisations with limited resources, the ability to choose the most effective interventions that will achieve the greatest impact is particularly important. Further, combining this information with costs of interventions can provide good guidelines on what the intervention priorities should be and how resources can be used most efficiently in order to achieve the highest impact at the lowest cost.

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Table 3 Suggested sets of interventions to reduce undernutrition in Abaya woreda

Sector	Intervention	Rationale
WASH	Hygiene promotion	Diarrhoea: primary prevention
	Increasing safe drinking water availability	Diarrhoea: primary prevention
Health	Promotion of oral rehydration solution (ORS) use	Diarrhoea: secondary prevention
	Promotion of mosquito net use	Febrile illnesses: primary prevention
	Rotavirus vaccination in EPI	Diarrhoea: primary prevention
	Improved provision of antimicrobials at PHC facilities	Infections: secondary prevention

Increasing nutrition-sensitivity of value chains: a review of two Feed the Future Projects in Guatemala

By Alyssa Klein



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This article draws on the following report: SPRING (2015). Increasing Nutrition Sensitivity of Value Chains: A Review of Two Feed the Future Projects in Guatemala. Arlington, VA: USAID/SPRING project. See www.spring-nutrition.org/publications/briefs/increasing-nutrition-sensitivity-value-chains-review-two-feed-future-projects



J McNulty, Guatemala 2014

Location: Guatemala

What we know: The effect of agriculture on nutrition may be leveraged in many ways through income, production and empowerment of women and is influenced by the environment.

What this article adds: A qualitative study by SPRING examined USAID agriculture value-chain activities in two Guatemala projects to explore impact assumptions and investigate ways to improve nutrition sensitivity. Expected increased income has not (yet) materialised for coffee (annual income) and green beans (saturated market) value chains. Handicrafts value chain reported increased income and demand (with some associated challenges identified). Soil erosion, deforestation and lack of water were reported as large constraints. Identified opportunities to improve nutrition-sensitive outcomes included improved labour-saving technologies (affecting women's time), expanded messaging on feeding practices, improved childcare services, and expanded markets.

Introduction

Agricultural livelihoods affect nutrition of individual household members through multiple pathways and interactions. The conceptual pathways between agriculture and nutrition summarise current knowledge to leverage agriculture to improve nutrition. Figure 1 illustrates how various agricultural outcomes might improve

access to food and health care; how they impact and are affected by the enabling environment; and ultimately how they affect the nutrition of women and children.

In general, the pathways can be divided into three main routes at the household level: 1) food production, which can affect the food available for household consumption as well as

Figure 1 How agricultural outcomes may contribute to improved nutrition

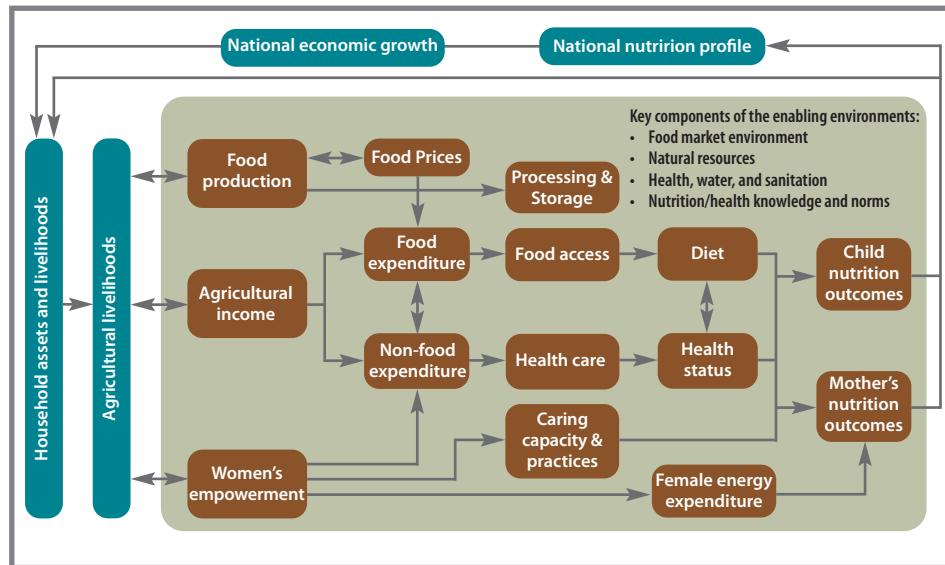
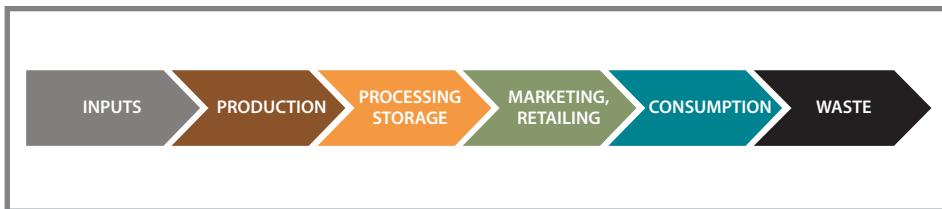


Figure 2 Key stages of an agricultural commodity value chain and food system



the prices of diverse foods; 2) agricultural income for expenditure on food and non-food items; and 3) women's empowerment, which affects income, caring capacity and practices, and female energy expenditure. Acting on all of these routes is the enabling environment for nutrition, including several key components: natural resources, food market and health, water, and sanitation environments; nutrition/health knowledge and norms; and other factors such as policy and governance (Herforth & Harris, 2014).

The three starting points in the pathways diagram (production, income and empowerment) represent outcomes of agricultural commodity value chains functioning within the larger food system. Improvements can be made to enhance nutrition outcomes of the value-chain activities, regardless of the selected crop's nutrition content. Each stage of the value chain and food system – inputs, production, processing, storage, retail, consumption, and waste and recycling (Figure 2) – may present a number of opportunities to enhance nutrition sensitivity.

Context

Chronic malnutrition rates in Guatemala have remained stubbornly high; with 54% of children under five years of age being moderately to severely stunted, the country ranks third-highest in the world for undernutrition (UNICEF, 2009). Among rural and indigenous children in Guatemala, national stunting rates are 59% and 66% respectively. These rates of stunting reach even higher levels in some regions of the Feed the Future zone of influence, which includes 30 municipalities in five departments of the Western Highlands: Totonicapán, San Marcos, Huehuetenango, Quetzaltenango and Quiché (Feed the Future, 2011). As part of its effort to confront the challenge of undernutrition, the Government of Guatemala is implementing a multi-sectoral response through its Zero Hunger strategy and donor support from the Feed the Future initiative. In Guatemala, Feed the Future applies the value-chain approach to transition families out of poverty and improve both their incomes and access to food. Complemented by improved access to health services, potable water and comprehensive hygiene and nutrition education, agricultural value-chain activities are expected to reduce poverty and improve nutrition for the targeted population.

USAID designed two value-chain projects for income-generation interventions that focused on coffee, handicrafts and horticulture value chains in Guatemala's Western Highlands. The

projects are expected "to improve household access to food by expanding and diversifying rural income and to contribute to improve the nutritional status of families benefited under this programme" (USAID Guatemala, 2011). This is to be accomplished by "expanding the participation of poor rural households in productive value chains, and linking these chains to local, regional, and international markets" (USAID Guatemala, 2011). The focus is especially on female farmers.

Methods

During this qualitative study, which took place in September 2014 as part of a SPRING technical assistance visit, we conducted field visits and consultations with a range of stakeholders, including implementing partner staff, input suppliers and buyers and producer cooperative members. During these interactions we looked for opportunities to reduce or mitigate the underlying causes of undernutrition along the three specific commodity value chains of coffee, green beans and handicrafts. We used the pathways diagram as a framework to organise our findings and provide recommendations based on where current interventions were situated relative to the pathways diagram.

The study included a document review, focus group discussions (FGDs) and key informant interviews (KII). Primary data collection consisted of KII with the project staff of the prime and sub-implementers. KII were also conducted with buyers and suppliers to the surveyed cooperatives. FGDs were held with farmer and producer cooperatives, especially during the coffee and green bean value-chain activities. Around six FGDs were held, with 10-15 participants in each. About 30-40 project staff were interviewed. Most of the FGD and KII participants were men.

An assumption underlying the selection of the value-chain commodities was that, due to the strong export market for these commodities, efforts to strengthen each step of the value chain would result in improved income for the range of actors involved, especially smallholder producers and home-based artisans. It was further assumed that an increase in income would contribute to an improvement in nutritional status among participant households. (The projects do not measure nutritional status; however they are part of the portfolio of projects in the Feed the Future Zone of Influence (FTF ZOI). As part of the FTF ZOI, stunting will be measured at a population level and all projects are expected

to contribute to a reduction in stunting; however they are not being held individually responsible for measuring nutritional status among their own beneficiaries. In other words, the income-to-food and health services purchase pathways would be the primary avenues for linking agriculture and nutrition in these activities.

The export product of green beans was chosen for horticulture because it is one of the two primary crops grown by a majority of project-supported producers. Coffee was selected because it is the primary focus crop for one of the projects and is the crop with the highest earning potential for clients. The handicrafts value chain is a smaller focus for both of the projects and represents a new source of non-agricultural income with high levels of demand from international buyers.

Findings

The findings of this study reveal opportunities to incorporate nutrition-sensitive agriculture thinking and interventions across the projects as well as within the enabling environments of each commodity value chain. Although the objective of both activities was to increase income for value-chain participants, coffee and green bean producers reported that they had not yet perceived a noticeable increase in household income. Recall and perception might be influenced by their cash flow, as green bean and coffee producers in the participating cooperatives are paid annually, at the end of the harvest, which had occurred a few months before this study took place. For year-round cash flow, producers reported relying on loans from the cooperatives. On the other hand, handicraft producers reported increased earnings and identified an impact on household investments and priorities. The project will be collecting data on income in the endline survey.

During interviews, several opportunities for increasing and strengthening production and processing practices to improve nutrition-sensitive outcomes were mentioned. There is not a standardised set of messages about best agricultural practices, although each cooperative has technicians who are available to provide trainings and support farmers. The technicians noted that, with improved techniques, production on the currently cultivated land could significantly increase. There is no significant incentive for increasing production of green beans, however, as that market is saturated: following the 2013 harvest, producers destroyed a portion of their crop because they did not have buyers who could purchase all of it. Small greenhouses were identified as an opportunity to grow new crops, such as asparagus, for which there is buyer demand. Increases and diversification of production were seen as ways to both increase income and diversify consumption.

The need for technologies that save time and to diversify and increase production and income opportunities were mentioned by both farmers and technicians during interviews. Technologies such as coffee pulpers and dryers that would

allow producers to process crops at the cooperative level were noted to ensure consistent quality and avoid waste. A drip irrigation component, introduced in some green bean cooperatives, reaches only a small percentage of producers: 2% in one cooperative and 18% in another.

Processing and storage techniques were also discussed as areas of opportunity as most of the cooperatives do not process products on-site. Green beans are collected by the buyer and sorted at a factory, with the rejected portion destroyed. The few cooperatives that process horticultural products did not participate in this study. Coffee producers complete most of their own drying and pulping at home. In 2013, a percentage of the crop was lost because coffee fermented when a rainy harvest season made it impossible for farmers to dry the beans.

The value chains have few if any links to local markets because they do not pay well enough. Although horticulture cooperative members acknowledged demand for horticulture products, farmers prefer to grow products for buyers who will guarantee prices and pay freight costs. Producers mentioned that they keep some of their crop to consume at home. Additionally, there seems to be interest in the home garden component that both activities promote for home consumption, but many producers lack sufficient land or water to grow everything they consume at home and so prioritise export crops. Availability and access of diverse and nutritious foods locally are limited in some project areas; opportunities for the cooperatives to sell more should be explored.

Members of every cooperative interviewed identified soil erosion and deforestation as some of the greatest challenges for local farmers and communities. Long-term water availability is another concern. Participants from primary buyers mentioned that the main motivation for working with cooperatives located a significant distance from their factory is access to community water sources for irrigation, as community water sources are lacking in many areas close to Guatemala City. None of the cooperatives has a strategy in place to address the challenges of deforestation, lack of water or soil erosion.

Although handicrafts comprise the smallest value chain, the potential for growth is large and a ready market exists. One project is revitalising handicrafts traditions that had nearly disappeared in the Western Highlands. This has resulted in new jobs and an additional source of regular income. Unlike horticulture producers, as handicrafts producers learn to create high-quality products they have become unable to meet demand. One interviewee mentioned that the project hopes to work with handicraft producers to create business plans that include cost structures as activities have not calculated projections for linking improved production capacity, costs and markets. Previously, producers have been forced to incur a loss when selling products because they were unaware of production costs when accepting the work.

Nutrition-sensitive opportunities along the value chain

The findings revealed the following opportunities to incorporate nutrition-sensitive agriculture thinking and interventions in the Guatemala programmes:

INPUTS

Technologies like drip irrigation and greenhouses could improve resilience, increase productivity and save producers time and/or energy. Labour-saving technologies could decrease the amount of time spent on farming activities, especially for women, and allow more time for other activities, such as childcare.

PRODUCTION

Production methods like improved water and soil management could increase income and decrease time and labour demands by mitigating erosion and maintaining nutrients in the soil and crops. Additionally, sustaining soil health and water availability could allow farmers to produce on limited land over the long term, increasing their resilience.

PROCESSING
STORAGE

Bulk drying and pulping of coffee during wet seasons could decrease waste caused by fermentation and the amount of waste water runoff into local streams, which are used for household consumption.

MARKETING,
RETAILING

Marketing and retailing practices could expand and diversify the number of domestic and international buyers to improve farmers' bargaining power and reduce producers' risk. Such expansion could create a broader range of potential markets, as well as new incentives and income opportunities. Additionally, expanding local demand could relieve saturated export markets and extend the season for producers, improving year-round food availability and access for producer households, as well as the availability and diversity of nutritious foods in local markets for consumers.

CONSUMPTION

Expanded messaging could improve consumption and feeding practices, especially among households with children. Producer cooperatives, processors and other businesses operating within any given value chain could facilitate the establishment of practices that maximise women's time and enhance their ability to care for very young children. For example, businesses could provide on-site childcare services, as well as

time and space for breastfeeding infants and feeding young children.

WASTE

Safe disposal of agricultural waste materials such as empty pesticide containers could help deter people's use of pesticide-contaminated containers to store drinking water and food, which would improve health.

Conclusion

More evidence and practical examples are needed to enhance opportunities to make value-chain activities more nutrition-sensitive. Feed the Future projects include a number of value-chain activities that can test assumptions and identify better practices and opportunities for improvement. There is still a lack of clarity about how value-chain activities should be expected to contribute to nutrition outcomes, as well as what projects that work with value chains should measure and how. Instead of funding activities with separate streams for agriculture and nutrition interventions, multi-sectoral work that improves the nutrition sensitivity of any value chain, regardless of the commodity's nutritional content, should be funded. Good agriculture practices can be nutrition-sensitive in and of themselves and can yield increased production of diverse foods, improved soil and environmental health, increased incomes for male and female producers, and make more time available for caregivers and other household members to spend caring for children.

Although reaching households is important for achieving maternal and child nutrition results, opportunities for linkages to nutrition must be considered thoroughly before they are implemented at (or applied to) the household level. The opportunities described in this report provide possible leverage points for making value chains more nutrition-sensitive. They also facilitate discussion on further developments that will contribute to improved nutrition and agriculture outcomes for Guatemala and other Feed the Future country portfolios.

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J Korir, ACF Kenya

Integrating MIYCN initiatives across sectors in Dadaab refugee camps in Kenya

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Location: Dadaab refugee camp, Kenya

What we know: In many refugee contexts, maternal undernutrition and sub-optimal IYCF practices contribute to the burden of acute malnutrition.

What this article adds: In 2011, UNHCR and partners renewed efforts to support maternal and IYCF nutrition (MIYCN) in established and new Dadaab refugee camps in Kenya where GAM and maternal anaemia were prevalent and feeding practices sub-optimal. Led by ACF, the initiative developed a common results framework and communication model with nutrition and health services and allied sectors such as WASH and livelihoods. Mother-to-mother support groups were at the cornerstone of the intervention. By 2014, GAM rates had fallen in the camps, largely attributable to improved MIYCN. A pilot of the UNHCR IYCF friendly framework will build on lessons and success to date.

Background

Dadaab refugee complex situated in Garissa County, a semi-arid part of North Eastern Kenya, was established in 1991 to cater for an influx of refugees from Somalia. Dadaab refugee complex has five camps; IFO, Hagadera and Dagahaley (in existence for 20 years) and two newly established camps; Kambioos and IFO 2, set up to host the new arrivals that came as a result of the 2011 influx following the worst famine in the Horn of Africa in 60 years. The total population of registered refugees as of 31 August 2015 is 349,280; this has reduced from 450,000 (2011) due to recent efforts made through the tripartite agreement between the Kenyan and Somali Governments and UNHCR on voluntary repatriation.

During the emergency response in 2011, the gains that had been made in improving infant and young child nutrition (IYCN) among children under five years was considerably eroded due to lack of effective monitoring and integration of activities into the mainstream routine health and

nutrition programmes. The situation was further exacerbated by the influx of Somali refugees and setting up of new camps. Results from the 2011 annual survey conducted in the refugee camps indicated a global acute malnutrition (GAM) rate of 20.4%, with exclusive breastfeeding (EBF) rates at 47.1% in Hagadera, IFO main 43%, Dagahaley 68.1% and IFO 2 41.2%. These were worse overall compared to previous years.

In order to scale up MIYCN activities urgently, UNHCR and UNICEF approached Action Against Hunger (ACF) with a primary goal of revitalising dormant MIYCN structures in the older camps, establishing structures in the new camps (Kambioos and IFO 2) and strengthening the existing structures in Hagadera. These activities were aimed at strengthening, integrating and sustaining MIYCN interventions within the mainstream health and nutrition programmes of partner organisations (International Rescue Committee (IRC) in Hagadera and Kambioos camps; Médecins Sans Frontières (MSF Swiss) in Daga-

haley camp; Islamic Relief Kenya (IRK) in Ifo main camp and Kenya Red Cross Society (KRCS) in Ifo II camp), as well as building their capacity.

Approach for establishing and revitalising MIYCN structures for improved nutrition outcomes

Various strategic engagements and discussions were held between ACF, UNHCR and implementing partners to aid in the integration of MIYCN into routine health and nutrition activities for improved health and nutrition outcomes. Capacity-building on MIYCN was conducted with partners to equip them with the necessary skills to protect, support and promote appropriate feeding practices. There was advocacy to partners on allocation of funds for preventive activities such as immunisation, micronutrient supplementation and MIYCN, especially during emergency response, and appropriate implementation of the same. During the strategic engagements with partners, joint work plans and a common results framework was developed. MIYCN was included as contributing to the larger framework, which involved building and sustaining basic MIYCN structures (network of MIYCN counsellors, mother-to-mother support groups, referral structures and minimum reporting) and integration of MIYCN into mainstream health and nutrition interventions. The idea was that if basic structures (as detailed above) are functioning effectively and MIYCN is mainstreamed in health and nutrition interventions and finally integrated across the sectors, optimal MIYCN outcomes that can be sustained will be achieved. Discussions were held (and are ongoing) on whether to conduct a knowledge, attitudes and practice (KAP) assessment separate from the annual UNHCR SMART (Standardised Monitoring and Assessment of Relief and Transitions)/SENS (Standardised Expanded Nutrition) surveys, due to challenges faced in monitoring MIYCN indicators during the annual survey. ACF designed and set up a robust and reliable M&E (monitoring and evaluation) system to effectively track and report MIYCN outputs and outcomes for MIYCN programmes. Data col-

lection tools for monitoring IYCN activities (largely process indicators) both at the community and health facility levels were jointly developed with partners in consultation with UNHCR and UNICEF. In addition, joint supervision was conducted by UNHCR, UNICEF, ACF and implementing partners across camps to monitor progress of MIYCN integration into routine health and nutrition activities.

Having noted the many strategies and approaches to improving MIYCN, there was a need to sustain the established structures and practices through integration into various sectors and adoption of a systematic behaviour change communication (Communication for Development (C4D) model. Formative research as part of C4D was conducted in June 2013 to determine factors influencing (predisposers, reinforcers, facilitators and inhibitors) MIYCN practices in the refugee camps. This found that knowledge on MIYCN among caregivers had generally increased as a result of previous and current MIYCN programming. However, adoption of optimal MIYCN practices, especially early initiation of breastfeeding, exclusive breastfeeding and appropriate complementary feeding, remained sub-optimal and below the universal World Health Organization (WHO) target of 80%. This was mainly attributed to strong cultural beliefs and practices among the refugee population. In addition, it was evident from the assessment that there was a lack of involvement by other sectors in supporting implementation of MIYCN activities, despite the existence of livelihoods; water, sanitation and hygiene (WASH); and child protection projects that could benefit the beneficiaries. A formative research report was formulated, guided by findings from the assessment and focused mainly on MIYCN practices, while delving into cross-cutting influences from other sectors such as health, protection, livelihoods and WASH, among others. This further set the stage for the design of the cross-sectoral C4D strategy that is systematic in achieving positive and holistic behaviour change in the refugee camps by leveraging other sectors.

Achievements realised

- Capacity strengthening of national qualified staff and incentivised staff (largely health) through classroom training, on job training, mentorship programmes and continuous medical education sessions; 80% of both of these cadres were reached. Implementing partners have full capacity to implement MIYCN activities and all camps have MIYCN steering committees that oversee implementation and ensure integration of all activities.
- Community sensitisation of key community members on MIYCN. This included traditional birth attendants; grandmothers; safe motherhood promoters; fathers; youth, religious and community leaders.
- Recipe development sessions and participatory cooking demonstration sessions at block level to improve dietary diversity.
- Intermediate baby-friendly hospital and community initiative (BFHI/BFCI) assessments and formation of BFHI committees.
- Sensitisation sessions for health workers and community members on the Breastmilk Substitutes (BMS) Act 2012.
- Formation and sustaining of 774 mother-to-mother support groups (MTMSGs) across all the camps, reaching an average of 11,610 pregnant and lactating mothers on a monthly basis.
- Formulation of a communication strategy, including development of key MIYCN messages and Information, Education and Communication (IEC) materials.

As MIYCN programming was strengthened, MIYCN practices overall improved. Over the same period, GAM prevalence and iron deficiency rate decreased (see Figure 1). It is likely that improved MIYCN practices coupled with improved emergency response interventions (including the general food ration) were key contributors of the improved situation.

Regarding trends in MIYCN practices reflected in Table 1, a dip in exclusive breastfeeding rates and a rise in infant formula use in 2013 likely reflects the transition period between ACF-led

Figure 1 Trends in MIYCN practices, child anaemia levels and GAM rates in Dadaab refugee camps

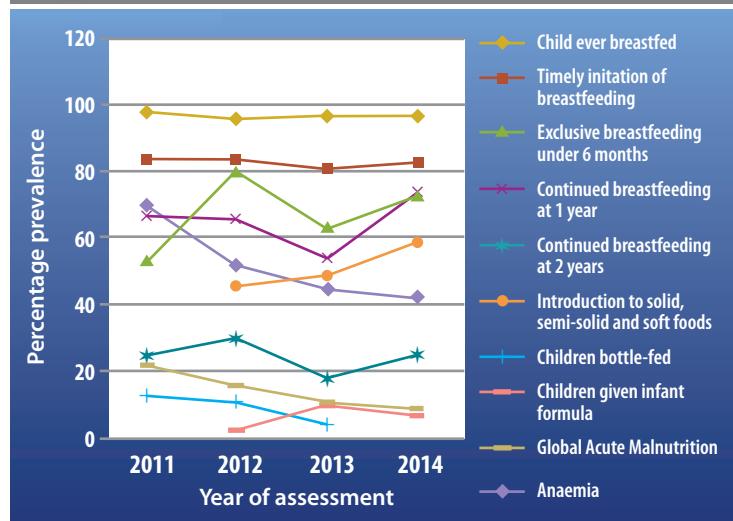
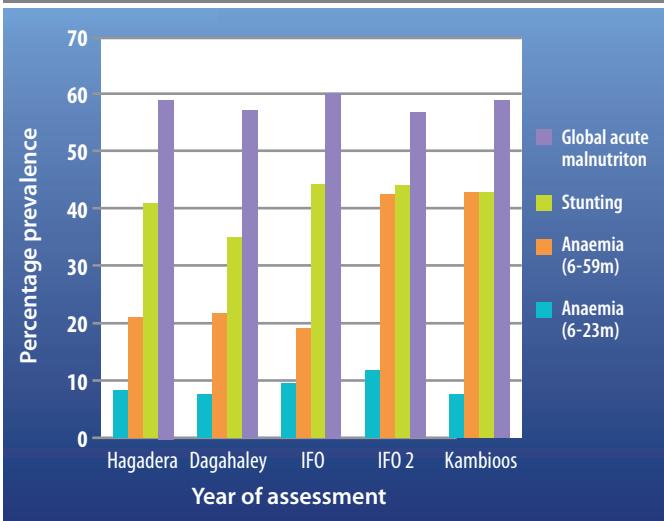
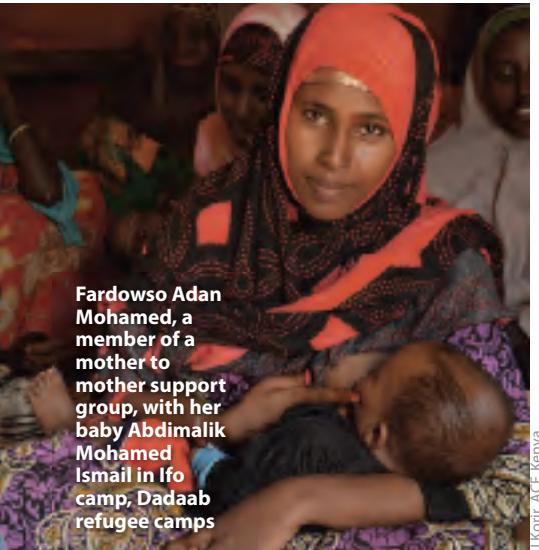


Figure 2 Prevalence of GAM, stunting, and child anaemia by camp, 2014





Fardowso Adan Mohamed, a member of a mother to mother support group, with her baby Abdimalik Mohamed Ismail in Ifo camp, Dadaab refugee camps

markets to improve complementary feeding. It is important for all livelihood partners to support MTMSG members in starting and sustaining cost-friendly activities (such as kitchen gardening) to help improve dietary diversity.

Integration of WASH activities into the MIYCN programme was also evident; all MTMSGs (which have an ultimate nutrition goal) were targeted with hygiene-promotion trainings on proper hand washing, safe water chain, and proper excreta disposal. Potties were provided to mothers with children aged between 12 and 18 months; pot filters (to filter water to remove residue and bacteria) were provided to mothers with children aged 0 to 6 months; while environmental kits for clean-up campaigns were provided to WASH committees who had received training in hygiene promotion.

intensive direct implementation in 2012 to partner-led implementation with minimal external support. Anaemia prevalence fell in children aged 6-59 months and pregnant and lactating women; both groups were targeted with micronutrient powders from 2011 to end of 2013. The prevalence of GAM, stunting and anaemia by camp in 2014 is shown in Figure 2.

Implementing recommendations: Bringing dynamics into the mechanics

With support from UNHCR, the project took advantage of various interagency fora to orient sector heads and programme staff on the importance of a multi-sector approach in integration of MIYCN for improved nutritional outcomes. Discussions were held during nutrition technical fora, health and nutrition coordination meetings and head of agency meetings on a monthly basis. In addition, various multi-sectoral workshops were held which led to development of a comprehensive Behaviour Change Communication (BCC) strategy highlighting key activities that facilitate integration of MIYCN into other sectors. The approach used was to link women engaged in MTMSGs as channels for dissemination of MIYCN behaviour-change communication to other sectors, programmes and interventions. The project took advantage of various interagency fora to orient various sector heads and staff on the importance of a multi-sector approach to integration of MIYCN for improved feeding practices and hence nutrition status. The Food Security and Livelihoods (FSL) and WASH sectors were some of the active participants and contributors during the process.

For example, MIYCN messages were mainstreamed in FSL programmes, such as fresh food vouchers supported by UN World Food Programme (WFP) aimed at complementing the general food distribution. Through orientation and meetings, the Danish Refugee Council has shown commitment to involve MTMSG members in their ongoing livelihood programmes to equip them with various skills on income-generating activities and village saving associations (VSLAs). This will enable the caregivers be to produce or purchase various foods available in the local

markets to improve complementary feeding. It is important for all livelihood partners to support MTMSG members in starting and sustaining cost-friendly activities (such as kitchen gardening) to help improve dietary diversity.

- be fully involved in the planning and implementation of MIYCN interventions. Examples of such involvement in this project include selecting mentor mothers; recruitment of incentive MIYCN counsellors; the community providing project insight during community dialogues; fathers supporting mothers; religious leaders mobilising the community during prayers; and shopkeepers scaling down the sale of infant formula to mothers.
- In addition to continued active participation in health and nutrition, there is a need to expand participation to other sectors such as water, sanitation, child protection, education, livelihoods, and shelter and protection. These sectors can provide a supportive structure for influencing MIYCN practices.
- Mothers base their infant feeding decisions on an array of factors, including their experiences, family demands, socioeconomic circumstances and cultural beliefs; hence these all affect optimal MIYCN practices. Maternal adherence to the WHO recommendations on MIYCN have also been found to be influenced by a host of other different and often inter-relating factors, including parental age, personality and educational attainment. In addition, the child's birth order in relation to other siblings and the influence of health professionals may also contribute to maternal behaviour.

Conclusions

The observed reduction in GAM rates is attributable to an improvement in emergency response interventions generally which involves an emergency service package of health, food security, protection, nutrition and livelihoods. However, amongst these MIYCN was singled out as a major preventive factor. Dadaab refugee camps were chosen in May 2015 to pilot the IYCF-friendly framework (see field article in this edition of Field Exchange). The pilot framework, led by UNHCR and Save the Children, will support MIYCN mainstreaming across sectors by creating momentum around IYCF and the framework, initiating collaboration and engagement from other sectors and strengthening the capacity of key IYCF actors to take the framework forward. To date, sector heads and staff from child protection, livelihoods and health have been oriented on the framework and have committed to implement activities that can be integrated into their sector interventions. WASH, education, and protection and shelter, among other sectors, will be prioritised in phase two of orientation, after child protection and livelihoods are judged to have been sufficiently engaged. Progress of the action points and commitment by partners from various sectors will be reviewed and discussed during bimonthly coordination meetings led by UNHCR. Discussion on how best to monitor implementation of the framework is ongoing, building on the headway already made by ACF.

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Data collection in 2005



S McKune, Niger, 2005

Impact of food aid on two communities in Niger

By Sarah McKune and Nicole Hood



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Data presented here were collected as part of the University of Arizona and British Red Cross Cash Distribution Study in 2005 and as part of Dr McKune's doctoral field research in 2010, which was funded by USAID's Collaborative Research Support Programme (LCC CRSP). This article relies heavily on Dr McKune's unpublished dissertation *Climate Change, Livelihood, and Household Vulnerability in Eastern Niger*.

Location: Niger

What we know: Food aid features in humanitarian response to food crisis to improve food security and halt or prevent a rise in acute malnutrition.

What this article adds: Longitudinal data were collected in five agropastoral communities affected by the 2005 and 2010 food crises in Niger to try to understand household vulnerability, the use of coping mechanisms, food security and nutritional status of children under five. Prevalence of acute malnutrition correlated positively with food aid in two of these communities, with improvements from 2005 to 2010 in Dareram and deterioration in Kékeni. Remittances from migrated family members and accessible-market foods contributed to coping capacity in Dareram. In Kékeni, anticipation of aid in 2010 influenced household migration patterns; response to food aid may trigger livelihood adaptation that increases or decreases household vulnerability. Timeliness of adequate food aid is critical; livelihood and livestock interventions are a necessary adjunct in pastoral communities.

Introduction

Niger, a land-locked country in the African Sahel, is one of the least developed countries in the world. Heavily reliant on rain-fed agriculture for its food supply, Niger's food security is highly vulnerable to the erratic rainfall patterns experienced across the Sahel in recent years. In particular, agricultural and agropastoral communities located in areas where rainfall is barely enough to sustain crop production in good years (and fails to do so as often as not) suffer from high rates of malnutrition and food insecurity. In years of crisis, such as 2005, 2010 and 2012, undernutrition rates soar. This article investigates the role of food aid in two Nigerien communities in Tanout District, Dareram and Kékeni, during the 2005 and 2010 food crises.

Niger is consistently ranked among the least developed countries in the world. Its population is among the most rapidly growing and relies almost entirely on subsistence, rain-fed agriculture for its food supply. Much of the Government's budget comes from foreign assistance; livestock

and uranium are among the few exported goods. The population of 19.1 million is projected to reach 24 million by 2020, due to the alarmingly high 4% growth rate. The prevalence of total undernutrition (defined as weight-for-height z-scores (WHZ) of <-2 and/or oedema) in 2009, a non-crisis year, was 12.3% in children under five, and prevalence of severe undernutrition (defined as WHZ of <-3) was 2.1% (UNICEF, 2009). In Zinder region, the research area for this study, the prevalence of total undernutrition was 15.4% in 2009. This was slightly above the 15% threshold used as an indicator of an emergency situation (UNICEF, 2009). Thus, even in normal years, nutrition is an urgent problem.

The Nigerien Government, along with national and international non-governmental organisations (NGOs) and United Nations (UN) agencies, monitors prevalence of undernutrition. Heightened undernutrition rates detected by surveillance of child growth serve as an indicator of impending crisis, particularly when they appear early in the year. Nationally, the multiplicity of causes of un-

dernutrition is complex and likely varies across crisis years, as does the national/international response triggered by crisis. In 2005, the national Government refused to acknowledge and appropriately respond to the severity of the food crisis and the international response was late and uncoordinated. Research indicates that the lessons learned by humanitarian aid groups in 2005 and changes implemented in policy and government response since then facilitated improved response during the 2010 crisis. In this instance, once again, crop and fodder production were low (much worse, in fact, than in 2005), and rates of undernutrition and child mortality were high. In stark contrast to the events of

2005, the 2010 response was timely, widespread and coordinated. One major exception to the improved response of 2010 was the limited access to the northern pastoral zone. This was due to the political insecurity that began in 2007 and which restricted the movement of humanitarian aid and development assistance personnel during the 2010 crisis. The presence and activity of an al Qaeda cell in Niger, al Qaeda in the Islamic Maghreb (AQIM), further complicated aid efforts: as the safety and security of expatriate staff working with international NGOs was jeopardised and aid workers were increasingly targeted, more and more NGOs pulled out of the region.

Method

This article utilises longitudinal data, first collected by the author as part of the University of Arizona and British Red Cross (BRC) 2005 Cash Distribution Monitoring and Evaluation team, then supplemented by data collected during research conducted in the same communities following the 2010 crisis. During both 2005 and 2010, household surveys, key informant interviews, focus groups and anthropometric measurements were conducted in five of the same communities to understand household vulnerability, the use of coping mechanisms, food security and nutritional status of children under five. Food security data and corresponding sample size came from

Case studies

Dareram

Dareram is a community of about 200 people situated in three small settlements. Predominantly Tuareg, community members are agropastoralists of the Icherifan clan (those that claim descent from the prophet Mohammed). Slaves of the noble Tuareg, their ancestors escaped and formed the community of Dareram. Initially, families continued to practice transhumance (seasonal movement of people with their livestock between fixed summer and winter pastures), and at least some part of the family would travel with small ruminants, camel and cattle toward Agadez in the north; however this practice has diminished over time because of declining herd numbers. As one participant stated, "Our grandparents were pastoralists, but we, we have come to know agropastoralism" (Dareram, male focus group, 2010). With unreliable rainfall and years of crisis repeating in shorter intervals, mobility has declined and reliance on crop production has increased. Not everyone cultivated crops before, but now community members feel it is clear that animals will be lost with each crisis, so the entire community has started cultivating crops.

This community has historically relied on the natural resource base of the area (such as famine food) during crisis years. Women would collect fodder to sell at market; household heads and families would collect wild foods to survive on through the crisis. Heads of household and young men would also travel *en exode* (together) in search of work or food. In good years, youth travel *en exode* to earn money with which they buy their own animals to raise, but the strategy is also employed by heads of household during times of crisis. During the crisis in 1973, heads of household travelled south with camel and effectively secured food supply for those at home. When these efforts fail, however, entire families flee the area, as happened in 1984, the worst crisis in living memory for this community. The entire community fled to either Nigeria or the nearest Nigerien cities of Tanout, Zinder, and Agadez. Most went to Nigeria where they stayed two to

three years, but some who fled during the 1984 famine have never returned. Many social ties within the community were broken at this time, and community members see this as a turning point in their vulnerability to crisis.

The 2010 crisis was not as bad as 2005 for this community. In 2005 there was a rain deficit and some households did not produce any grain. Regionally, the price of millet per tia (a local standard measure) passed 1,100 FCFA (West African Franc), triple its normal price, and was scarcely available at market. Those who were able to cultivate a harvest shared what they had with those whose harvest failed entirely; however, generalised production deficit led to crisis within the community and no outside humanitarian aid (food or otherwise) was received. Households reportedly collected boscia (wild food) more than 50 km north of Dareram to bring home to their families to eat. In comparison, during the 2010 crisis, there was always grain at the nearby market and the price of millet rose but did not surpass 500 FCFA per tia. The entire community stayed in place, with the exception of young men who left *en exode*, largely to Nigeria. The financial contributions of those exodants are cited as instrumental to the community's survival of the 2010 crisis as they allowed family members to purchase grain from market. Other coping strategies included small-scale commerce (sale of tea and jewellery) and quick sale of livestock early in the crisis. By June, however, reserves were empty and the community was in crisis. NGOs including Catholic Relief Services began distribution of substantial food aid to the community. This is in distinct contrast to 2005, when Dareram received no aid. The aid that came in 2010 came in four phases: 1) distribution of corn and sorghum (50 kg per seven people); 2) distribution of corn and beans (12.5 kg per person); 3) blanket distribution of 50 kg corn to all families with a child under five years old and half a litre of oil per child under five; and 4) distribution of 50 kg of corn per child under five. The community cites the loss of men *en exode* and declining livestock holdings, due to death and sale, as the direct consequences of the 2010 crisis, and they attribute financial contribu-

tions of exodants and humanitarian aid as the most important determinants of their ability to endure the 2010 crisis. Indeed, total undernutrition rates were lower in 2010 (8.6%) than in 2005 (13.3%), suggesting a positive impact of humanitarian aid on child nutrition indicators. In 2010, no household ($n=19$) was categorised as highly food insecure.

Participants identified repeated years of poor rainfall as the greatest threat to food security and nutritional status within the community. Youth and household heads leave to find work, but they are not always successful. Those who are left at home are no longer able to rely on natural resources (wild food) while they are gone. One must travel farther and farther north to find those wild foods that remain. The community relied heavily on humanitarian aid during the last crisis and recognises that there is no guarantee that there will be aid during the next crisis.



WFP/Réin Skullerud, Niger, 2012

household surveys (n=19), whereas nutritional status came from anthropometric measurements of children aged 6-60 months, including children of the targeted households, but also including community children in an effort to secure measurements of 40 children. The majority of children came from households that were selected at random for the first survey in 2005 and participated again in 2010.

Dareram and Kékeni were found to have the greatest improvement and decline, respectively, in nutritional status between 2005 and 2010 (see Tables 1 and 2). What follows is an analysis of these two communities, their coping strategies, aid activities in the community and other determinants of food and livelihood security. Utilising data collected in the post-harvest period just after the food crises in 2005 and 2010, this study seeks to investigate the role of food security and humanitarian food aid as determinants of nutrition (mean weight-for-height z-scores).

Table 1 Percent total and severe underweight children under five years (CU5), 2005 and 2010

Year	Total underweight CU5 % (no. of children)	Severe underweight CU5 % (no. of children)
Dareram	2005 13.3% (31)	3.3% (31)
	2010 8.6% (35)	2.9% (35)
Kékeni	2005 15.2% (33)	0.0% (33)
	2010 27.8% (36)	5.6% (36)

Table 2 Undernutrition (mean WHZ) 2005 and 2010 by community

Year	Mean WHZ	N	SD
Dareram	-1.11	31	1.33
	-0.84	35	0.99
Kékeni	-0.81	33	1.19
	-1.12	36	1.13

Table 3 Food insecurity by community 2010, (p=0.053)

	Mild	Moderate	High
Dareram (19 households)	36.8%	63.2%	0
Kékeni (19 households)	31.6%	42.1%	26.3%

Table 4 Nutritional status of CU5 by community, 2010 (p=0.121)

	Severe malnutrition (WHZ <-3)	Moderate malnutrition (WHZ <-2)	Normal
Dareram (35 children)	5.6%	5.6%	88.9%
Kékeni (36 children)	5.6%	22.2%	72.2%

Kékeni

Kékeni is an agricultural community made up of over 100 households that is heavily reliant on rain-fed crop cultivation; primarily millet. Although this represents the primary livelihood of most houses, some households keep a small number of livestock. The production ratio, used as an indicator of herd production and calculated as the quotient of the total livestock units (TLU) and the number of reference adults (RA), is 0.19 in Kékeni. (The concept of TLU provides a convenient method for quantifying a wide range of different livestock types and sizes in a standardised manner.) In addition to livestock holding, some households practice off-season gardening – cultivating tomatoes, lettuce, cabbage, potatoes and/or squash, depending on the year and water availability. Keeping livestock (particularly cattle) and off-season gardening are largely the responsibility of women. Historically, the community also hunted. Around 1970 the number of wild animals, particularly guinea hen and deer, began declining, which largely eliminated hunting by this community. Access to water is a major constraint. There are two open cement wells that function during the wet season, only one of which functions during the dry season. The well that functions year-round is used for both animal and human consumption during the dry season, which leads to a lot of tension within the community concerning water use and distribution. The community is over 40 km from a health centre, requiring six hours by cart or foot. As a result, a number of women have died in labour while traveling to the health centre, a concern voiced by the community.

en exode to Nigeria, Libya, the city of Agadez and even Europe in search of work. Both male and female community members fear that this strategy is undermining the strength of the community because it is breaking families apart.

In terms of rainfall deficit and crop production, residents and scientific evidence indicate that the 2010 crisis was worse than the one in 2005 in Kékeni, but not as bad as those in 1973 or 1984. However according to the community the impact was worse in 2010 than it was in 2005, 1984, or 1973; they attribute this, among other things, to their inability to use their historic coping mechanisms. For example, there is now only one species of wild food to collect and no animals to hunt. Indeed, data indicate that the impact of the crises on total undernutrition rates was much greater in 2010 (27.8%) than in 2005 (15.2%) in this community. In contrast to Dareram, where no households were reported to be highly food insecure in 2010, 26.3% (n=19) of Kékeni households were highly food insecure (n = 38, p = .053). Other factors worsening the impact of the 2010 crisis in Kékeni include the short interval between the 2005 and 2010 crises and the difference in amount and timeliness of aid. In 2005, households were beneficiaries of the Cash Distribution Project of the Red Cross and received 120,000 FCFA. A food-for-work project was also active in the area, providing a second source of aid. In 2010, families received an average of two sacks (50 kg) of grain, in large part through blanket feeding programmes for children under five years old and protective rations for children enrolled in feeding programmes (36% of children surveyed were enrolled in feeding programmes, n=41). However, *prior* to the arrival of any aid, an estimated half to two-thirds of the household heads sold livestock, purchased and stocked what grain they could, and then travelled *en exode* to seek work in either Agadez or nearby communities that had sufficient crop production. Those who remained received aid. The community identifies consecutive crises, population growth, lack of health infrastructure, shifting temporal and geographic distribution of rainfall, decreasing quantity of rainfall, lack of aid and the loss of natural resources as key determinants in the community's inability to effectively manage the 2010 crisis.

Pest infestations result in heavy crop losses



(Food security was calculated based on the frequency of use and severity of coping mechanisms employed by household during crisis, including changed eating habits, decreased portions at meals, decreased nutritional quality at meals, acceptance of gifts/loans from family and friends, decreased number of meals, collection of wild famine foods, day without eating, and sale of personal belongings. The variable has a range of 1-15 and is binned into tertiles of mild, moderate and high food insecurity.)

Discussion

Timely distribution of appropriately targeted food aid may have important impact on household food security and nutritional outcomes. Focus group and key informant interviews show that Dareram received no aid in 2005, but was the beneficiary of at least four phases of food aid in 2010; conversely, those data indicate that Kékeni benefitted from the Red Cross's cash distribution in 2005 and received minimal aid in 2010. Nutritional rates correlate positively with food aid in these communities, with improvements from 2005 to 2010 in Dareram and deterioration in Kékeni. This information is validated by household surveys, which indicate that 94% of households in Dareram and 63% of household in Kékeni received some form of food aid during the 2010 crisis. In addition to receiving less aid in 2010 than previously, in Kékeni the type of aid received by households was largely linked to children under five rather than the general population and reportedly arrived late, after important coping mechanisms had been employed. Food security data for 2010 show a significant difference ($n=38$, $p=.053$) between the two communities, while the nutritional data (albeit important) do not ($n=38$, $p=.121$).

Humanitarian aid can act as a catalyst for mobility, immobility or shifting patterns of mobility and household demography. Historically, communities fled their home location for towns and cities during crisis to ensure that aid organisations found them. As aid becomes more and more common, it is reaching many of these stationary communities in situ. However, others, including

nomadic pastoralists, are learning a lesson from agropastoralists from the past and are coming into towns or choosing to partially sedentarise in order to avail themselves of emergency services, including food aid that arrives in towns during crises such as 2005 and 2010.

Food aid can also be seen as the driver of change in patterns of migration and household demographics, as in the case of exode. In Kékeni, individuals (not families, as historically occurred) migrated, with the hope that those who stayed in place would benefit from aid distribution, which is exactly what happened: food aid was distributed to those households who remained and had young children. But the consequences are mixed. Many of these were female-headed households, a highly vulnerable population and a clear target of such intervention. However, these women also complained that migration was undermining the social fabric of their community by increasing the rates of divorce, a consequence that renders them much more vulnerable in the long run.

The use of coping mechanisms during food crisis is evolving (abandonment of old mechanisms) due to the shortened periodicity between food crises. Qualitative data indicate that the availability of wild foods and wild animals for consumption during times of crisis has decreased significantly in the past 20 to 30 years, eliminating historically important coping mechanisms among agropastoral and pastoral populations of the area. The loss of indigenous species is an important, recently developed, constraint on livelihood and food security in years of poor rainfall. And, while variation in rainfall and years of rain deficit are normal for the region, the decreasing periodicity between crisis years is decreasing household resilience to subsequent shocks.

Response to food aid may trigger livelihood adaptation that increases or decreases household vulnerability. This situation was observed in 2010 during pilot testing of the research instruments. In October 2010, the research team convened in Tanout town and aimed to target

agropastoral households in and around Tanout as participants in the pilot phase of data collection. After arriving in Tanout, however, the team quickly became aware of a refugee camp of nomadic pastoral Fulani situated 500 metres from the team's accommodations. All instruments were pilot-tested in this community and the experience of the nomadic Fulani is illustrative of others in the area. They were very hard hit by the 2010 crisis, losing over 90% of their livestock, including donkeys. The 2005 crisis had been difficult for them and they did not receive any aid. Once the severity of the 2010 crisis was clear, having heard that aid was distributed in Tanout, families fled to Tanout and set up camp on the outskirts of town. Indeed, by the time researchers met with the community in October 2010, they had been beneficiaries of food aid distributions. But the decision to move into town and wait for aid to arrive rendered them highly vulnerable. Having abandoned their traditional livelihood and associated coping mechanisms, they would have been extremely vulnerable, despite their adaptation.

Given the vulnerable nature of Sahelian populations to the impact of climate change, preparedness and livelihood projects must be tailored to the unique realities and needs of pastoralists, agropastoralists and agriculturalists. Strategies to protect herds (e.g. animal vaccination campaigns) and rebuild them (e.g. breeding exchanges), along with programmes that target improved herd resilience (e.g. drought-hardy species) may be more effective in improving food security and nutrition outcomes among pastoralists than traditional livelihood diversification strategies. Findings from this research emphasize the need to understand the complex drivers of a food crisis and to identify the most vulnerable populations, given the nature of the crisis, because populations' responses variably impact the effectiveness of food aid programmes in improving food security and nutritional outcomes.

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Impact of community-based advocacy in Kenya

By Geoffrey Kipkosgei Tanui, Thatcher Ng'ong'a and Daniel Muhinja



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World Vision, Kenya



Kawalase community in Turkana Central forwarding their names to petition their County Government to allocate funds to Community Health Service and Environmental Health Services.

Location: Kenya

What we know: Local-level advocacy is a powerful social tool to improve community services by influencing decision-makers and holding leaders to account.

What this article adds: A World Vision social accountability methodology called Citizen Voice and Action (CVA) empowers citizens to understand and act on their rights. The approach was used in Kenya, where it resulted in substantial local government increases in health resource allocation (committed budget, healthcare worker recruitment, improved services) in rural communities in Turkana and Baringo Counties. In addition, the community's new-found awareness of their rights to quality health care led to increased utilisation of outpatient services, surpassing immunisation targets and increased the number of children screened and treated for malnutrition. Tools and guidance are available at: www.wvi.org/local-advocacy

Introduction

Local-level advocacy is a powerful tool for bringing change in underserved areas in a community. The following article provides two examples where a Citizen Voice and Action approach was used to increase health resource allocation in rural communities in Turkana and Baringo Counties in Kenya.

As part of health system strengthening, World Vision Kenya in collaboration with the Ministry of Health (MoH) implements a package of nutrition-specific interventions locally dubbed 'High Impact Nutrition Interventions'. This package includes treatment of acute malnutrition; promotion of good maternal infant and young child nutrition (such as exclusive breastfeeding for six months); handwashing; provision of micronutrients for young children and their mothers through micronutrient supplementation and fortified foods. While the advocacy activities described in this article focused on broader health outcomes, improvements in the utilisation of services for acute malnutrition were observed.

CVA is World Vision's primary approach to community-level advocacy (CVA, 2014). It is a social accountability methodology which aims to improve the dialogue between communities and government in order to improve services (like health care and education) that affect the daily lives of children and their families. Social accountability refers to civic engagement by communities (other than voting) designed to improve the performance of government. CVA works by educating citizens about their rights and equipping them with a structured set of tools designed to empower them to protect and enforce those rights. First, communities learn about basic human rights and how these rights are articulated under local law. Communities also have the opportunity to rate government's performance against subjective criteria that they themselves generate. Finally, communities work with other stakeholders to influence decision-makers to improve services, using a simple set of advocacy tools.

Local-level advocacy kicked off in earnest in 2013 in Turkana County against a backdrop of

worrying quality of community health services and low levels of health sector staffing and financing. In FY 2013/14, the County Government did not allocate any funds to the public health and environmental health department. The staffing gap for skilled health workers in Turkana Central, South and East sub-Counties stood at 98. World Vision introduced community-level advocacy through the CVA approach with the aim of creating accountability platforms on health service delivery. The CVA approach transformed health service providers to become increasingly responsive and accountable to the communities they serve.

World Vision, in collaboration with MoH officials, mobilised communities to elect community representatives as members of the local-level advocacy and accountability forums. World Vision also sensitised MoH officials on the CVA approach. The goal was to facilitate a common approach in addressing the accountability issues affecting the delivery of community health services in Turkana, Central and East sub-Counties, which serve a population of 530,204 (DHIS).

The process

Phase One: Training

The first phase focused on enabling citizen engagement. World Vision Kenya began by equipping community members with skills to engage in governance issues, which would provide the foundation for subsequent CVA monitoring and advocacy phases. This stage involved a series of processes that raised awareness on the meaning of citizenship, accountability, good governance and human rights (including women's rights, children's rights and the rights of people with disabilities). Most importantly, community members learned about how abstract human rights translate into concrete commitments by the Government of Kenya under national law. For example, the Right to Health (Article 25 of the Universal Declaration of Human Rights) is also included as the 'right to healthcare services, including reproductive health care' in Kenya (Constitution of Kenya, 2010), which also includes a child's right to receive vaccinations at the local clinic health facility.

The training enhanced communities' readiness to engage governments in a constructive, productive and well-informed manner. World Vision Kenya rolled out local-level advocacy in Turkana County by providing materials to train nine World Vision nutrition staff and three partners' staff (two from the International Rescue Committee and one from MoH) in March 2013. In collaboration with the MoH, World Vision identified three community groups (Kawalase, Katilu and Lokori) from three sub-counties (Turkana Central, South and East). World Vision then trained 36 CVA members (20 males and 15 females) on governance, accountability (their right to quality health services and community social audit process), various policies and standards governing health service provision, the monitoring processes for health service delivery, and engagement with health service providers. World

Vision facilitated three chiefs (two males and one female) and three male community health services focal-point persons to provide community sensitisation on local-level advocacy and the selection of community members to form CVA starter groups.

Phase Two: Engagement via community gathering

Community gathering describes a series of linked participatory processes that focus on assessing the quality of public services, such as health care, and identifying ways to improve their delivery. Community members who use the service (especially marginalised groups), service providers (such as health facility staff) and local government officials are all invited to participate. The process, which is collaborative and non-confrontational, hinges on the premise that nobody wants an underperforming service provider in their community, and local authorities are often eager to work with citizens to improve these essential facilities. World Vision Kenya followed four broad strategies in strengthening the collaboration for improving the wellbeing of children. As part of the community gathering, the following sessions were held:

- **The initial meeting:** At this meeting, citizens, MoH staff and representatives (service providers) and local government representatives (the Chief) learned about the CVA process, its objectives and what they could expect moving forward.
- **The monitoring standards meeting:** At this meeting, stakeholders recalled what they learned during the enabling citizen engagement phase of CVA; their entitlements under national law; and the service charter, including information such as the services available at the health facility, average waiting time, and cost. In May 2013 World Vision supported 35 CVA members, three community health focal persons and five chiefs (three male, two female) to hold community accountability dialogue meetings. Armed with information from the monitoring standards meeting, the CVA groups visited the health facility and compared the reality on the ground with the stated government commitments. The CVA group used a simple quantitative method to record what they observed. This visit, also known as 'social audit', was conducted in Lodwar County Referral Hospital, Katilu Health Center, Lokwii Health Centre, and Lopur and Namukuse Dispensaries.
- **The community scorecard process:** The scorecard process provided both service users and providers with a simple qualitative method for assessing the performance of service delivery. The scorecard process required service users and providers to compare the health facilities they visited with what an ideal health facility should look like. The CVA groups developed areas of concern in staffing and budgetary allocation at the county level for community health services and environmental hygiene and sanitation. The communities then developed proposals

for improving service delivery.

- **The interface meeting:** At the interface meeting stakeholders shared information from the monitoring standards and scorecard processes with a broader group. In June 2014, in collaboration with World Vision Kenya and health workers from the previously mentioned health facilities, the five CVA groups invited the area chiefs and ward administrators to convene community meetings in Turkana South, East and Central sub-Counties, where they shared the social audit findings. The results, with community input, were then submitted to the county chief officer for health. Based on this information, the community, government and service providers created an action plan to improve the services monitored.

As a result of these four processes, the communities have a wealth of information about what the government has promised to do and what exists in reality. Communities also build essential relationships that strengthen civil society and begin to form actionable plans that will allow them to change the condition of the services on which they depend on a daily basis.

Phase Three: Improving services and influencing policy – submission of the memorandum on increased allocation of budget in public health sector

World Vision, in collaboration with the CVA of health public officials and Kawalase CVA group in Turkana Central, closely monitored the Turkana County FY 2014/15 budgeting process. Focus was drawn to the key areas of concern, particularly community health and environmental health services. World Vision facilitated the chairperson of Kawalase CVA group to collect signatures from community members petitioning the budget committee to allocate Ksh. 20 million (\$200,000 USD) and Ksh. 30 million (\$300,000 USD) for community health services and environmental health services respectively. The communities, through the CVA group, began the monitoring process again for the FY 2015/16 fiscal period.

The outcome

One of the notable successes of the local-level advocacy in Turkana County was its contribution to healthcare worker recruitment and the County Government's budgetary allocation to community health services and environmental health services. A memorandum on the budget gap in the public health sector was presented to the Turkana County Assembly Budget and Appropriation Committee during a public meeting organised by Turkana County Assembly on 26 June 2014. The committee considered the submitted memorandum and allocated Ksh. 10 million (\$100,000 USD) to the community health strategy and Ksh.5.5 million (\$55,000 USD) to environmental health services in the FY 2014/15 budget. This marked the first time in Turkana County that local advocacy groups had influenced budget allocation for the public health sector. In September and October 2014 an additional 309 health workers were recruited (Lutta, 2014) in

the five health facilities in which the CVA members conducted a social audit and submitted memoranda on health staffing. The CVA process influenced the recruitment and posting of skilled health workers to these health facilities.

Local level advocacy successes in Baringo county

In January 2015 World Vision Kenya partnered with the MoH and the community to roll out the Illng'arua Health and water, sanitation and hygiene (WASH) emergency response project in Marigat sub-County. The project aimed to contribute to improved access to health services among children below the age of five and pregnant and lactating women in Illng'arua by June 2015. The project also aimed to contribute to increased access to safe water for domestic use among the Illng'arua community during this period. The CVA approach, facilitated by World Vision, was employed to engage the Illng'arua community, service providers and local leaders. The Illng'arua community health unit (comprised of 25 community health workers, Marigat sub-county Health Management Team, area chief, ward administrator, county assembly member and 35 village elders) participated in community-level advocacy and accountability dialogues where basic human rights and health care standards were discussed.

A notable achievement of local-level advocacy in Illng'arua community is the transformation of one of the temporary outreach sites into a dispensary. The County Government of Baringo funded a community proposal worth Ksh. 1.5 million towards construction of Longewan Dispensary. In addition, in an attempt to sustain gains realised by the emergency intervention, partners were successfully mobilised to maintain outreach services beyond the formal closure of the project. The Marigat sub-County Health Management Team continued to provide outreach services in Loropi, while Longewan outreach was provided by Catholic Mission while the construction of the dispensary progressed. In addition, the community's awareness of its rights to quality health care could have contributed to increased utilisation of outpatient services, surpassing immunisation targets and increasing the number of children screened and treated for malnutrition (see Table 1). Although coverage

Table 1 Utilisation rates of health and nutrition services before and during community advocacy efforts

	June-Dec 2014 Before implementation		Jan-June 2015 During implementation	
	Baringo County	Marigat sub- County	Baringo County	Marigat sub- County
Outpatient Department Services	294,075	25,108	450,201	35,693
Immunisation Coverage	57.4%	69.4%	60.8%	79.6%
Under five admissions in the SFP and OTP programme (CVA, 2014)	796	106	851	126

data for Marigat sub-County are not available, outpatient therapeutic programme (OTP) coverage for East Pokot sub-County (in the same County) is about 46%. It is important to consider that seasonal factors may also have played a role in increased OTP and supplementary feeding

Lessons learned

Local-level advocacy is a low-cost yet powerful approach for advocating for resource allocation, impact creation, ownership and sustainability of emergency projects as well as development projects. In Turkana County, a modest investment of about \$10,000 USD in CVA training and support for monitoring directly contributed to substantial and long-term investment in the public health sector. By sensitising and training communities on their rights, community-based advocacy is a powerful platform to advocate for resource allocation and accountability.

Challenges faced in the process included low literacy levels among the community members during the training process, which necessitated use of interpreters. In addition, community members often tended to avoid situations where they are expected to monitor and audit public projects for the purpose of making their leaders account for public money and resources. However, with continuous mentoring, experience and exposure, the CVA groups gained the courage to engage their leaders and demand services.

A recommendation emerging from this advocacy experience is to involve both the private sector and academia from the beginning. Private sector representatives (e.g. businessmen) and academia (e.g. Mount Kenya University) were only engaged in the feedback session to discuss

the final report. The advocacy efforts may have a longer-term impact if these two groups had been involved in phase one.

The CVA approach can and has been used by World Vision to influence change in other sectors that are known to contribute to good nutrition; e.g. advocacy directed to government stakeholders in education and agriculture has improved resource allocation to these sectors. Furthermore, establishment of citizen voice action groups leads to empowerment of women and increased opportunities for their economic empowerment, as well as increased education for girls.

Conclusion

The CVA approach is an effective approach for local-level advocacy. In the case of Turkana County, support for local advocacy resulted in substantial investments by local government in sub-County health services through direct increases to the annual budget allocation. While the focus of the advocacy efforts was on improving staffing for the health sector and budget allocations for community health and environmental health, this leads to improvements in malnutrition treatment service resourcing and uptake. CVA also equipped local leaders to continue to monitor health services delivery, thereby strengthening the local accountability mechanisms. In Baringo County, the impact of CVA as a nutrition-sensitive approach was demonstrated by increased utilisation of outpatient services and surpassed immunisation targets, and may have been a contributory factor in the increased number of children screened and treated for malnutrition.

World Vision has developed specific tools for the CVA approach, including a field guide, a video and case studies. These are available at www.wvi.org/local-advocacy.

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Community feedback meeting at Katilu, Turkana County: A CVA member expressing her views concerning a health care staffing audit report which reflected a huge staffing gap in their facility



M Ouedraogo, Burkina Faso, 2015

Implementation challenges and successes of an AG4Nut project in the eastern region of Burkina Faso

By Marcellin Ouedraogo, Régina Khassanova and Fanny Yago-Wienne



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Location: Burkina Faso

What we know: Undernutrition remains a significant public health concern in Burkina Faso. Evidenced interventions are needed to programme effectively.

What this article adds: An established HKI homestead food production project in Burkina Faso (CHANGE) that targets women is being studied in a randomised control trial (RCT) over three years. Experimental arms include addition of water, sanitation and health (WASH) behaviour change and preventive distribution of LNS to children aged 6-23 months. Experiences from the village model farm (VMF) indicate good community buy-in and greater diversity in foods produced and consumed, including increased consumption of Vitamin A-rich foods and animal-source foods among children. Challenges relate to water access, women's legal access to land, high illiteracy rates and sustainability. RCT results will be available December 2016.

Context

Undernutrition remains a significant public health concern in Burkina Faso. According to the 2014 SMART survey, 8.6% of children are acutely malnourished and 29.1% chronically malnourished. The situation is even more worrying in the eastern region (9.4% wasting and 37.7% stunting). Micronutrient deficiencies are particularly alarming: 61.9% of women of child-bearing age and 83.4% of children are anaemic (ENIAB, 2014). Furthermore, it is estimated that 7% (EDS, 2003) of pregnant women suffer from night blindness and that between 26.8% (Aguayo & Baker, 2005) and 46.1% (Micronutrient Initiative/UNICEF, 2004) of children under five suffer from Vitamin A deficiency.

To address this issue, HKI has been engaged in an Ag4NUT project¹ supporting food production strategies for improved nutrition in this region since 2009. The CHANGE (Creating Homestead Agriculture for Nutrition and Gender Equity) project funded by DFATD is currently implemented in 60 villages. To assess the model, the programme is being implemented

as a cluster RCT, which is being externally evaluated by the IFPRI. The purpose of the study is to assess the long-term impact of the Enhanced Homestead Food Production Programme (E-HFP) implemented by HKI on household food security and nutritional status, as well as the impact of including additional interventions (behaviour change communication promoting optimal WASH practices, malaria prevention, and/or distribution of preventive lipid-based nutrient supplements to children aged six-23 months) in addition to the standard E-HFP model (visit www.clinicaltrials.gov for more details). Thus the aim is to apply a multi-sectoral approach to address the range of obstacles to good health and nutrition simultaneously. The study will run from March 2014 to June 2016. The evidence-based findings will be used to improve the design moving forward and inform advocacy with partner organisations and the Government. This article shares programme experiences to date.

¹ An Ag4Nut Project seeks to realign existing agricultural approaches and encourage new ones in order to better meet the nutritional needs of the target population

Enhanced Homestead Food Production (E-HFP) approach

The E-HFP approach aims to improve the nutritional status of women and children through homestead agricultural production and behaviour change on essential nutrition and hygiene actions (see Box 1). A VMF is established in the village which serves as a platform for beneficiary women. All women with a child under five are eligible. The VMF is used to acquire improved gardening and small animal husbandry techniques, as well as learn about good nutrition and hygiene practices and recipes for new crops. Sessions are facilitated by lead farmers and male and female community workers. The project promotes formal community agreements to ensure women's access to land for the VMFs and makes men aware of the potential benefits. Consequently, women are granted long-term control of a plot of land in the community and receive support of men and community leaders.

Four female Village Leader Farmers (VLFs) are chosen by each village. HKI trains these leader farmers in improved techniques for agriculture, animal husbandry, health, nutrition and hygiene. The leader farmers then share this knowledge with about 40 other beneficiary women organised into women's groups and supervised by project field staff. HKI provides tools, necessary infrastructure such as fencing, starter kits of seeds and planting materials, along with hens and a rooster, to establish the VMF. The ultimate objective is for each farm to become self-sufficient, procuring these items without project support, within two years. Each VLF has a small plot within the community plot and produce from that plot belongs to her. The produce from the common plot is used for cooking demonstrations, seed production and



A village leader farmer in front of eggplant plot in the Village Model Farm

sales (proceeds are saved in an account to support ongoing costs).

When they have mastered the new production techniques, beneficiary women are encouraged to establish an individual garden and apply the techniques at household level. Those who have established individual gardens have fresh micronutrient-rich foods available almost year-round, most of them very close to the homestead. Produce includes dark green leafy vegetables (spinach and other traditional leaves, jute mallow, baobab), carrots, orange-flesh sweet potatoes (OFSP), beans, sesame, moringa, okra and eggs. The leader farmers and other trained volunteers, such as grandmothers (who have an important influence on childcare practices in these communities), continue to support the women with group discussions on nutrition and hygiene topics. They also conduct home visits to support small, doable changes in nutrition and hygiene practices that fit the reality, aspirations and needs of households.

The community-led total sanitation (CLTS) approach is also used to improve sanitation and community hygiene practices (visit www.communityledtotalsanitation.org for more information). CLTS, first developed by Kamal Kar in Bangladesh in 1999, is a methodology for mobilising communities to eliminate open defecation – a key element in the disease-spreading cycle of faecal-oral contamination. Since simply providing toilets does not guarantee their use, CLTS focuses on the behavioural change needed to ensure sustainable change in practice. This is achieved through a series of awareness-raising activities to create disgust about open defecation and motivate a community to undertake collective change. Hygiene committees are set up and hygiene agents are identified by the communities to perform outreach and household visits, during which they urge households to take key actions, such as construction of latrines and hand-washing stations, and to reinforce the importance of hand washing.

In one of four experimental arms of the RCT (new EHFP; old EHFP+WASH; new EHFP+WASH; old EHFP+WASH+LNS distribution (old EHFP are projects implemented since 2010; new EHFP are those implemented since 2013)), HKI is also providing lipid-based nutrient sup-

plement (LNS) in 15 villages to all children six–23 months for an 18-month period (start at six months and continue to 23 months). This approach is being tested based on the experience that food-based approaches may not be sufficient to reduce the high burden of micronutrient deficiencies, in particular anaemia. Every month, beneficiary children receive a supply of LNS to allow daily consumption of one 20g sachet; distribution is at the community level but overseen by health workers from the nearest health centre. During the distributions, children are screened for acute malnutrition and suspected cases are referred to the health centre for diagnosis and treatment if necessary. In addition, these events provide another occasion for reinforcing nutrition messages and for organising demonstrations of recipes for nutrient-dense complementary foods based on garden production and other locally available ingredients.

To ensure high quality results, activities are regularly supervised by field agents from HKI and by agents from community-based organisations, as well as government agriculture, health and animal husbandry offices trained by HKI. These partners also actively participate in the project-steering committee that meets every quarter.

Lessons learned and successes

Monitoring to date suggests that CHANGE is contributing to increased production of nutritious foods and improved nutrition practices, which in turn is expected to improve nutrition and health status in participating households. Reinforcing the links between agriculture and nutrition is an explicit aim of the model and is ensured by village farm leaders and grandmothers. After almost three years of implementation, the following outputs have been delivered:

In total, 2,494 direct beneficiaries have been trained in improved gardening and animal husbandry techniques through 60 VMFs established in an earlier phase. Project staff and partners have supported local VLFs, community health workers and grandmothers to reach more than 2,000 beneficiary women each year with Essential Nutrition and Hygiene Actions (ENA-EHA), using the model farm as a platform to gather, debate and encourage participants to take their newly-acquired knowledge home. More than

BOX 1 Enhanced Homestead Food Production (EHFP)

- A communal garden or VMF is established in each village, including infrastructure such as a well when possible.
- In this VMF, women learn improved gardening and animal husbandry practices.
- Interactive nutrition education improves their understanding of the causes of malnutrition, including suboptimal health, hygiene and nutrition behaviours, and potential solutions.
- Women are encouraged to establish individual gardens and to apply improved infant and young child feeding and hygiene practices within their families.
- Gender empowerment activities support more equitable intra-household decision-making. Activity examples include group discussion with men and community leaders to improve women's access to land, and improving women's capacity to manage income resulting from surplus production.
- As a result, participants cultivate micronutrient-rich foods, improving dietary diversity of children and families, combatting malnutrition and improving child health and growth.

2,700 home gardens have been created in the project area, extending the availability of fresh micronutrient-rich vegetables from only three months per year to almost year-round.

The project emphasises safe and sustainable production techniques, including bio-pesticides and organic fertilisers, which can be produced from ingredients that are easily available in these communities. It also supplies drip irrigation systems to reduce the labour burden on women and on water resources. As Sana Azaratou, one of the beneficiary women from Abaza village reported following training, "Organic fertiliser is very important! My soil is weak and the crops don't do well without it".

"In the dry season [when few vegetables are available], I would prepare for her a dish with fresh vegetables from my garden. Impressed, she would taste it and ask, 'How can you have all these vegetables in the dry season?' This would convince her to visit my garden and learn to do the same."

Salmata Zidwemba, a beneficiary farmer from Kalwatinga village

The activities of this project are attracting the attention of other community members. Project staff have noticed spill-over to non-beneficiary households in both intervention and non-intervention villages, who have begun growing vegetables at their homes, feeding their children more diverse and nutritious foods and using improved nutritional practices. They too decided to set-up home-gardens, established plots on their own and requested training to help them produce properly. In response, HKI mobilised resources and provided training to an additional 1,200 women. This effect is particularly encouraging and suggests that the project is meeting a felt need in these communities.

Project-monitoring data also suggest that sales of surplus production have enabled the mothers to improve the family diet by purchasing high-value foods that are not produced in the garden or to cover other crucial expenses such as health or school fees. This has also increased women's influence over important household decisions. OFSP, which is particularly rich in beta carotene and promoted by HKI and others to address vitamin A deficiency, is observed as being increasingly cultivated in household gardens and VMFs. Many households now own more than 20 chickens and are feeding eggs to young children. According to latest monitoring data, about 80% of children under five consume eggs regularly. Monitoring data also shows that 92% of women are consuming leafy greens, 92% of children consumed meat and poultry product and 65% of children ate fruit and other vegetables rich in Vitamin A during the previous seven days. It also appears that the income generated by the selling of the surplus is allowing women more autonomy in expenditures for children's health and education.

The results to date of the CLTS activities are also very encouraging. The approach is conducted in 45 villages by hygiene committee members trained by HKI, who monitor latrine construction and promote good hygiene practices among the community. In the words of Djaneiba Naba, the chair of one of these committees: "For me, there aren't things that are difficult to change; there are just things that we don't know about yet. Like with latrines, we used to think they were just too expensive to build; now we know this is within our reach and the men have already started digging. The rest will come in time."

The CLTS approach has been integrated into a nutrition-sensitive agriculture approach to increase the impact on child nutritional status. Infections increase nutritional needs while reducing nutrient uptake. Environmental enteropathy, in which constant faecal-oral contamination results in changes to the intestines, significantly impacts absorptive and immunologic functions. It is thus fundamental to tackle hygiene and nutrition at the same time to achieve the expected results.

Monitoring results suggest that while nutrition knowledge and practices are improving, more efforts are needed in areas such as feeding the sick child and the integrated control of anaemia. Men appear increasingly convinced that home gardens contribute to family health and are encouraging their wives to continue the gardening activities during the rainy season, when staple crops are usually given priority. Men are also contributing by investing in henhouses of more durable materials.

The project is guided by a steering committee comprised of various stakeholders, including representatives from the regional and provincial directorates of agriculture, animal husbandry, environment, women's promotion and health as well as local community-based organisations. During the quarterly meetings, achievements and challenges are discussed and recommendations provided to improve the project implementation and to find solutions to problems related to the local context, give advice and make decisions if necessary. These partners are also closely following project progress through periodic field visits. The mechanism is helping to build ownership of the project that should continue after external support ends.

Challenges

The major challenge of implementing an agriculture-oriented nutrition project in Burkina Faso, and in particular in the eastern region, is access to water. Water is fundamental not only for gardens but also optimal hygiene. If gardens must be watered by hand using distant sources, the labour burden may have unintended negative consequences on women's and family health. Drip-irrigation systems are only a partial solution, as in some locations silt levels in the water lead to clogging. The hard and rocky soil also makes digging latrines more arduous.

More approaches are needed to strengthen women's legal access to land. Currently the

garden plots do not belong to women and can thus be repossessed at any time. Encouraging evolutions in community norms have been observed (Van den Bold, Pedehombga et al, 2013) but much still needs to be done in this field. It is also important to be vigilant to make sure the additional responsibilities for gardening are not detrimental to child-care activities. It is even more challenging to reconcile production objectives and child wellbeing during the rainy season, when mothers are staying in the fields far from health facilities while the risk of malaria and diarrhoea diseases increases. During the rainy season the family relocates to focus on staple crop production, making it difficult to reach beneficiaries with project training and behaviour change activities and LNS distributions.

The contributions of the community relays are considerable. However, high levels of illiteracy pose significant challenges in Burkina and the ability to learn is limited among illiterate community relays. Images are used in job aids as much as possible, but abstract concepts are more difficult for low-literacy volunteers to understand and master. Routine project reporting is also often weak.

Finally, sustainability remains a major challenge in the local context. The project has endeavoured to create a supportive enabling environment, building the capacity of individuals as well as institutions, and experience suggests that positive outcomes can be achieved with limited external supports. Continued engagement of local authorities and the recognition of their contribution to the fight against malnutrition will be crucial to fully hand over the key project activities.

Conclusions

The experience in Burkina Faso shows that integrating nutrition and agriculture into a multi-strategy and cross-sectional approach project is an essential ingredient to fighting the multiple and interrelated determinants of undernutrition. Monitoring data must be used to increase the effectiveness of such interventions and evaluation data will provide more evidence of what works best.

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Nutrition-sensitive agriculture in Zambia: work in progress

G-SHA, Zambia, 2015

Location: Zambia

What we know: Where stunting and micronutrient deficiencies are prevalent, multi-sectoral approaches that concurrently address underlying causes are needed.

What this article adds: A livelihoods programme that integrates agricultural production and productivity with nutrition promotion and health education and that provides technical assistance to district authorities is being implemented in a five-year programme in Zambia by Gorta-Self Help Africa. Livelihood enhancement groups (LEGs) are the main mode of intervention. The nutrition component includes capacitating community infant and young child feeding (IYCF) trainers (with linkages to health centres) and cooking demonstrations and education on dietary diversity; complemented by hygiene promotion, new livestock and their management, new bean varieties and aquaculture. Nutrition indicators relate to dietary diversity and infant and young child feeding IYCF practices. Mid-term review indicates improved household dietary diversity (annual Food Consumption Scores). Coordination between district-level ministries of health and agriculture is central to current and continued progress.

Background

Zambia is a landlocked country in sub-Saharan Africa that borders the Democratic Republic of Congo to the north, Tanzania to the northeast, Malawi and Mozambique to the east, Zimbabwe and Botswana to the south, Namibia to the southwest, and Angola to the west. It covers a land area of 752,612 square kilometres. Administratively, the country is divided into ten provinces and 105 districts. Of the ten provinces, two are predominantly urban, namely Lusaka and Copperbelt. The remaining provinces – Central, Eastern, Muchinga, Northern, Luapula, North Western, Western, and Southern – are predominantly rural. The capital city is Lusaka, in the south-central part of the country.

Zambia is broadly divided into three agro-ecological regions and 20 livelihood zones (FEWS NET, 2014). The three regions are classified as follows: 1) low potential, semi-arid and arid plains and valleys with an annual rainfall of <800mm (mainly in the southern part of the country); 2)

high potential plateaus, rainfall 800-1,000mm (broadly central part of the country); and 3) northern high rainfall areas, rainfall of >1000mm (northern parts of the country). Northern Province is around 850km from Lusaka. It is in the third ecological region outlined above and is around 1,200 metres above sea level. It consists of eight districts and is part of the Rift Valley.

Self Help Africa development programme

In January 2013, Self Help Africa (SHA) began a five-year, Irish Aid-funded development programme in two districts in northern Zambia targeting around 90,000 persons focused on two key areas: sustainable agriculture and nutrition. The overall goal of the Irish Aid Local Development Programme (IALDP) was to improve the livelihoods, health status, food and nutrition security of poor households in Northern Province, with a particular focus on women and vulnerable groups. This will be attained through implementation of an integrated livelihoods programme focusing on increasing agricultural

production and productivity; promoting improved nutrition and health education; and providing technical assistance to district authorities to improve delivery of social services to local communities.

A number of studies were conducted at the start of the programme to better understand the context. These included a baseline study and an Individual Household Methodology (IHM), which is similar to a Household Economy Approach (HEA). The IHM gave information on the livelihood zones and ranking of wealth groups. These were conducted during 2013. In September 2014, a Knowledge, Attitude and Practice (KAP) study was completed in Mbala District to understand better practices around health, hygiene and in particular feeding practices for children under five years old. At the end of 2014, a Nutrition Survey was conducted in Luwingu District to access the nutritional status of children under five, with a particular focus on levels of chronic malnutrition (see Table 2). Interestingly, the KAP survey indicated very high levels of illiteracy among the women interviewed. Even though 53% had attended formal education, 75% could not read and write. As can be seen from Table 1, infant feeding practices are sub-optimal; in particular, there is extremely poor dietary diversity and low frequency of meals.

A national food consumption and micronutrient status study undertaken in 2014 in two provinces (Northern Province and Luapula Province) indicated a 40% prevalence of anaemia in pregnant women ($Hb < 11\text{mg/dl}$) and around 23% prevalence in non-pregnant women ($Hb < 12\text{mg/dl}$) in Northern Province (Alaofo et al, 2014). The prevalence for children aged 6-59 months in the same study was 54% ($Hb < 11\text{mg/dl}$).



Overall focus of the programme

As SHA had not previously worked in Northern Province, it took a number of months to become operational – recruiting staff, setting up offices and linking with the various relevant authorities. The programme is focused in two districts, Luwingu and Mbala. The estimated population of Luwingu District is 134,426 and 213,254 for Mbala (2010 census). The programme targeted a total of 16,000 households (HH); 6,000 from Luwingu District and 10,000 from Mbala District. This is a target population of around 90,000 beneficiaries. The programme has three main objectives:

- To increase market-oriented sustainable agriculture production and productivity;
- To improve the nutrition and health status of vulnerable HHs in Northern Province; and

- To strengthen district authorities with increased planning and implementation capacity and improved service delivery for local communities.

Initially, the project had ambitions to reduce stunting prevalence. Following technical review, this was considered over-ambitious and the aim was revised to impact positively on household dietary diversity and IYCF practices.

The main mode of implementation is through working with groups identified by the communities. The livelihood enhancement groups (LEGs) are formed within the community and consist of around 45 members, with at least 60% female participants. These groups have been formed over a period of time (around two years). Within each LEG, a number of various trainings are given, initially on group dynamics formation and governance. Within the group, individuals are trained on various issues such as conservation agriculture, planting and harvesting various crops, animal husbandry, micro-finance, aquaculture and nutrition. Individuals are trained within the LEGs as Trainer of Trainers (TOT) and they, in turn, cascade training to other group members and the community at large. Simultaneously, inputs were given to some of the members, including various seeds (mainly pulses), small livestock (goats and chickens) and vegetable seeds and fruit tree seedlings. A pass-back/pass-on system was used in which ultimately all LEG members received some inputs. In around 25% of the LEG groups, Village Saving and Loan Associations (VSLAs) were formed, partly as a safety net system. Furthermore, around one fifth of all LEGs will become involved in micro-enterprise on a number of specific commodities, such as fish and beans.

Table 1 IYCF KAP baseline study results, Mbala District, September 2014 compared with selected DHS national data (2007 and 2013-14), Zambia

Selected Indicators	SHA KAP Study, Malamba and Mukololo, Mbala District September 2014	Zambia Demographic Health Surveys (2007 and 2013-14)
1. Early initiation of breastfeeding < 1 hour	61%	57%
2. Exclusive breastfeeding under six months (0-5 months)	64%	73%*
3. Introduction of solid, semi-solid, or soft foods (6-8 months)	89%.	80%*
4. Minimum dietary diversity (6-23 months)	17%	37%
5. Minimum meal frequency (6-23 months)	48%	56%
6. Bottle feeding (0-23 months)	20%	5%*
7. Children ever breastfed	100%	98%

* Data derived from the ZDHS 2013-14 Preliminary Report

Table 2 Nutrition Survey results, Luwingu District, 2014

Indicator		Prevalence	95% CI
Global acute malnutrition (wasting)	Weight for height < -2 Z score	2.5%	1.2 - 3.9%
Severe acute malnutrition (severe wasting)	Weight for height <-3 Z score	2.1%	0.9 - 3.2%
Chronic malnutrition (stunting)	Height for age <-2 Z score	53.4%	47.8 - 59%
Chronic malnutrition (severe stunting)	Height for age <-3 Z score	26.5%	20.7 - 32.3%
Underweight	Weight for age <-2 Z score	11.7%	8.5 - 14.9%

Research

Within the IALDP, a percentage of the budget is allocated for research with part of the funding assigned to different sectors, including agriculture, aquaculture, nutrition and gender. This funding has been extremely valuable in supporting the completion of the KAP and nutrition surveys to date. However, Irish Aid has also funded

CGIAR (see www.cgiar.org) through World Fish, Harvest Plus and the Center for International Forestry Research (see www.cifor.org) to conduct research linked to the IALDP. A number of studies are in process linked in with SHA staff and the local provincial research institutions. Studies include acceptability studies on orange maize, developing local fish foods for use in the fishponds, and a study on the use of wild foods (yet to be finalised).

Nutrition component

Realising that the prevalence of chronic malnutrition (stunting) in Zambia remains very high at 45% (Demographic Health Survey (DHS), 2007) and even higher in Northern Province at 49.3%, the programme has paid particular attention to nutrition at HH level. A specific focus has been to target the window of opportunity (1,000 critical days) from pregnancy to a child's second birthday. This focus includes training on IYCF practices, nutrition and healthcare during pregnancy, hygiene promotion including safe processing and storage of foods, and improvement of dietary diversity at HH level through cooking demonstrations and discussions.

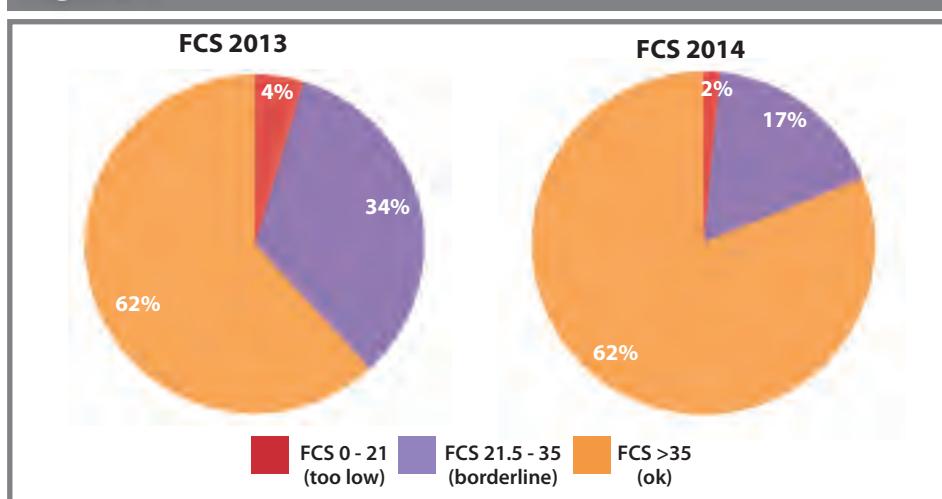
Community IYCF trainers

At the start of the programme two women (mainly mothers with young children) were identified from each LEG formed. Each training consisted of a group of 20 mothers/women, who received a six-day residential training conducted using the Ministry of Health (MoH)/UNICEF-accredited national trainers in collaboration with the MoH itself. All the mothers remained to the end of the training, completing the training course. A total of 225 people were trained in the IYCF TOT. Nutritionists from the MoH and Ministry of Agriculture and Livestock (MAL) from both districts were involved in the training, as well as the nutritionists from SHA.

This training incorporated information on health and nutrition during pregnancy, early initiation of breastfeeding, exclusive breastfeeding to six months, and good complementary feeding practises. It also incorporated training on good hygiene practices, feeding the sick child, child spacing and growth monitoring, as well as good practices regarding food preparation. The counselling cards adopted from the MoH were translated into the two local languages, Bemba and Mambwe, and each trained person received the counselling cards for use in the community. The translation of the material was also done in collaboration with the ministries to ensure accuracy and buy-in. The training material is mainly pictorial, which is important in the community where literacy levels are low.

There was a deliberate follow-on cascade training with SHA staff supporting the community IYCF trainers to conduct training within the community. In both districts, each community IYCF trainer was responsible for training four women/men within their respective LEGs. The women who received the cascade training are called the mother-to-mother support group. They support women in the community but do

Figure 1 Food Consumption Scores (FCS) in Luwingu District, 2013 and 2014



not conduct 'official' training. It was decided to include men as well as women in the official TOT training as they are often the decision-makers in the household. Around 25% of those trained were men; those chosen are strong advocates and influential within the community.

Cooking demonstrations and dietary diversity

In addition to the community IYCF training, the SHA team, together with the district nutrition specialists from the MAL and the MoH who are also well versed in the local foods and local nutrition challenges, have been involved in training the communities in good food preparation practices. Training modules from the National Food and Nutrition Commission (NFNC) of Zambia have been used. The main objectives of these community trainings are to equip mother-to-mother support groups and the communities at large with basic knowledge and skill of food requirements and good preparation practices. The topics discussed include:

1. Food groups and their importance (energy, body building, vitamins and minerals);
2. Cooking methods through demonstrations (boiling, roasting and frying);
3. Balanced diets; and
4. Malnutrition and monitoring nutrition status in children under five years of age.

Community IYCF trainers have been actively involved in food preparation demonstrations within the community and developing recipes using locally available foods. The agriculture component of the programme saw the introduction of a number of bean varieties within the LEGs. Soya bean was introduced as a new crop, together with a variety of bean high in iron content. There is a strong component of training on processing and use of soya, including introducing recipes as part of the training. Another area of focus in these trainings has been improving dietary diversity within the household, with better utilisation of foods yielding a more balanced diet for all members. The training has focused not only on the LEG members but also on the general community, which has shown huge interest.

Linkages with the health centres

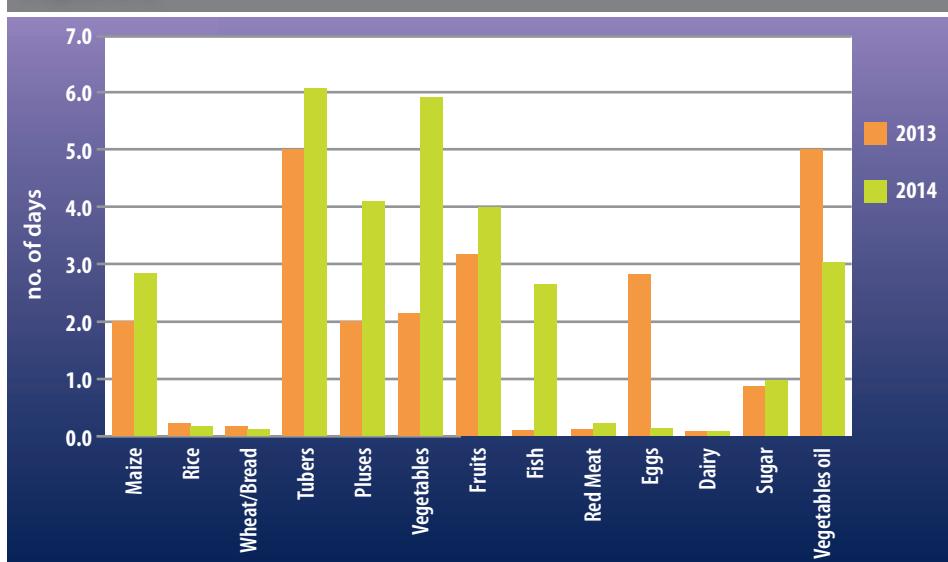
The community IYCF trainers are strongly linked to the health centres. Many of these health centres are rural and isolated with limited human-resource capacity. The community IYCF trainers attend antenatal days and under-five growth-monitoring days. They are involved in various activities within the health centre; in particular, the health/nutrition education component with pregnant women and new mothers. The community IYCF trainers fill in a monthly activity report, which has been developed by the MoH. Some of the information collected by the community trainers includes the number of pregnant women, number of women with children under five years old, and number of women groups learning how to prepare different food-stuffs.

In general, those participating in the TOTs do not receive any incentives apart from receiving the IYCF participants' manual, counselling cards and recipe books for their work. They also receive T-shirts so they are recognised as trainers. They occasionally receive a small incentive for attending meetings. At the start of the programme some of those trained received a bicycle, which was much appreciated.

Agriculture and aquaculture

In northern Zambia in general, livestock are not part of people's livelihoods. Consequently the introduction of small livestock, including goats and chickens, has been highly appreciated and a strong component of the programme includes livestock management. Knowledge of beans was limited. New varieties were introduced, including soya beans and a bean that is high in iron. Training was included in processing and preparing these beans, especially the soya bean. Aquaculture is an important component of the programme, with smallholder farmers constructing fishponds, supply of fingerlings (a young fish, generally less than a year old and about the size of a human finger) and training on the various elements of the management of fish. CGIAR partners have also been involved with various complementary pieces of research in progress.

Figure 2 Seven-day recall of HH foods consumed (2013-2014)



Results

Household dietary diversity scores will be calculated regularly during the implementation period (seasonally, twice per year). Other programme impact measures include number of trainings of IYCF trainers, cascade training, records of cooking demonstrations, assessment of knowledge on WASH (safe drinking water etc.), and appraisal of records from the health centres. Both a KAP survey and nutrition survey will be conducted at the end of the programme to assess knowledge and behavioural change, together with any changes in nutritional status.

The programme is currently only at the midterm point, so it is still too early to see what impact the various components of the programme may have on nutrition outcomes. However, annual Food Consumption Scores (FCS) at the same time of the year, using the WFP FCS tool in November 2013 and 2014 in Luwingu District, indicate an improvement in dietary diversity. The acceptable diet has improved from 62% to 81% (see Figure 1). The introduction of pulses and use in the HH has been an important factor contributing to the improvement in dietary di-

versity. Data will be available from November 2015 twice yearly. Seven-day recall of foods consumed shows twice as much consumption of pulses and vegetables (number of days) and an extremely high increase in fish consumption in 2014 compared to 2013 (Figure 2).

The initial KAP survey was conducted in 2014. There is a plan to have a repeat KAP survey at the end of the programme to determine if there has been a change in behaviour and practices, in particular with regard to IYCF practices, hygiene and health-seeking behaviours. A nutrition survey was conducted in Luwingu at the end of 2014 which showed very high levels of stunting at 53.4% and extremely high levels of severe stunting (26.5%). A repeat survey will be conducted at the end of the programme, recognising that the short intervention timeframe will likely limit impact.

Discussion

The IYCF training of trainers with community members and deliberate cascade training has led to a considerable improvement in health and nutrition practices within the community.

At the beginning, the training was thought to be beyond the capacity or excessive for non-health trained persons. However, there seemed to be substantial empowerment of those trained and the deliberate cascade training (identifying individuals for training) appears to be working extremely well. Those trained appear to be respected within the community and at health-centre level.

The use of the MoH/UNICEF-accredited trainers and materials has translated into more collaboration and ownership of the trained community members, not only by the line ministries but also by the community members.

The mixture of ongoing training within the community by the SHA nutritionists and the community IYCF trainers, together with the support by the community IYCF trainers to the health centres, ensures continuity of messaging and increases the level of sustainability.

Including men in the IYCF training appears to have been very beneficial as the information obtained is cascaded within different peer groups. It builds on trust within the community and allows men to be more supportive to their women folk. This also builds trust and allows women to have a voice where decision-making is concerned.

Technical staff from both ministries (MAL and MoH) are also involved in field monitoring and mentoring visits, together with the SHA staff. These activities are planned together to strengthen the working relationship and to allow for sustainability of the programmes in the communities. It is hoped that the strong collaboration with the ministries and the community will significantly impact on health and nutrition going forward.

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Mainstreaming human nutrition in livestock interventions: lessons learnt from a capacity-building workshop for the Sahel region

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Location: Sahel

What we know already: Animal-source foods (ASFs) are a rich source of bioavailable nutrients. Even where livestock is central to livelihoods, livestock production is rarely considered as a key nutritional resource of poor populations.

What this article adds: An FAO-led regional workshop was held in Senegal to capitalise on existing experiences and knowledge on linkages between livestock and human nutrition in the Sahel and strengthen the capacity of governments and humanitarian stakeholders for nutrition-sensitive programming in this sector. A total of 57 nutrition and/or livestock experts working in Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal or at regional level participated. The workshop involved formal training, team work (to identify livestock impact pathways to malnutrition) and experience-sharing (detailed country case studies). Discussions found that, while high importance was awarded to integration, it was not a priority for either sector. Participants identified a number of ways to optimise the nutrition impact of interventions, including targeting, understanding the cultural specificities of ASF and their nutritional properties, and considering nutrition at the context-analyses and study-design stages. Risk factors for negative impact included food safety issues and high cost of interventions. Recommendations for follow-up included creation of a Community of Practice specific to livestock and nutrition.

Even in good agricultural production years, the Sahel countries register continued 'emergency' malnutrition rates, with prevalence of wasting up to the emergency level ($> 15\%$) and exceeding 40% for stunting in some countries (UNICEF, 2014), as well as anaemia prevalence in women and children of severe public health significance (WHO, 2006). Furthermore, absolute numbers of malnutrition cases in the region are increasing yearly due to demographic growth. (In most Sahel countries, the population doubles each every 20 years, with more than 50% of the population below 20 years old.) In such arid or semi-arid regions, climate and land constraints may challenge crop and diversified plant production. In contrast, livestock is plentiful and

an essential part of livelihoods (for income, savings and employment). Animal-source foods (ASF) are rich sources of highly bioavailable protein and micronutrients, such as vitamin A, iron, calcium and zinc, as well as the only source of vitamin B12 (Randolph, Schelling, Grace et al, 2007). ASF consumption promotes child growth, cognitive function and health. Despite this, livestock production is rarely considered as a key nutritional resource of poor populations, by either producers or programme implementers. Consequently, poor households hardly benefit from the potential of livestock to improve nutrition, even in pastoral areas.

In June 2014, a first Food and Agricultural Organisation (FAO) regional workshop on In-

tegrating Nutrition and Food Security Programming took place in Saly, Senegal, within the framework of an ECHO-funded programme. Building on this, a subsequent initiative was conducted focusing specifically on the integration of livestock and human nutrition programmes in the region. This article presents the results of the second workshop, implemented by FAO's Regional Resilience, Emergency and Rehabilitation Office for West Africa/Sahel (REOWA) in Dakar, Senegal, with the technical support of FAO's headquarters in Rome, Italy; the Royal Veterinary College (RVC) in London, UK; and the International Livestock Research Institute (ILRI) in Nairobi, Kenya, with funding from ECHO.

Workshop overview

The objective of the Livestock, Livelihoods and Nutrition in Emergency and Building Resilience regional workshop was to capitalise on the existing experiences and knowledge about the linkages between livestock and human nutrition in the Sahel and strengthen the capacity of governments and humanitarian stakeholders for nutrition-sensitive programming in this sector, thus contributing to building resilience. Prior to the workshop organisation, a scoping study was conducted to interview key nutrition and livestock actors in the region, gather their needs and expectations for such a workshop, and map the existing interventions integrating livestock production and malnutrition prevention. The workshop was held in Dakar, Senegal, from 5-7 November 2014. Candidates were selected according to their technical needs, the relevance of their expertise to the topic, and their potential contribution to the discussion, aiming also at balanced assistance by sector of expertise, institution type and country. A total of 57 nutrition and/or livestock experts working in Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal or at regional level participated. The central questions of the workshop are shown in Box 1. The methodology included:

- i) Formal training on basic concepts of nutrition, food security and livelihoods in the region, existing tools of situation analysis and M&E, facilitated by experts from FAO, RVC/ILRI, UNICEF, WFP, ACF, FRC and Agronomes & Vétérinaires sans Frontières (AVSF). (AVSF presented results from livestock nutrition tools applied on interventions in Mali; these are shared in detail in a separate article in this edition of Field Exchange.)
 - ii) Team work activities: these focused on the preparation of livestock impact pathways to human malnutrition in four emergency scenarios (conflict, drought, animal disease outbreaks and economic crisis), applied to four types of livelihoods (pastoralists, agropastoralists, poultry smallholder or livestock-less urban households) (see Figure 3 for an example). The frameworks created were pivotal to subsequent team group exercises to identify and discuss solutions, interventions and possible impact indicators across the pathways. Other activities included the analysis of cultural barriers (e.g. taboos, especially for pregnant and lactating women) and analysis of coordination issues and needs.
 - iii) Experience-sharing: ongoing integrative initiatives throughout the region were presented by implementing non-governmental organisations (NGOs) and government stakeholders. Selected projects were discussed in three parallel sessions to stimulate debate on which elements can maximise the nutrition impact of livestock interventions, the innovative aspects, harmful impacts, and how to consider taboos and gender. Presenting institutions were: Islamic Relief France Senegal (goat use to fight malnutrition in children under years of age); Swiss Centre of Scientific Research (ASF preservation in Senegal and Mali); Cell of Fight Against Malnutrition of the Senegalese Government (poultry and small ruminant to support food security in vulnerable households); Oxfam Intermón Mauritania (chicken and milk cooperative to fight malnutrition); Centre of Economic and Social studies in West Africa-CEAAO (production and commercialisation of dried meat in Niger); Professionals for Fair Development-GRET (nutritious incentives to milk sales to improve anaemia in nomadic pastoralists – this study and its results are described in detail in a separate article in this edition of Field Exchange); Veterinarians Without Borders Belgium (effect of destocking in malnutrition in Mali); Guné De Kolda Association (short-cycle species production for household nutrition in Senegal); and Hellen Keller International (agriculture project for maternal and child nutrition in Burkina Faso).

Figure 1a Participants' perceptions of the importance of integrating human nutrition in livestock interventions

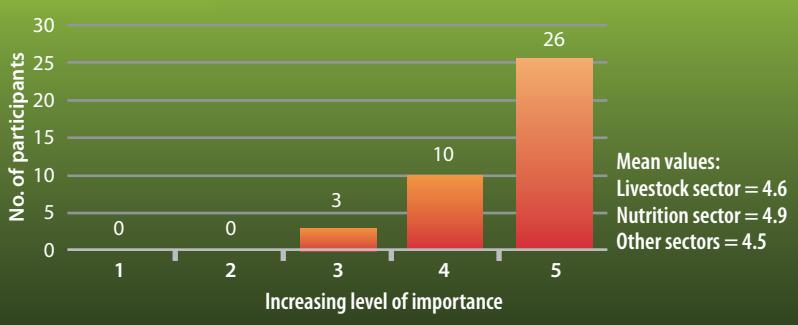


Figure 1b Participants' perceptions of degree to which the livestock sector considers nutrition to be a priority

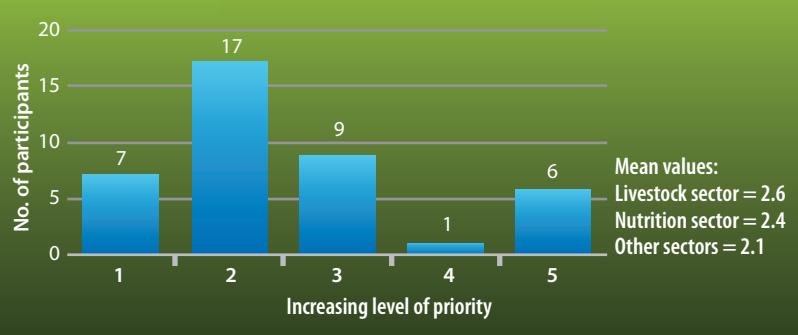


Figure 1c Participants' perceptions of degree to which the nutrition sector considers ASF and livestock as a priority in controlling malnutrition

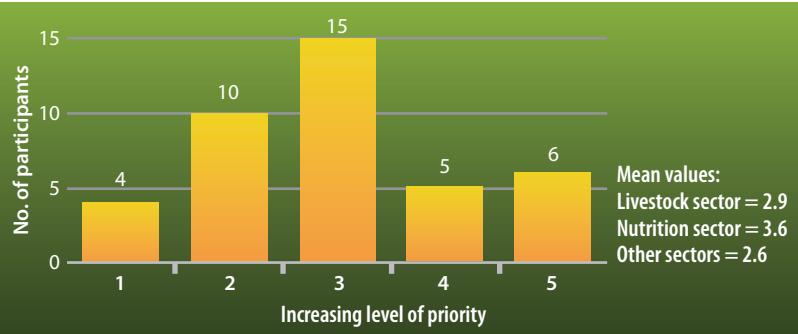


Figure 2 An impact pathway produced during a workshop

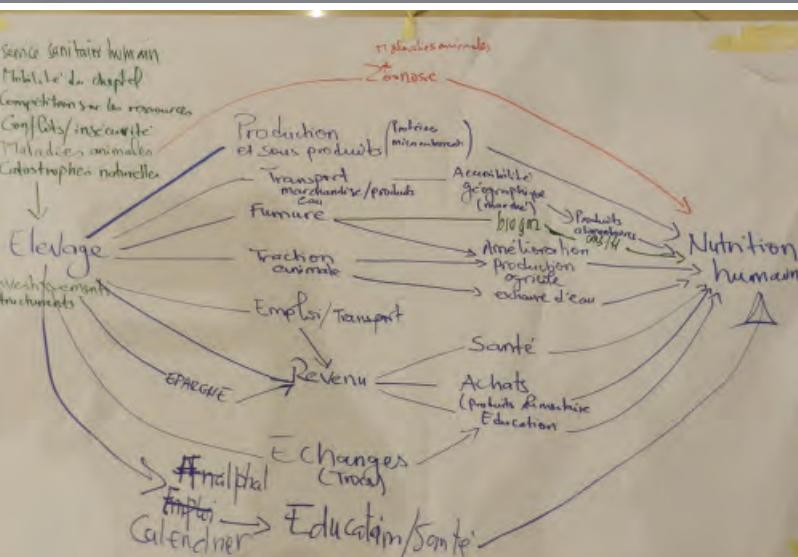


Figure 1**Central questions of the workshop**

1. How can the livestock sector contribute to improving human nutrition and the prevention of human malnutrition for the poorest/most vulnerable households?
2. What are the specific nutritional characteristics of animal-source foods and how can they be preserved throughout the value chain?
3. To what extent can livestock interventions fulfil the human nutrition deficiencies most commonly found in the Sahel?
4. How can the impact of livestock interventions on human malnutrition prevention be measured and enhanced for the different livelihoods?
5. What good practices have been identified in the sub-region and what are the lessons learnt?
6. Which livestock interventions have shown a positive effect or impact (direct or indirect) on human nutrition and/or its causes?

Workshop training materials were shared for replication of the workshop format within the participating countries (see links to resources, below).

Results and discussion

The workshop was planned to look at livestock interventions through a nutrition lens and discuss the benefits and risks of approaching malnutrition in a multi-disciplinary manner. On the first day, participants were asked their opinion on the importance of livestock-nutrition integration, and how they thought each sector considered the other sector as a priority in their programming. Figures 1a, 1b and 1c show that although high importance was awarded to integration, it was not a priority for either sector. This large disconnect between the disciplines is bi-directional: livestock interventions frequently neglect nutritional goals, mainly due to the complexity of impact measurement and the alternative roles of livestock in livelihoods; while preventive nutrition programmes focus on crops and vegetables but often overlook the potential of ASFs. Therefore, substantial effort was made to demystify the complexity and operational ‘know-how’ of both disciplines and increase awareness, presenting simple activities, targeting strategies and indicators, but also emphasising the interest of inter-sector work for more complex interventions and joint planning with formulation of nutrition objectives and indicators. The long-planned activities during the workshop for discussion in mixed teams contributed to initiating the development of a network of professionals that can talk to each other and engage in nutrition-sensitive livestock interventions and pro-

grammes. Sensitisation also revolved around the design and understanding by the delegates of impact pathway diagrams between livestock and nutrition and its use as a planning tool (see Figure 2). More than 14 different pathways were identified, of which four were livestock-specific, while the other applied more generally to agriculture interventions. This approach proved to be a powerful tool to help visualise, realise and critically analyse emergency/nutrition problems and identify solutions and necessary interventions, and was valued highly by the participants. Full details on the utilisation of this framework as a planning tool will be published shortly in a peer-reviewed journal.

Some key lessons learnt regarding impact optimisation of interventions related to the importance of: targeting; understanding the cultural specificities of ASF (household consumption habits, good practices and taboos) and their nutritional properties; considering nutrition at the context-analyses and study-design stages (as opposed to an add-on); promoting short livestock production (poultry); including nutritional education on technical livestock interventions; using traditional and innovative preservation methods to extend ASF shelf-life; the implications of pastoralist mobility patterns for health; and the integration of actors in livestock value chains. Key cultural and gender factors were related to intra-household distribution and time allocation. Risk factors for negative impact revolved around food safety issues, high cost of interventions, need for further interest by the private sector, and the importance of income-driven distortions (i.e. shift between trade and

household own-consumption, and use of generated income).

Opportunities and challenges in inter-sector coordination were discussed and participants explored how best to collaborate in joint programming. It was agreed that, to support integrative work, coordination and prioritisation needed to start at donor level, UN agencies and high-level country government and line ministries, down to other humanitarian organisations. The often short funding cycle of humanitarian interventions makes the measurement of effects and impact difficult. The different government ministries (livestock, health, others) should make more effort in inter-sector coordination.

Post workshop steps

At the end of the workshop, feasible steps were agreed by participants. These included follow-up activities after the workshop, with delegates organising restitution meetings in their technical (livestock, food security and nutrition) coordination groups or cluster and disseminating the key tools, knowledge and messages, as well as advocating for integration, and maintaining the dialogue between nutritionists and livestock experts at different levels. The delegates also requested the creation of a Community of Practice specific to livestock and nutrition where tools, case studies and ideas could be shared. This can be considered, but in the meantime the FAO Dakar office is keeping a mailing list of participants for information-sharing. The need for implementers to work with researchers in order to provide insights in the existing evidence gaps was acknowledged. A first webinar on ASFs, livestock and nutrition was organised by FAO in May 2015 and will be followed by a one-day workshop organised with the FAO technical livestock network. Finally, this workshop model can be adapted and implemented in other regions where livestock production is a main livelihood in order to build professionals’ capacities and ownership in improving the human nutrition outcomes of livestock interventions.

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Links to resources

A link to the workshop resources, including presentations, is available at:

<http://www.fao.org/in-action/food-security-capacity-building/events/detail-events/en/c/248628/>. Short videos can be watched at:

<https://youtu.be/UMDq1ZF1LMQ> (English), <https://youtu.be/oDS0BMTNxos> (French), <https://youtu.be/FecBW-WlaBE> (French).

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Global Forum on Nutrition-Sensitive Social Protection Programmes

Editorial note: As discussed in the editorial of this issue of Field Exchange, there is a lack of clarity and resulting confusion as to what actually constitutes a nutrition-sensitive intervention. In other words, what are the intrinsic elements and variables that help define whether an intervention is nutrition-sensitive or not? This inevitably leads to subjective classification and lack of harmonisation of definition. It was therefore of interest to the ENN to examine how the authors of the various case studies presented at the Global Forum on Nutrition-Sensitive Social Protection Programmes in Moscow in September and the organisers of the meeting classified nutrition-sensitive programming, i.e. what criteria were utilised.

SecureNutrition and the Russian Federation hosted the Global Forum on Nutrition-Sensitive Social Protection Programmes in Moscow, Russia, from 10 to 11 September 2015. The role of effective nutrition-sensitive social protection programmes has been increasing and the current global development agenda calls for raising the profile of nutrition by ensuring strong leadership and commitment at all levels and across multiple sectors. The Global Forum on Nutrition-Sensitive Social Protection Programmes looked to support these efforts by contributing to the evidence base for policy options and operations/operational actions.

The Global Forum aimed to:

- Better understand existing needs of countries to assist them in setting up well-functioning, nutrition-sensitive social protection programmes;
- Support countries in catalysing, building commitments for, designing, establishing, managing, and scaling up nutrition-sensitive social protection programmes;
- Disseminate best policies and practices and innovative approaches;
- Improve access to knowledge and build awareness related to nutrition-sensitive social protection;
- Facilitate south-south and triangular cooperation and exchange of experience and lessons learned;
- Enhance coordination and cooperation among development partners; and
- Promote engagement of all interested stakeholders.

Among the case studies presented at the meeting, 21 have been analysed by the ENN in order to better understand similarities and differences between social protection programming design. Some of the features (but not all), such as behaviour change communication (BCC) and multi-sector approach, relate to nutrition sensitivity. Key nutrition-sensitive

characteristics of the country experiences are included below and summarised in Figure 1.

Defining 'nutrition-sensitive'

Reflecting on the presentations, there appear to be five main aspects that cut across all of the programmes making them nutrition-sensitive. These are:

1. The promotion of health and nutrition services;
2. The delivery of training/capacity-building/education and good food behaviours;
3. Increased resilience to food insecurity;
4. A focus on the most nutritionally vulnerable;
5. Increased coordination between social protection, health, and nutrition stakeholders.

1. Promotion of health and nutrition services

The programmes in Indonesia, Tanzania, Mexico and the Dominican Republic have a strong focus on the promotion of health and nutrition services.

The Indonesia programme (PNPM Generasi Programme) does this through the delivery of incentivised block grants. The Tanzania programme (Tanzania Productive Social Safety Net) also does this through regular and longer-term support that promotes access to health facilities through compliance with health-related requirements. Similarly, Mexico's programme (MX Social Protection/PROSPERA Programme) delivers cash transfers to beneficiaries based on specific co-responsibilities relating to health/nutrition service utilisation.

Finally, the Dominican Republic's programme (Progresando con Solidaridad) has a conditionality that ensures that beneficiaries have to regularly participate in preventative medical care, such as application of vaccination and attendance of primary health care child growth and development check-ups.

2. Delivery of training/capacity-building/education and promotion of good food behaviours

Programmes in Indonesia, Tanzania, Ethiopia, Cabo Verde, Kenya, Republic of Congo, Myanmar, Kyrgyz Republic, Haiti, Syria, Brazil, Nigeria and Mexico all have components related to training/education and promotion of good food behaviours.

Indonesia's PNPM Generasi Programme provides training and capacity-building for communities to promote long-term education on nutrition and good food behaviours. Ethiopia's Programme (Productive Safety Net & Households Asset Building Programme) engages in behaviour change communication sessions whereby clients are expected to participate in at least six sessions. Similarly, the Kenyan Programme (targeted at orphans and vulnerable children) has focused promotion sessions of vitamin A supplements, as well as awareness-raising activities at community level. Mexico's MX Social Protection/ PROSPERA Programme also provides nutritional support and cash transfers based on attendance of health/nutrition sessions.

Both Haiti (Appui au Programme National de Sécurité Alimentaire et de Nutrition) and Nigeria (Child development and Grant Programme) also have a focus on education and good food behaviours to attempt to address underlying causes of under-nutrition and ensure children are born healthy and nurtured effectively.

Finally, the Brazil (Zero Hunger Strategy), Kyrgyz Republic (Optimising Primary School Meals Programme) and Cabo Verde programmes (National School Nutrition Programme) all aim to build healthy food habits in children of school age. These programmes all specifically focus on the nutritional needs of school-age children and how best to incorporate this into 'school feeding'. These pro-

grammes also all aim to promote and educate children on healthy eating and good food habits.

3. Increased resilience to food insecurity

The Programmes in the **Republic of Congo, Mali, Haiti, Nigeria and Syria** all have a particular focus on resilience to food insecurity.

The Republic of Congo Programme (Nutrition-sensitive Urban Safety Net Programme) aims to increase resilience to food insecurity

and undernutrition in the long term particularly by providing nutrition assistance and promoting positive behaviours to combat under-nutrition in periods of food insecurity. In Haiti the Bureau of Nutrition and the Ministry of Health (MoH) work together to define the composition of the food basket to ensure it is nutrition-sensitive. In practice, 40% of the value of the monthly USD 25 voucher to procure a locally produced food basket has to include fresh nutritious foods such as vegetables, fruits and meat products, thus providing a

long-term social safety net for food insecurity. Nigeria's programme aims to address the underlying causes of food insecurity. The programme has built in components of infant and young child feeding (IYCF) and nutrition Behaviour Change Communication (BCC) to address some of these underlying causes of under-nutrition, such as poverty, food security and health and nutrition practices. Syria's programme (fresh food vouchers for pregnant and lactating internally displaced women) aims to combat conflict-induced food insecurity by ensuring that the food vouchers given can only be used to purchase, from participating shops, specified fresh foods that complement WFP food baskets. Mali's programme (Emergency Safety Nets Project), through specific targeting, aims at building resilience among those most at risk of under-nutrition.

4. Focus on most nutritionally vulnerable (pregnant/lactating mothers, babies and young children)

The programmes in **Indonesia, Bangladesh, Myanmar, the Philippines and Nigeria** all have a very specific nutrition focus on pregnant/lactating mothers, babies and young children.

Indonesia's programme targets most high-risk groups in the poorest households. These include pregnant women and children under two years old. Bangladesh's Programme (Income Support Programme for the Poorest) has a similar component with a specific gender focus that targets pregnant women and/or women with children below the age of 60 months. This programme particularly focuses on growth-monitoring and child nutrition and development sessions. Similarly, the programmes of Myanmar (Tat Lan Programme: Maternity Cash Transfers) and Nigeria have a strong focus on BCC for optimal IYCF behaviours. Myanmar's programme also focuses on health-seeking hygiene and maternal care, particularly during the first 1,000 days. The Filipino Programme (Philippines Social Welfare Development and Reform Project) seeks to meet objectives of keeping children healthy and reducing stunting and long-term health complications related to poor nutrition.

5. Increased coordination between social protection, health and nutrition stakeholders

Two of the programmes explicitly coordinate social protection, health and nutrition stakeholders. Both the **Djibouti** and **Indonesia** programmes have a strong component related to enhancing sectoral coherence by increasing coordination and linking social protection and nutrition interventions. The Djibouti Programme (Social Safety Net Project) is at the forefront of a longer-term national social protection strategy.

For more information, visit:

<http://www.worldbank.org/en/events/2015/08/03/global-forum-on-nutrition-sensitive-social-protection-programs>

Figure 1 Cross-cutting themes by country

Cross-cutting themes	Bangladesh	Brazil (PNAE)	Brazil (ZHS)	Cabo Verde	Djibouti	Dominican Republic	Ethiopia	Haiti	Indonesia (PNPM)	Indonesia (FPH)
Multisectoral										
Integrated (supply & demand)										
Decentralisation										
Community participation										
Gender/women's empowerment										
Mobile phone technology										
Behaviour change communication										
Rural										
Urban										
Local procurement										
Resilience										
Lifestyle approach										
Early childhood development										
Innovative financing										
Double burden of malnutrition										
Lifecycle approach										

Cross-cutting themes	Kenya	Kryzz Republic	Mali	Mexico	Myanmar	Niger	Nigeria	Philippines	Republic of Congo	Syria	Tanzania
Multisectoral											
Integrated (supply & demand)											
Decentralisation											
Community participation											
Gender/women's empowerment											
Mobile phone technology											
Behaviour change communication											
Rural											
Urban											
Local procurement											
Resilience											
Lifestyle approach											
Early childhood development											
Innovative financing											
Double burden of malnutrition											
Lifecycle approach											

Guidelines and free on-line modules to support multi-sectoral programming for nutrition and resilience

Guidelines and a free online module have been developed by the Food and Agricultural Organisation (FAO) to assist professionals involved in emergency, resilience and development programmes on how to handle a workshop for joint action on nutrition. The target users of the module encompasses development partners (i.e. international organisations, donor agencies, international and local non-governmental organisations (NGOs)), national governments, and/or independent consultants, working in a diverse range of sectors relevant to nutrition (including food security, agriculture, health, education, water & sanitation, and social affairs).

The guidelines present a workshop methodology that uses the problem/solution tree approach (see Figure 1). This methodology is a powerful way to better understand the complexity of and the interrelations between causes of malnutrition. It helps to build consensus among participants and strengthen ownership of nutrition issues. The guidelines support professionals in facilitating workshops, in order to design integrated information systems and programmes, and to develop partnerships for sustainable improvements in nutrition. The workshop methodology also enables participants to learn simultaneously about nutrition, food security and livelihoods concepts, at the time as are they are engaged in planning.

The online module is a self-training interactive tool that guides the participant through a simulation of the four phases of a workshop process: 1) Preparation of the workshop, 2) Introductory and problem tree sessions 3) Solution tree session, 4) Action plan session and workshop follow-up. The exercise is set in the fictional country of Namambar where alarming rates of malnutrition are reported (see Box 1). Your

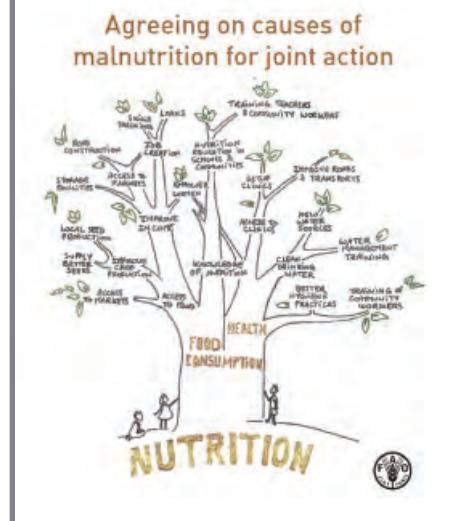
mission is to facilitate a workshop to develop a joint strategy for strengthening resilience and combating food insecurity and malnutrition.

The module content was developed in the framework of an ECHO-funded Capacity Building programme run by FAO in 2013-14. Through this project, 13 training workshops and two training of trainers on *Integrated food security and nutrition programming for emergency response and resilience building, using the malnutrition problem and solution trees methodology*, were organised in the Sahel and Horn of Africa regions (at regional, national and/or sub-national levels) in 2014, and additional workshops have already taken place in 2015. More than 600 professionals from over 150 different organisations actively participated in the workshops through case studies, group work and open discussions. Participants included international & local NGOs, the Red Cross, UN agencies, Government, REACH and SUN stakeholders. The workshops have generated a pool of more than 40 regional and country trainers, now active in their respective countries.

Feedback collected from participants (end of workshop evaluations and online surveys 4 to 6 months after the two regional workshops) shows that the workshops have been instrumental in building partners' capacities and bringing concrete changes in programme design and implementation. Indeed, 98% of the participants judged they have gained from good to excellent understanding of basic concepts for integrated food security and nutrition programming. Sixty per cent of on-line survey respondents have observed improvements in the integration of nutrition and food security programming in their organisation, and 58% reported progress made in implementing the country action plan designed during the workshop. The module builds on

Box 1

Problem/solution tree approach: agreeing on causes of malnutrition for joint action



this very successful experience and comprises interactive learning, photos and videos from the workshops.

The module is available in English, French and Spanish.

English:

www.fao.org/elearning/#/elc/en/course/ACMJ

French:

www.fao.org/elearning/#/elc/fr/course/ACMJA
Spanish:

www.fao.org/elego

(soon available)

In addition, if y

food security or resilience, you can access a series of free e-learning courses already on-line on FAO E-learning centre, see:
<http://www.fao.org/elearning/#/elc/fr/home>

Box 1

Example scene from the online training module



My name is Jaden and I will take you through a journey in the fictional country of Namabar where alarming rates of malnutrition are reported, affecting four different vulnerable livelihood groups:

- Former pastoralists now settling down in Wajil city
- Agro-pastoralists living in the central part of the country
- Fish workers living on the coastal area of the country
- Urban poor living in Kithare, a slum of Naiburu, the capital city

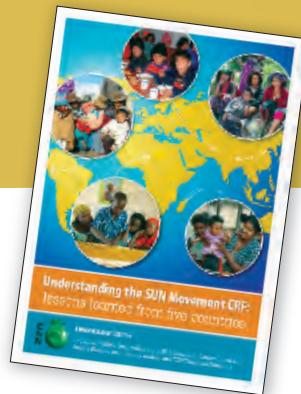
Your mission: you are working for a humanitarian organisation, *Help for Hungry*. Together, we will facilitate a successful workshop using the malnutrition problem and solution trees methodology to develop a joint strategy for combating malnutrition and strengthening resilience in Namambar.



Problem tree in action

Understanding the SUN movement Common Results Framework: lessons learned from five countries

This is a summary of a recently finalised ENN document which brings together background thinking around the SUN Common Results Framework (CRF) and five examples of country level implementation; Tajikistan, Madagascar, Nepal, Niger and Peru. The full report is available at: www.ennonline.net



The review was undertaken by ENN at the request of the Sun Movement Secretariat (SMS) and was closely supported by key members of the SMS. Tamsin Walters led the review on behalf of ENN and was supported by Carmel Dolan and Jeremy Shoham (ENN Technical Directors).

Special thanks go to Patrizia Fracassi from the SMS for guiding the overall focus of this work. Thanks also to Paola Victoria, Fanny Granchamp and Delphine Babin-Pelliard for assistance with Peru and Madagascar case examples and to Bjorn Ljungqvist for sharing experiences from Niger. Interviewees and reviewers for case examples included civil society and government representation for Peru and Madagascar; UN and government representation for Nepal and Tajikistan. Global stakeholders interviewed included donor, UN, independents, SUN civil society and private sector representation. The ENN gratefully acknowledge the support of Irish Aid who funded this review.

Information was gathered from document review and interviews with 20 global and ten country-based stakeholders¹. It was not intended to be an exhaustive review of the Common results Framework (CRF) but to give a flavour of how processes are being implemented and the perceived successes and challenges.

What is a CRF?

The 2014 SUN movement Progress Report describes a CRF as a single and agreed set of expected (or common) results generated through the effective engagement of different sectors of Government and the multiple (non-government) actors who have capacity to influence people's nutrition. This set of results should be based on the national goals and targets for nutrition, and reflect the ways in which different sectors and actors can best contribute to the achievement of these targets through their individual and collective actions. While the "results" referred to in a CRF are guided by the 1000 days window of opportunity to improve nutrition, CRFs may also include targets for obesity or overweight reduction.

The CRF concept has been shaped by the SMS to facilitate a common language. According to current SMS guidance², "When written down, the Common Results Framework will include a

table of expected results: it will also consist of a costed implementation plan, perhaps with a roadmap... describing the steps needed for implementation. There may also be compacts, or memoranda of understanding, which set out mutual obligations between different stakeholders. In practice, the implementation plan is often an amalgam of several plans from different sectors or stakeholders – hence our use of the term "matrix of plans" to describe the situation where there are several implementation plans within the Common Results Framework. The group of documents that make up a country's Common Results Framework will be the common point of reference for all sectors and stakeholders as they work together for scaling up nutrition".

The CRF concept builds on previous initiatives to develop multi-sectoral plans for nutrition, including initial attempts in the 1970s and the post-International Conference on Nutrition (ICN)¹ (1992) National Plans of Action for Nutrition. CRFs ideally have the following features³:

1. **Expected results for improvement of nutritional status**
A result or set of results; for example, a reduction in stunting of 10% over 5 years.
2. **Defined populations in which these improvements will be seen**
3. **Interventions necessary to achieve the results and clear indications on the current coverage level and the goal coverage**
CRFs may select defined geographic areas to target, based on identified high burden contexts
4. **Identified responsibilities of line ministries and sectors within Government for implementing the interventions**
5. **The roles and responsibilities of non-government partners**
Including the private sector, UN agencies, civil society and donors
6. **A shared framework for performance monitoring and evaluation**
7. **A matrix of costs, which identifies the contribution of government (including human resources) and of other implementers.**

"The development of the Common Results Framework is informed by the content of national development policies, strategies of different sectors..., legislation, research findings and the positions

taken both by local government and civil society. For it to be used as a point of reference, the Common Results Framework will require the technical endorsement of the part of Government responsible for the implementation of actions for nutrition. The Common Results Framework will be of greatest value when it has received high-level political endorsement – from the National Government and/or Head of State. For effective implementation, endorsements may also be needed from authorities in local government."⁴

The process of developing a CRF, bringing plans of different sectors together and facilitating dialogue between a range of stakeholders is essential for effective implementation and accountability to be achieved.

"The process through which a plan is developed has a critical influence on the utility of the plan or stewardship of multiple actors. A plan is more likely to be of use for stewardship if developed as a result of inclusive consultation between representatives of national governments and other in-country stakeholders".⁵

The CRF is an evolving concept. Experiences of different countries have contributed to refining the concept moving forwards. There is no standard CRF template and CRFs do not look the same in all countries. This relates to the different realities and contexts, as well as the status of the policy and strategy frameworks in each country. CRFs can be comprised of a suite of documents and commitments or alternatively, a CRF may be primarily housed in one key overarching plan or pact⁶.

¹ While ten in-country stakeholders were purposefully interviewed, others contributed through review of case examples and the authors drew on their own experience supporting SUN in three of the countries, as well as the experience and review of SMS country focal points.

² Assessment Guide and overview of Progress Markers 2015. http://scalingupnutrition.org/wp-content/uploads/2013/02/REF_2-Assessment-Guide-Overview-of-ProgressMarkers_2015-EN.pdf

³ <http://scalingupnutrition.org/resources-archive/common-results-frameworks>

⁴ Assessment Guide and overview of Progress Markers 2015. http://scalingupnutrition.org/wp-content/uploads/2013/02/REF_2-Assessment-Guide-Overview-of-Progress-Markers_2015-EN.pdf

⁵ Planning and costing for the acceleration of actions for nutrition: experience of countries in the Movement for Scaling Up Nutrition, May 2014



Development of a CRF: lessons learned

Building on learning documented by the SUN Movement Secretariat (SMS) and the SUN Independent Comprehensive Evaluation (ICE)⁷, the findings of this review are summarised below.

1. How is political and social mobilisation around nutrition achieved and maintained?

SUN Movement global advocacy has played an important role in bringing awareness to nutrition and gaining high-level political commitment to move processes forward. Studies on the cost of hunger and economic effects of malnutrition have also proven effective in some countries. However, the role of nutrition champions in high-level positions at national level cannot be underestimated. These include advocates high up in government bodies, such as the Ministry of Planning or a Presidential Office, who have driven nutrition forward as a multi-sectoral issue and positioned it high on the national agenda.

Maintaining that drive towards fulfilment of a CRF can prove challenging: investment in genuine, deep consultation and development of a common understanding on nutrition across sectors and stakeholders at the start is a vital part of the process, which takes time, resources and facilitation. Enshrining a common goal for nutrition in legal statutes (policy or signed pacts) or in a national development strategy can assist as a directive to sectors to engage. However, the more inclusive the process of discussion and planning in the early stages and the broader the advocacy, creating recognition of nutrition as a priority development issue for the country, the more effective and efficient the implementation, and hence the achievement of outcomes, is likely to be.

2. Engagement of sectors to establish multi-stakeholder platforms

The process of bringing stakeholders together from across Ministries, donors, United Nations (UN) agencies, civil society, academia, the private sector and the broader population requires a high level convenor.

Where SUN Focal Points are based in a sectoral ministry, such as the Ministry of Health (where more than 20 of the 55 SUN Focal Points

are based), their ability to convene across sectors is often compromised and plans may be skewed towards activities of their sector.

Alignment of different actors requires multiple stakeholders to have a common understanding and a willingness to adapt their traditional ways of working to achieve new collective objectives. It can be a big step for sectors to start thinking about nutrition and how their work might contribute towards nutrition outcomes; and a further step to integrate relevant indicators into their strategies and programming.

Building up stakeholder networks/platforms takes time. The case examples reveal that missed opportunities to engage a range of actors can result in weaker plans, with challenges arising at the implementation stage; when civil society or local government have not been engaged in planning but are called on to implement, the diversity of contexts and priorities at sub-national levels are illuminated. Madagascar, Niger and Peru are examples of countries where there has been recognition of the need for early consultation with the subnational level stakeholders to inform improved planning.

The private sector is not always aligned with the national interest. However, it can contribute beyond the restricted focus of its value chain and business interests if there is a clear strategic approach to its participation from the start; for example, in Guatemala, private sector involvement in social auditing (through corporate social responsibility) assisted identification of how health services could be improved and subsequently engaged the sector in contributing to those improvements.

Although many countries do not yet have the full spectrum of stakeholder networks proposed by the SUN Movement (UN, Civil Society, Business and Donor), the case examples illustrate the scope for strengthening CRFs and achieving greater results if a wider range of stakeholders can be actively engaged.

3. Planning together and developing M&E frameworks

Investment in consultation with multiple stakeholders must be genuine and deep enough to ensure meaningful CRFs are established that are owned by all and are therefore more likely to be sustainable. Such a process can take a very long time, depending on the starting point of the different sectors.

Finding a common ground – conceptual integration – is one of the first hurdles. Each sector has its own operational plan and faces competing priorities; adding nutritional indicators may be viewed as a burden and a distraction from their core business. Information on what works, made relevant for different sectors, can contribute to an improved understanding and interest in moving forwards. However, this is somewhat frustrated by weakness in the evidence-base around nutrition-sensitive programming and lack of definitive guidance on what works; weighting nutrition sensitivity of activities

and allocating budget to them is currently a complex and somewhat subjective exercise that requires technical, as well as contextual, knowledge and support. A substantial amount of high-level advocacy may be required to raise awareness and understanding of nutrition as an issue with multiple determinants that cut across a range of sectors. As noted by one interviewee, “*There is a need to bring each and every stakeholder along at each and every step of the process*”.

Contextual analysis, cost of hunger studies and programming gap analyses can help inform a common understanding of the nutritional challenges in a country and the priority actions for inclusion in a CRF.

In many countries, UN agencies are committing significant time and resources towards supporting governments to facilitate CRF development. This provides a huge benefit to time-pressured SUN Focal Points. However, there is a fine balance to maintain to avoid tipping the scales away from government ownership. Ownership across stakeholders is an essential component of a CRF and brokering those relationships and commitments requires full national ownership from high-level government bodies.

4. Implementing plans at the regional and district level

At the implementation stage, the commitment of government sectors and development partners is tested as all actors need to align firmly with what has been agreed at national level. Budgets and plans as well as monitoring are often disconnected between sectors.

One interviewee noted, “*the plan is very good on what to do, but less on how to implement these actions*.” Country experiences advocate starting slowly with gradual build up of coverage of interventions. Strong coordination teams are required at provincial/district level to link budgets, plans, monitoring and accountabilities. Funding needs to align with the action plans. M&E systems that can demonstrate achievement of objectives and results and consolidate results across sectors are required, which include sufficient flexibility to be responsive to different local realities.

Concluding remarks

Development of a CRF takes time and substantial resourcing

The development of a CRF, with inclusion of all its features is a process that may take years, rather than months.

The processes of galvanising political and key stakeholder interest and ownership, development of multi-sectoral approaches and M&E frame-

¹ In Guatemala, for example, the overarching document that spearheads the CRF is in the form of a Pact which has been signed by all engaged parties; the Pact is a signed political commitment to achieve reduction of chronic malnutrition by a specified percentage within a specified timeframe.

⁷ Independent Comprehensive Evaluation of the Scaling Up Nutrition Movement. FINAL REPORT. 1st May 2014. Mokoro Ltd in partnership with Valid International and FEG Consulting.

works are complex, as well as resource-intensive, activities. Commitment of a variety of different sectors and stakeholders is required to establish a relevant, feasible and workable CRF. Technical capacity and negotiation skills are required to facilitate the CRF processes and a question remains over how governments resource that. Tajikistan and Niger have called on development partners and engaged consultants; Nepal has employed a strong REACH-funded Secretariat to support the necessary steps to move forward; Peru has benefitted from a strong and vibrant civil society network and efficient long-standing government mechanisms; Madagascar has a designated National Nutrition Office that implemented efficient government systems and is now calling development partners and civil society to contribute to a redoubling of effort.

Stakeholders report a notable shift in the type of staff recruited by agencies such as UNICEF and WFP, from technical specialists towards upstream, strategic support personnel.

There is clearly a balance to be struck between dependence on highly invested external support and national leadership, ownership and investment. The flexibility to start small and keep plans realistic and achievable, building on what already exists, is important in this respect.

Resourcing the development and rollout of CRFs

A key issue around funding of CRFs remains. It is unclear how donor funds are contributing to the processes of developing and implementing CRFs. While there is donor funding at country level for technical support to specified processes, it is not clear whether a strategic approach to working with countries to see through the entire process exists, or how much governments can take on support costs themselves.

Links between the global level (SUN donor network) engagement and country level appear weak. Funding approaches and mechanisms need to keep pace with country planning: funding still tends to be allocated by sector, despite donors acknowledging the need for a multi-sector approach. Achieving funding flows down to the local implementation level and retaining flexibility for contextually appropriate spending is a further challenge.

The World Bank and Results for Development estimate that to meet World Health Assembly (WHA) targets on stunting in 37 high-burden countries, development partners will need to quadruple funding and Governments to double domestic spending until 2025⁸. It is unclear how realistic CRF budgeting processes are in terms

of funding gaps and the likelihood of their being filled by a combination of domestic and development partner funds.

The current lack of evidence around nutrition-sensitive programming makes it difficult to predict how much the different sectors can contribute to targets and highly challenging to track financing of nutrition.

CRFs in fragile and conflict-afflicted countries

Finally, a question remains around how CRFs resonate with fragile and conflict-afflicted countries and the particular challenges they face. Capturing experiences from more SUN countries in such contexts would assist learning around how the humanitarian perspective is incorporated in the CRF processes and how the humanitarian approach considers a multi-sectoral, multi-stakeholder process.

Case study details are available in the full report, included with this edition of Field Exchange and available at: www.ennonline.net

⁸ International Food Policy Research Institute. 2015. Global Nutrition Report 2015: Actions and Accountability to Advance Nutrition and Sustainable Development. Washington, D.C.g.



Nutrition and social protection

In recent years, social protection has increasingly gained attention as a powerful tool in the battle against poverty and inequality; social protection instruments are frequently adopted to enable populations to better adapt to the shocks and stresses of economic challenges and climate change. With malnutrition an urgent global challenge, agriculture and social protection both need to contribute to addressing the underlying key determinants of malnutrition, as well as apply principles that are specifically designed to improve nutrition outcomes.

A recent FAO report, 'Nutrition and Social Protection', discusses the main linkages and synergies between social protection and nutrition within an agricultural context. It identifies possible ways of using synergies to ensure greater positive impact of social protection measures on nutritional outcomes. It is the result of a collaborative effort between the Nutrition Division (ESN) and the Social Protection Division (ESP) of the Food and Agricultural Organisation (FAO) and is part of FAO's broader efforts to mainstream nutrition in all key aspects of programme of

work. The report is written for policy makers and project managers working on areas related to nutrition and social protection. Building on the conceptual framework of malnutrition and the broad definition of social protection, it aims to provide practical and operational suggestions to enhance the nutritional impact of social protection policies and programmes.

The report highlights the principles in making social protection interventions nutrition-sensitive and identifies concrete actions that programme designers and implementers can consider in designing their interventions and programmes to fully exploit synergies. It describes how various social protection instruments, such as food, cash and asset transfers and public works programmes, can have positive impacts on diets, income, health and care and so tackle multiple causes of malnutrition.

Social protection holds immense potential for improving nutrition sustainably. By lifting people out of poverty and enhancing access to a greater quantity and diversity of food as well as health, sanitation and education, it addresses a

range of basic, underlying and immediate causes of malnutrition. However, social protection needs to be part of a carefully targeted, multi-sectoral approach tailored to reach the most vulnerable and embedded in the broader agricultural and rural development agenda to ensure coverage of the poorest, most disadvantaged and marginalised populations. Such integration requires institutional mechanisms within and across relevant sectors – social protection, health, agriculture, education, labour, trade, environment, consumer affairs and planning, among others – at all levels, to facilitate policy coordination and coherence. Civil society organisations and research institutions involvement help ensure that policy and programme designs are context-specific and confer ownership on beneficiaries.

The authors conclude that scaling up and sustaining social protection can be financially challenging; projects and programmes must last long enough to effect enduring, positive impacts on food security and nutrition. The current political environment is increasingly favourable to expanding the agenda on social protection. In order to carry this momentum forward, it is essential to encourage long-term investments and build strategic partnerships within and among nations – primarily through exchange of experiences and good practices – and to enhance institutional capacities in making social protection nutrition-sensitive.

Access the report at: Food and Agriculture Organisation (2015). Nutrition and social protection. FAO: Rome.
<http://www.fao.org/3/a-i4819e.pdf>

Regional conference on responding to challenges of undernutrition in West Africa

By Christelle Huré, Regional Advocacy Adviser,
Action contre la Faim West Africa Regional Office



In June 2015, Action Contre la Faim (ACF), in partnership with the SUN Civil Society Network (SUN CSN) and UNICEF, organised a regional conference in Dakar, Senegal, on *How to respond to the remaining challenges of the fight against undernutrition in West Africa*. About 100 stakeholders from the region attended the event. The objective was not to develop a roadmap to fight undernutrition in West Africa or to take further commitments, but to reflect collectively on the current situation and identify progress, good practices to be scaled up, challenges ahead and opportunities to be seized.

The overview of the nutritional situation in West Africa reveals a mixed picture (For the purpose of this article, the West Africa region is defined as the seven Sahel countries (Burkina Faso, Chad, Mali, Mauritania, Niger, Nigeria and Senegal) as well as the coastal countries (Benin, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Sierra Leone and Togo). On one hand, there has only been slow progress in reducing undernutrition, especially compared with other regions of the world. For instance, stunting rates are not declining (except for a decrease of more than 2% in 2014 in six of the 17 West Africa countries – Burkina Faso, Côte d'Ivoire, Ghana, Mali, Mauritania, Senegal). Furthermore, while the prevalence of acute malnutrition is generally decreasing, the caseload keeps increasing (see Figures 1 and 2 for trends in the Sahel). Over the past five years, the number of children under five suffering from severe acute malnutrition (SAM) has increased by 25%. On the other hand, great efforts have been made in terms of scaling up treatment of acute malnutrition, funding has been mobilised, new data are available and states have made political commitments to fight against hunger (Nutrition for Growth Conference, Malabo Declaration, within the SUN Movement).

The best practices and conditions for success are known in West Africa but have not been fully achieved: *national leadership*, which is essential to effective and efficient coordination; programme quality (effective targeting; thorough analyses of the causes of undernutrition; joint implementation of short-term and long-term interventions; joint implementation of treatment and prevention; involvement of community; monitoring and evaluation); *improved financing in quantity and quality* (short-term and long-term); *responsibility and accountability*; *improved knowledge*; *support to civil society and recognition of its role*. Overall, the conditions for success show that it is essential to consider the complexity of undernutrition. Undernutrition should be seen not only as a feature of humanitarian emergencies but also as a *development and public health priority* which requires the sustainable and long-term mobilisation of a diverse range of stakeholders and contributing sectors.

In order to effect these practices and conditions, several initiatives, frameworks and programmes, both at regional (Global Alliance for Resilience (AGIR), Economic Community of West African States (ECOWAS) Zero Hunger Initiative) and global levels (Renewed Efforts Against Child Hunger and undernutrition (REACH), Scaling Up Nutrition (SUN)), have recently emerged in West Africa. These initiatives pursue the same goal to tackle hunger, face the same challenges, involve the same stakeholders and all seek to highlight the leadership of governments and regional institutions. While efforts have been made towards alignment and coordination, overall communication and consistency between these initiatives remain limited. Coordination and clarification on the harmonisation of these different initiatives under the leadership of regional organisations (ECOWAS and the West African Eco-

nomic and Monetary Union (WAEMU)), is essential for a sustainable and efficient fight against food insecurity and undernutrition. Clear communication channels need to be defined. Beyond consistency, each initiative should strengthen its organisational and technical capacity, work on the monitoring and evaluation of its implementation and impact on the community, and ensure improved inclusion of civil society.

All these initiatives agree on one point: the need for contributing sectors to implement a series of nutrition-sensitive actions complemented with nutrition-specific interventions. Considering the multi-sectoral causes of undernutrition, contributing sectors must mobilise through the integration of nutrition into their respective policies, while nutrition multi-sectoral policies must in turn integrate all sectors and demonstrate their potential and actual impact on nutrition. These policies must then be translated into concrete programmes on the ground, with adequate financial resources.

Despite current consensus on the need for a multi-sectoral approach, implementation in practice is much more complex and still faces many difficulties. An ACF study on the level of inclusion of nutrition in sectoral policies in West Africa (ACF, 2015) reflects these challenges and formulates key recommendations, such as: improve nutrition management tools and enhance nutritional targeting in policies; recognise each sector's priorities and take into account the implementation capacities of contributing sectors; and invest in the decentralised level, by strengthening coordination and positioning nutrition in local development issues.

The experience of Senegal, which adopted a multi-sectoral approach in the fight against malnutrition a few years ago, shows that the implementation at the highest level of a multi-actor

Figure 1 Evolution of global acute malnutrition (GAM) in Sahel countries (source: UNICEF)

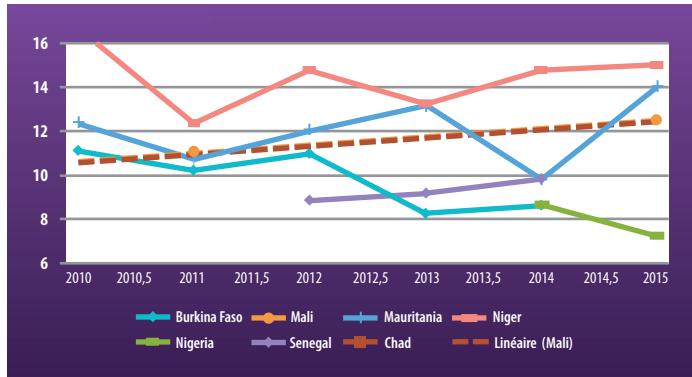
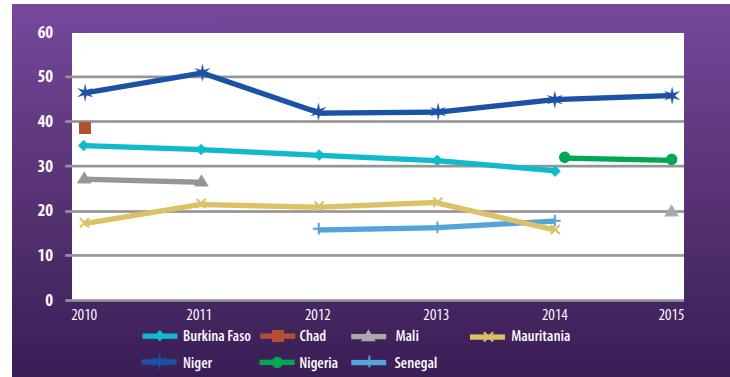


Figure 2 Evolution of chronic malnutrition (stunting) in Sahel countries (source: UNICEF)



and multi-stakeholder coordination platform (*Cellule de Lutte contre la Malnutrition, CLM*) can promote the positioning of nutrition. It also facilitates the tackling of the various drivers of nutrition and the mobilising of funding. The Senegalese experience also shows the essential role that MPs can play, particularly in advocacy for domestic resource mobilisation. A study led by Senegalese MPs on 2013-2015 budget lines allocated to specific nutrition interventions or nutrition-sensitive interventions revealed that many ministries contribute financially to the fight against malnutrition without people knowing it due to lack of information-sharing.

In general, the political and institutional environment in West Africa is increasingly favourable to nutrition. This is due to a stronger institutional anchoring, a policy framework that integrates nutrition, and increased funding. However, there are still challenges ahead, including the needs to:

- Strengthen the institutional anchoring at the highest level to promote the involvement of all line sectors;
- Develop impact measures and strengthen evidence on the effectiveness of multi-sectoral interventions; and
- Strengthen the coordination and implementation of policies at the local level, with strong involvement of the community and with enhancement of the role of civil society.

The integration of nutrition at the programmatic level is also key. Multi-sectoral programming is widely recognised and accepted today; interventions have been identified (water/sanitation/hygiene, agriculture, behaviour change, social protection, etc.) and promoted (especially by UNICEF and the Food and Agriculture Organization of the United Nations (FAO). However, a shift is still needed to move from an opportunistic approach to a systematic and pragmatic approach, ensuring multi-sectorality at all project management phases (planning, implementation,

monitoring and evaluation). To achieve this:

- Multi-sectoral programmes must be systematically based on knowledge and understanding of local causes of undernutrition (the ACF Link-Nutrition Causal Analysis (NCA) study is one useful approach in this regard);
- Sectors should further improve coordination (same geographical area and same targeting);
- Evidence of the impact of sector interventions on undernutrition must be better shared and used to promote their scale-up. Evidence could be further strengthened through thorough monitoring of the implementation of multi-sectoral programmes and their real impact;
- The ‘Do no harm’ principle should guide action in two ways: the potential negative impacts of each sector on nutrition must be controlled and the potential positive contribution of each sector to nutrition should not prevent it from achieving its sector-specific goals and priorities; and
- Beyond each sector, each stakeholder has a role to play: UN agencies, NGOs and civil society must support countries in designing multi-sectoral programmes on a large scale, based on best practices and lessons learned; and donors and governments must allocate the necessary resources to implement these programmes.

The solutions to fight against undernutrition in West Africa are known and proven, but have yet to be scaled up. One of the obstacles to scale-up remains the mobilisation of financial resources, which must be sufficient, flexible and tailored to the needs of the region, with financing both in emergencies to treat children suffering from acute malnutrition but also long-term to address the underlying causes of both acute and chronic malnutrition.

While governments should mobilise their domestic resources and progressively increase the

budget allocated to nutrition, international donors have a key role to play to support them in this effort. The link between relief and development and the financing of the multi-sectoral approach or coordination between donors are challenges that remain. In the West Africa region, emergency and development donors recognise the recurring nature of food and nutrition crises, have invested, and continue to invest heavily in the fight against undernutrition. Besides treating acute malnutrition, which remains essential for saving lives and reducing child mortality, investments are still needed for prevention.

Several good practices and suggested improvements can be highlighted:

- Introduce nutrition indicators in programming documents and in the result frameworks of development projects;
- Increase funding for nutrition-sensitive interventions, with clear nutrition objectives and impact measurement indicators;
- Mobilise flexible and long-term funding that addresses at the same time both the management and prevention of malnutrition; and
- Integrate interventions that can have a strong impact on nutrition in the long term in donor strategies (e.g. climate change and population growth).

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The full report of the conference is available in French: http://www.actioncontrelafaim.org/sites/default/files/articles/fichier/rapport_conference_regionale_societe_civile_wa_juin_2015.pdf

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ACF, June 2015 Integration of nutrition into contributing sector programmes and policies. Synthesis report of a West Africa regional case study. See www.actioncontrelafaim.org/sites/default/files/publications/fichiers/acf_iramintegrationnutritioneng.pdf

and measurement of agriculture interventions in terms of the wellbeing of individuals (in particular to poorer and marginalised groups), improved tools and metrics to measure agri-health interventions, while better linking research and policy. Engagement and capacity building of stakeholders at different stages of the value chain and the promotion of partnerships between different institutions are considered essential to mainstream and implement effective nutrition-sensitive agricultural interventions and policies.

Two side events were also held:

Launch of the Chicago Council on Global Affairs report: “Healthy Food for a Healthy World - Leveraging Agriculture and Food to Improve Global Nutrition”, June 2, 2015.

Women’s time allocation, agriculture and nutrition seminar, June 2, 2015.

Sessions were audio-recorded or videoed. These, together with conference abstracts and presentations are available at: <http://lcirah.ac.uk/5th-annual-conference>

Agri-health research: what have we learned and where to next?

The Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH) held its fifth annual research conference, at the London School of Hygiene and Tropical Medicine, London, on the 3rd and 4th of June, 2015. It provided an opportunity to gather researchers from around the world to examine and reflect critically on what we have learned from agriculture, nutrition and health research in the past five years and what the future research agenda should look like.

Research studies presented fell into the following themes:

- Women and child health outcomes
- Behaviour change/consumer acceptance

- Innovative metrics & tools
- Diversifying local agricultural production & diets
- Value chain approaches to nutrition
- Nutrition-sensitive agriculture policy

Developments in different research areas, such as gender and women’s empowerment in agriculture and nutrition, theoretical and methodological shifts towards interdisciplinary work, innovative metrics and a shift from quantity (i.e. caloric adequacy) to quality of the diet, were discussed. These developments have led to a new language and innovative strategies for the implementation of policies and projects. There is a general recognition to rethink policy, research

Baby WASH coalition planned to overcome development silos

By Peter Hynes, World Vision

Actors from non-governmental organisations (NGOs), donors, academia, United Nations (UN) agencies and others met recently to consider forming a coalition to improve collaboration among those who work to prevent malnutrition and keep children healthy in their first 1,000 days. The meeting, convened in London by World Vision and WaterAid on December 10th 2015, was prompted by a need to seriously address the lack of multi-sectoral engagement in ensuring child survival and development in the first 1,000 days of life.

"There are many missed opportunities due to the siloed nature of the development space," said meeting organiser, Stefan Germann. "Ensuring health in the first 1,000 days really does require a multi-sectoral engagement process."

The first 1,000 days of life, from the point of conception up to the child's second birthday, includes major hotspots such as pregnancy, birth, the neonatal period, early childhood and onset of exploratory play. Health in this period is often best addressed through multi-sectoral interventions. For example, emerging evidence on environmental enteric dysfunction (EED) suggests that the environment that children grow up in could play a large role in childhood stunting, in addition to the food and health care the child receives. Mduduzi Mbuya, whose joint work on EED with Jean Humphrey at John Hopkins University was recently cited in the December 12th edition of the Economist, said that "the theory underlying BabyWASH is that children are routinely exposed to contaminants during their first years of life." Mr. Mbuya, who presented at the coalition consideration meeting, went on to say that "without improving sanitation and hygiene along with improved nutrition, and ensuring a conducive environment of infant play and socialisation, we might continue to fail in maximising the cognitive, developmental, economic, and overall human potential of children"

The aim of the proposed coalition – currently named *Global BabyWASH¹ Coalition* – is to bring together experts in water, sanitation and hygiene (WASH); Nutrition; Maternal, Newborn and Child Health (MNCH); and Early Child Development (ECD) to promote cross-sector collaboration to ensure better health for children, their mothers and their caregivers. "Making progress on child health relies on addressing

environments as well as disease," said Senior Policy Analyst on Sanitation and Health at WaterAid, Yael Velleman. "We need to move away from our siloes and bring together health, WASH and nutrition sectors in coalitions like this, to make real and significant impact in the area of undernutrition and stunting."

Facing up to the challenge

The meeting highlighted the difficulties of integration caused by organisational structure, by donor funding structures, and by insufficient efforts among sectors to work towards common targets. In this instance, having the common objective to reduce child stunting and malnutrition, necessitates multiple sectors - nutrition, WASH, MNCH and ECD to work together, and the proposed BabyWASH coalition may be a mechanism to accelerate this approach.

Nevertheless, there was clear agreement that if the world is serious about reaching the ambitious sustainable development goals (SDGs), better co-ordination among the development sectors is crucial. "This current work in BabyWASH highlights the prioritization of World Vision, WaterAid and the participating agencies to translate the commitment to a multi-sectoral and multi-stakeholder approach into action" said World Vision's Senior Nutrition Policy and

Partnerships Advisor, Miriam Yiannakis. "This commitment must take place both in leadership at the global level and in multi-sectoral interventions in communities."

Stefan Germann said there was a reticence among those at the meeting "to clutter up the already busy development space with another coalition if one was not required". Therefore the group will explore what initiatives already exist that focus on integration of sectors and the first 1,000 days of life.

"We will be looking for current actors and other relevant initiatives to become part of the proposed coalition, with the intention of building effectiveness and efficiency," said Mr. Germann. "We will be exploring this over the next few months and updating our key objectives at a meeting in March 2016.

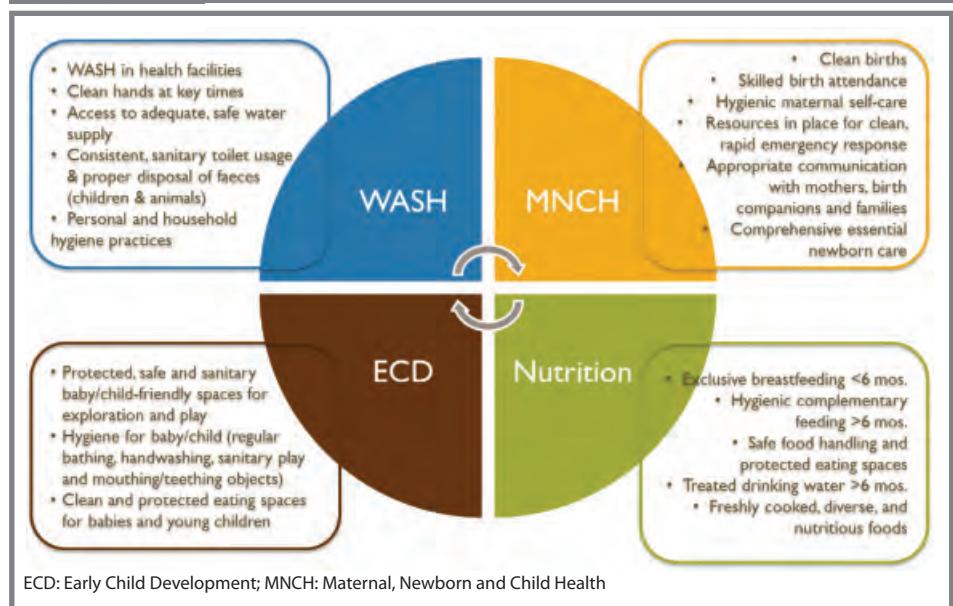
He added that any coalition should be driven by action rather than just planning. "It is very important to us that this does not just become a talking exercise, but that we actually are able to produce deliverables that improve health outcomes and change the development landscape."

Proposed action steps for any future coalition include the creation of tools that improve collaboration between the multiple sectors for a common outcome, and that enhance leadership and accountability in the critical 1,000-day period. The group will also work to find better linkages between research and field programming to show the benefits of inter-sectoral work.

For more information about the coalition formation, please contact Stefan Germann, email: Stefan_germann@wvi.org

¹ BabyWASH is a shorthand term for those interventions required to keep children developing in a healthy way during the first 1,000 days of life. They include safe water, adequate sanitation, good hygiene, sanitary birth practices, good nutrition, protected play spaces, proper development, etc.

Box 1 Problem/solution tree approach: agreeing on causes of malnutrition for joint action



Programming implications of stunting in protracted emergency contexts

The objectives of nutrition-sensitive programming are most often framed in terms of reducing levels of stunting. Funded by Irish Aid, ENN recently undertook a scoping exercise to explore the implications of operating in situations of protracted crisis where wasting prevalence may not trigger emergency nutrition interventions but levels of stunting are high. The exercise involved document review and informal discussions with nutrition focal points in a number of agencies (donor, United Nations) and non-governmental organisations. The brief report summarises key quantitative data (see Box 1), the funding context, the extent of monitoring stunting levels in protracted crisis, what we are doing about stunting in programming terms, and what could or should we be doing about it (see Box 2).

The investigation raised more questions that can currently be answered; recommended next steps are to:

- Conduct further roundtable discussion with agencies working in nutrition and related sectors, including clusters and sector coordination bodies in Fragile and Conflict Affected States (FCAS), to further explore the issues raised.
- Investigate opportunities to improve monitoring of both wasting and

stunting levels in protracted crises – including better understanding of sub-national trends, incidence and seasonality.

- Keep attention focused on the extent to which our response in protracted crisis supports the nutritional needs of all individuals (including those with increased needs) based on knowledge of requirements, assessment of needs and the principle of the right to adequate food.
- Monitor the extent to which the Lancet specific interventions are being scaled up in FCAS contexts and explore the relationship between intervention coverage and trends in stunting.
- Continue to advocate and propose interventions for longer term funding in protracted crisis.
- Advocate for greater adherence to common monitoring frameworks for nutrition particularly in protracted crisis which will allow results (including impact on stunting) to be tracked over the long term, including during periods of more acute crisis.

A print copy of the review is included with this edition of Field Exchange. It is also available online at www.ennonline.net

BOX 1

Figures on stunting in fragile and conflicted affected states (FCAS)*

- Over half (55%) of the countries have *serious critical* levels of stunting.
- Only four of the countries have *acceptable* levels of stunting (and of these two are out of date).
- Total stunted children in the world (WHO/UNICEF/WB 2015) = 23.8%, 158,600,000 children.
- Therefore an estimated 45% of the total stunted children in the world live in FCAS.
- The 2030 Global target is to reduce the number of stunted children in the world to 86 million.
- Severe stunting prevalence is over 15% in nearly half of the countries (26/54).

* Note that FCAS are taken as a very rough proxy of countries experiencing protracted crises.

BOX 2

Ten evidence based interventions for stunting reduction

1. Salt iodisation
2. Multiple micronutrient supplementation in pregnancy (includes iron-folate)
3. Calcium supplementation in pregnancy
4. Energy-protein supplementation in pregnancy
5. Vitamin A supplementation in childhood
6. Zinc supplementation in childhood
7. Breastfeeding promotion
8. Complementary feeding education
9. Complementary food supplementation
10. (Management of SAM – included in the Lancet 10 interventions for its impact on mortality)

Making agriculture work for food and nutrition security

An upcoming course, organised by Wageningen UR Centre for Development Innovation (Netherlands), will focus on how agricultural programmes and policies can become nutrition-sensitive to achieve nutrition objectives. It will explore the different agricultural pathways leading to food and nutrition security. Expert facilitation will provide participants with the knowledge and skills to design and strengthen the implementation of nutrition-sensitive agricultural programs and policies. The course is highly interactive, building on the participant's own experiences and cases.

Upon completion of the course, participants will:

- understand the definitions of food systems, value chains, food security, nutrition security and their interconnectedness;
- be able to apply conceptual frameworks to ensure nutrition-sensitive agricultural development programmes and policies;
- have strengthened competence in the design and implementation of agricultural development programmes and policies to enhance the impact on nutrition.

Applicants should have a BSc or equivalent in the field of agriculture, food and nutrition security,

health, or a related field, and have at least three years of professional experience in governmental or local non-governmental organisation as a policy or planning officer, or a managing or co-ordinating position in one of the field related to the course. Proficiency in English is required.

Course date: 7 - 18 November 2016

Application deadline: 22 March 2016

Location: Ethiopia

Cost: 3450 euro

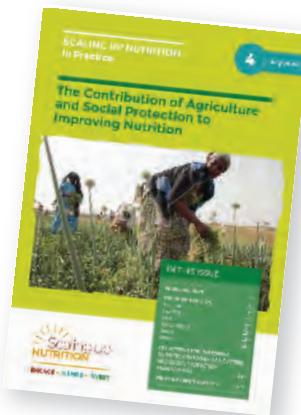
For more information and online registration, visit: <http://www.wageningenur.nl/en> and select 'Education for professionals'.

SUN in practice:

Contribution of agriculture and social protection to improving nutrition



A series of themed briefings – entitled Scaling Up Nutrition (SUN) in Practice – have been produced by the SUN Movement Secretariat since 2014. These present the scale up experiences of SUN country governments, and other national stakeholders. A fourth briefing has been produced that focuses on how agriculture, food systems and social protection schemes are contributing and can better contribute to scaling up nutrition in SUN countries. Representatives from six SUN countries – Burundi, Lao PDR, Mali, Mozambique, Nepal and Yemen - have shared their accounts of how food, agriculture and social protection stakeholders have engaged in nutrition coordination activities to achieve nutritional outcomes. Key challenges have been identified in each of the country articles. These, together with extensive information drawn from teleconference calls with SUN Government Focal Points and their teams, form the basis of the reflections in the concluding remarks by Tom Arnold, SUN Movement Coordinator, ad interim.



This and earlier briefs are available in English, French, Spanish, Portuguese and Russian at: <http://scalingupnutrition.org/about/sun-in-practice-briefs>

sustainable
sanitation
alliance

SuSanA Thematic Online Discussion: Linking WASH and Nutrition

What does nutrition have to do with water, sanitation and hygiene (WASH)? What do both sectors have in common? How can it be beneficial to link the sectors?

The secretariat of the Sustainable Sanitation Alliance (SuSanA), together with GIZ (German Corporation for International Cooperation) and Action Contre la Faim (ACF), warmly invites the Field Exchange readership to take part in a ‘Thematic Discussion’ to discuss challenges and opportunities at the interface of WASH (waster, sanitation and hygiene) and nutrition. The SuSanA is an open and international knowledge platform with individual members and partners who share a common vision on sustainable sanitation. SuSanA supports open dialogue through an open discussion forum where shared learning can take place.

Last year’s theme of the World Toilet Day was ‘Sanitation and Nutrition’, during which the Bonn WASH Nutrition Forum brought together experts from both sectors and new publications focused on the interface. This and previous thematic discussion outputs can be viewed at <http://www.susana.org/en/resources/thematic-discussion-series>

The online discussion on the linkages between WASH and nutrition will take place on the SuSanA discussion forum in March 2016. Over a period of two weeks, WASH and nutrition experts will elaborate on latest findings, point out gaps and good practices and stimulate discussions on various facets at the sectoral interface. Everyone is free to contribute. Weekly summaries of discussions will be posted on the SuSanA Forum, as well as a synthesis report of overarching findings at the end.

Confirmed dates will be shared on the SuSanA website and ENNs website. A link to the discussion will be available on ENN’s en-net forum and a summary of the synthesis included in a future edition of Field Exchange. This collaboration between ENN and SuSanA reflects a growing interest from both sectors to engage with each other.

To ask questions, comment and for share your experiences, please visit the SuSanA Forum www.forum.susana.org

To write posts in the SuSanA forum, first register at: www.forum.susana.org/en/register

The SuSanA secretariat is much looking forward to your engagement for a fruitful exchange.

Process learning: field testing a social and behaviour change guide for nutrition-sensitive agriculture



By Sarah Titus

Sarah Titus is the food security and nutrition manager with Save the Children for USAID's global nutrition project, SPRING. She has a Masters of Law and Diplomacy from the Fletcher School at Tufts University and over a decade of experience working in livelihoods and food security programming for international NGOs.

Among the project staff sat an agricultural officer, an older gentleman who had been working in the development field for several decades. He looked concerned as the SPRING team spoke with workshop participants about opportunities to enhance the nutrition-sensitivity of the agriculture practices their project promotes. When the SPRING team discussed how participating in value-chain projects could increase the burdens on women's time and labour and therefore pose a risk to their own and their children's nutrition, the agriculture officer finally spoke. He said, "For 30 years, we have been told that we need to involve women more in agriculture and income-generation projects, and now you are telling me this is a bad thing?" His frustration was evident. What was he supposed to do with the new information we were providing?

This incident occurred at a workshop in May 2015 to pilot test the *Behaviour Change Guide for Nutrition-Sensitive Agriculture*, being developed by the Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project. SPRING is a five-year, USAID-funded project that works to strengthen global and country efforts to scale up high impact nutrition practices.

The SPRING team is developing the guide to respond to a growing need for practical advice on how to make agriculture more nutrition-sensitive. Following the release of SPRING's conceptual framework linking agriculture and nutrition (see reference at end of article), we recognised the need to help implementers operationalise the three main pathways linking agriculture and nutrition – income, production, and women's empowerment. The guide introduces key concepts and models from the fields of nutrition, agriculture, and social and behaviour change (SBC). When

applied to project design, implementation and monitoring, these concepts can form an effective approach for achieving nutrition improvements through agriculture. Box 1 gives an overview of guide content.

To ensure that the guide is as accessible, relevant and useful for agriculture project designers and implementers as possible, the SPRING team is field-testing the content, format and tools included in the guide. The testing protocol used in the first field site consisted of: a learner needs assessment; workshop slides and handouts; a session observation guide; and a workshop evaluation. We conducted the first field test with a USAID project in Central Asia that is working to strengthen value chains and build the capacity of small- and medium-size enterprises. The testing involved three SPRING staff and a range of project participants, including nutrition and gender specialists, monitoring and evaluation officers, and agriculture officers.

Learning from the field test

The field-testing protocol emphasised process learning for both SPRING staff and the value chain project participants so that all stakeholders benefited from the effort. Key findings and results included:

Key components of the guide include:

- Review and application of the agriculture-to-nutrition pathways
- Identification of priority agriculture practices that contribute to nutrition outcomes
- Guiding questions to refine and prioritise key nutrition-sensitive agriculture practices
- Presentation of key Social and Behaviour Change (SBC) models and how they can be applied
- Tips for targeting priority practices
- Elements of an SBC strategy
- Additional resources for SBC strategy development

BOX 1 Summary of SPRING's Behaviour Change Guide for Nutrition-Sensitive Agriculture

SBC expertise lead the workshop proved critical to the testing process. With three facilitators, it was possible for every session to have one presenter, one participant and one observer who captured notes on clarifications needed on the slides, use of language, and instructions for exercises. This feedback is helping to strengthen guide content and structure.

What of the frustrated agriculture officer who was wondering why increasing women's participation in agriculture and income-generation activities was suddenly problematic? His question prompted great discussion among project and SPRING staff. Women have always been participants in agriculture; what is different now is that their contributions are better recognised and there is an understanding that they, too, need access to supportive services (e.g. extension, technologies and credit). At the same time, workshop participants discussed the importance of strengthening compensating measures in communities and families to support women's participation, while also ensuring they have enough time, energy and other resources to care for themselves and their children. This discussion resulted in historically siloed staff coming together and developing a common language that will help them to continue to work together across their sectors.

SPRING recognises the challenges inherent in asking practitioners to change the way they work - in any sector. We are excited to help and the field testing process is proving fruitful in this regard. On the one hand, it is helping SPRNG to ensure applicability of the guide. At the same time, it is provoking rich discussions and better understanding of terms and approaches among development experts in different sectors who are grappling with the challenges inherent to integrated programming.

Our learning from the field test has resulted in some significant adjustments to the guide's format and is informing changes to the protocol before testing the guide with a second project towards the end of 2015. From that second round of process learning, we anticipate finalising the guide, disseminating it widely, and using it - along with other design and monitoring-related tools - to provide technical assistance to Feed the Future partners in various countries throughout the coming year.

For more details about the development of the Behaviour Change Guide for Nutrition-Sensitive Agriculture and other aspects of SPRING's work, please visit www.spring-nutrition.org or contact info@spring-nutrition.org.

For more information, consult the Improving Nutrition through Agriculture Technical Brief Series, for a detailed introduction to the pathways-between-agriculture-and-nutrition framework (SPRING, Understanding the Primary Pathways and Principles: Brief #1, Improving Nutrition through Agriculture Technical Brief Series, Arlington, VA: USAID/Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project, 2014). Available at: <https://www.spring-nutrition.org/publications/series/improving-nutrition-through-agriculture-technical-brief-series>

Field Articles

Meals prepared for the school feeding programme

The nutrition-sensitive potential of agricultural programmes in the context of school feeding: lessons from Haiti

By Nathan Mallonee, Jason Streubel, Manassee Mersilus and Grace Heymsfield



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Jason Streubel is a Senior Advisor for Agriculture and Science at COH, an associate professor of Applied Science at Evangel University, and an adjunct faculty member at Washington State University, where he

earned his PhD in Soil Science: Soil Fertility. He has launched agriculture projects for COH in five countries, including Haiti.



Manassee Mersilus is the lead agronomist for FOME (Fondation Mission de l'Espoir). He has a degree in Plant Science & Agronomy from the National Agriculture University of Haiti and leads a team of four

agriculture technicians to train, teach, demonstrate and oversee ongoing projects.



Grace Heymsfield is a Technical Advisor in Nutrition and Child Health for COH. She has previously worked for COH in Haiti as a Monitoring and Evaluation Fellow and is currently studying for her

Masters in Public Health at the University of Michigan.

Special acknowledgment should be made to Dr. Hal Collins and Dr. Phillip Miklas of the United States Department of Agriculture's Agriculture Research Service for supplying the valuable bean lines and providing advice and field assistance.

Grace Heymsfield, Haiti, 2015

Location: *Haiti*

What we know: Haiti suffers from chronically high levels of undernutrition and food insecurity (a third are food insecure), potentiated by the 2010 earthquake.

What this article adds: Since 2010, Convoy of Hope (COH) has implemented a growing school feeding programme, largely to primary schools in Haiti. Nutritious meals were provided with some targeting to malnourished children. A selection of schools received nutrition and hygiene training. To boost the local economy, an agricultural extension programme was designed to boost agricultural production to enable food supply to the feeding programme and increase farmer income. The primary inputs were expert access, educational workshops and local seeds. Growth in yield translated to an average increase in household income from US \$2 per day to \$7. The intervention is considered a success by the community. Using local church networks was instrumental to buy-in. The programme is being further developed to better evaluate and capture nutrition outcomes at household level and to strengthen nutrition sensitivity.

Context

Haiti is the poorest country in the western hemisphere, with 61.7% of the population living below the international poverty line of US \$1.25 per day. Economic and socio-political factors contribute to high rates of food insecurity nationwide. This has led to 23.4% of Haitian children being chronically undernourished (stunted) and 10.6% acutely undernourished (wasted). The 2010 earthquake that left more than 220,000 dead, 300,000 injured and millions displaced prompted immediate action to address food insecurity, as average meals per day fell from 2.48 to 1.58 (Feed the Future, 2011). Though districts nearest to the earthquake have improved food security, approximately a third of the population remains food-insecure (see www.wfp.org/countries/haiti/overview).

Haiti suffered from high levels of undernourishment and food insecurity prior to the 2010 earthquake. In 2005, one in three children in Haiti suffered from chronic undernutrition. Six in ten children were anaemic. In response, COH initiated a nutritional support programme in schools in 2007 through USAID's International Food Relief Partnership (IFRP). The project was primarily implemented through COH's partner Mission of Hope (MOH) and targeted 6,000 children in primary schools with a supplementary meal. In 2010, COH rapidly scaled up its Haiti school feeding programme (SchFP) – which had grown to 13,000 beneficiaries since 2007 – to meet increased needs after the earthquake. As the number of beneficiaries grew, supplemental in-country food purchases were planned to support the local economy and reduce dependence on imported food as-

sistance. Inadequate amounts of food for local purchase led to an intervention to train and equip farmers to increase yields and thus supply the SchFP.

Project overview

The SchFP grew from 13,000 children in 2010 to 60,000 in 2012 and ultimately 85,000 in 2013. Supplementary food was primarily distributed through schools, the vast majority of which were private schools since Haiti lacks a strong public school network (World Bank, 2006). Community members prepared and served hot meals to students each day of the school year. During the 2013 and 2014 school years, 425,000 meals were served weekly. Schools were allocated additional food for take-home rations; children identified as undernourished by school and/or COH staff received the rations.

The SchFP targeted children in primary school, though some schools combined primary with pre-primary and secondary schools. While school administrators were encouraged to prioritise meals for younger children, in practice the ages for beneficiaries ranged from two to 25 years. The vast majority (75%) of schools were located in the Ouest department, though COH supported schools in the seven other departments as well.

COH funded the project through private donations of cash and food aid. The programme provided various fortified food mixes, and each serving size aimed to address common nutritional deficiencies in Haiti. The caloric value of one serving was 210 calories; however, staff observed children more often than not received a larger allocation: 1.5 serving sizes on av-

erage. Each child received 11g of protein at minimum and up to 100% recommended daily intake of critical vitamins and minerals such as Vitamin A, iron, zinc, and vitamin B12. Through the encouragement and observation of MOH's supervision staff, it was noted these servings were often supplemented by schools with locally procured fruits and vegetables.

During the first two weeks of each month, distribution trucks with trained warehouse staff were dispatched daily from MOH's warehouse in Titanyen. At each school, 'responsables' (i.e. principals or administrators) were required to confirm the number of beneficiaries, attendance numbers and programme compliance (planned usage versus actual usage) before receiving the next month's disbursement of food. A team of supervisors also conducted site visits to ensure the food was being prepared properly and conduct spot checks to confirm attendance and beneficiary numbers.

Starting in 2014, COH supported the provision of hands-on nutrition and hygiene training at a selected sample of schools through the WASH programme led by MOH's community health nurse. The pilot plan reached approximately 20 schools within or near the Cabaret area. Training sessions were tailored to age group and included topics such as hand-washing, cholera prevention and dental hygiene. COH's partnership with MOH also created a unique opportunity to provide medical care. Children identified as having special medical needs by supervision staff, often in consultation with teachers or orphanage directors, were referred to MOH's medical clinic in Titanyen.

Out of a desire to reduce the amount of imported food assistance and help the local economy, a plan was made in 2011 to purchase a portion of the food for the programme from within Haiti.

The intention was to buy the food directly from two core communities in the Ouest department where the programme was heavily concentrated (Turpin and Orange); unfortunately, it was determined there were not sufficient quantities of locally grown food. This led to a plan to train and equip groups of small-scale farmers in these communities to build their capacity and increase their yields.

Jason Streubel (COH) and agronomists from MOH designed this agricultural extension programme; the primary objective was to boost agricultural production so that farmers could get increased income and contribute food to the SchFP. From 2012 through 2014, more than 1,600 farmers from Orange and Turpin received classroom and field training, support from a team of Haitian agronomists and provision of improved varieties of locally sourced, open-pollinated seed varieties of black bean, pigeon pea and sorghum seeds. The project was implemented through a network of churches from the communities. Depending on market scenarios, MOH would purchase produce from the project participants at market prices. In addition, all participants were required to donate 10% of their initial harvest to MOH for use in the SchFP. The pigeon peas and black beans were packaged into bags at the MOH warehouse along with rice that was procured on the local market. In 2014, a total of 26.8 million meals were distributed in Haiti for the SchFP. 855,006 of those meals were acquired and packaged locally.

The primary activities for the agricultural extension project were providing small-scale farmers in these isolated, mountainous areas with hitherto unattainable resources: full-time access to a trained Haitian agronomist, monthly educational workshops and dispersion of locally procured seeds. The seed distributions were held in conjunction with the local community leaders who helped

ensure fair and equitable distributions. The leaders and local agronomist enrolled 200 beneficiaries in the programme per project cycle, which was coordinated with the growing season. They distributed seeds to each farmer for two or three different crops (maize, sorghum, pigeon pea, or black bean) based on the individual's need and appropriate growing seasons. Each individual signed a contract at the beginning of the cycle, agreeing to save 10% of his or her harvest as seed for subsequent seasons and to donate 10% of the initial harvest back to the SchFP.

Group training sessions, taught by the local agronomists, were held once a month. The monthly training sessions were not limited to that project cycle's beneficiaries; each training session was open to anyone from the community, including previous participants. Topics at the training sessions included soil fertility, integrated pest management, seed saving, irrigation, farm management, composting, and disease and pest identification.

Direct assistance was also provided in the farmers' fields. Local agronomists made in-person and in-field visits with beneficiaries on a regular basis. The agronomist lived in the farmers' community and was regularly in the fields throughout the week. During these visits, the agronomists directly applied lessons from the monthly training sessions to the farmer's situation. In addition, the agronomist could assist in helping anticipate future issues or address questions or concerns the farmer may have. In certain cases, issues or questions that could not be answered in the field were brought back to COH's agriculture experts for assistance.

Experiences

During the time of this study, from 2012 to 2014, the results of the SchFP were limited to monitoring data, including monthly activity and distribution reports. COH was not able to collect reliable anthropometric data of children in the programme prior to 2015, though COH's program effectiveness unit has been working over the past year to build MOH's capacity to improve data quality and evaluation methodology. As part of this process, COH instituted a more robust monitoring and evaluation plan for the SchFP that included anthropometric measurements on a statistically significant number of beneficiaries at a set of representative, randomly selected schools.

To determine changes in yields and household income, pre- and post-season surveys were implemented. From 2012 to 2014, during five seasons of black bean harvest, project beneficiaries ($n=1,000$) experienced a 245% increase in black bean yield – from 392 kg/ha in 2012 to 1,353 kg/ha in 2014. Similar increases were seen with sorghum (266%) and pigeon pea (121%). This translated to an average increase in household income from US \$2 per day to \$7, and the increased yield was achieved without the addition of any commercial fertilisers.

The pre-season surveys also indicated how most families lacked the capacity to save seed from their harvests for the next growing season; the entire harvest was consumed or sold for the

Figure 1 Increase in black bean yield, Haiti, 2012-2014

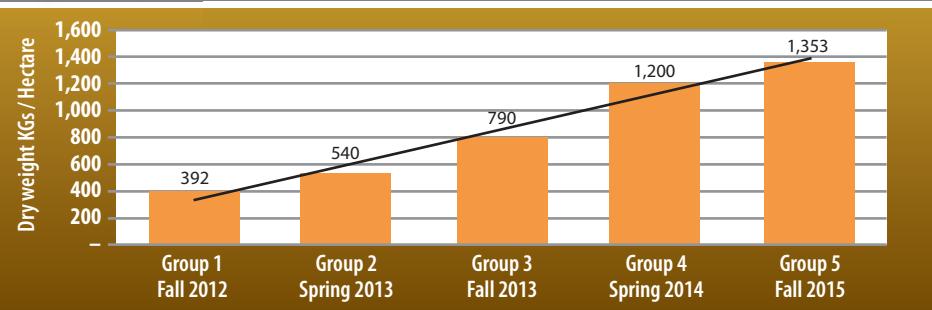
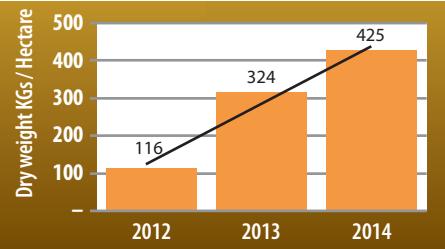
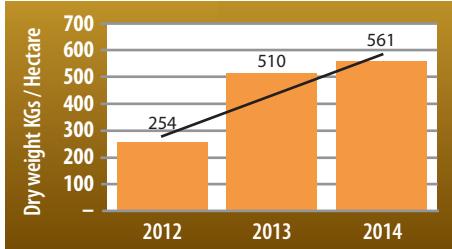


Figure 2 Increase in sorghum yield, Haiti, 2012-2014



Note: the total number of farmers is 600, with 200 farmers a part of the programme in each year.

Figure 3 Increase in pigeon pea yield, Haiti, 2012-2014



Note: the total number of farmers is 600, with 200 farmers a part of the programme in each year.

household's survival. As the yields increased, the agronomists noted how the habits of the community were changing; more families were consistently saving seed. Finally, although quantitative soil data were not collected, qualitative data were collected through interviews and on-site soil texture tests by staff. These observations showed improved soil productivity and fertility, an increase in organic matter and an increase in water holding capacity.

COH agronomists collected the yield data for each participant in the programme. Yields were recorded by first-person observation of each harvest collected in cans prior to long-term storage or market delivery. The traditional weight and measurement in Haiti is the basic unit of a 'can'. A standard can of coffee holds 48 ounces, which represents 5.5 pounds of the harvested product. This measure of volume has been standardised among farmers and has proven to be fairly accurate. The traditional can measurement is converted to kg and kg per hectare. The average land size per participant was 0.4 hectares. This figure was calculated based on baseline interviews and was confirmed during visits by COH agronomists. Figures 1, 2, and 3 show the increase in yield for black bean, sorghum, and pigeon pea respectively. Each time period represents a separate group of 200 participants. The yield recorded is the amount of yield at the end of the first growing season after receiving the education workshops and the seed distribution. The continued increase during each growing season shows in part the cumulative effect of working in the same communities over multiple growing seasons and the increased effectiveness of the project.

Outside of measuring change in yields and income, the ultimate indicator for success of this project was the local perception of success. Community leaders approached COH in early 2015 and suggested that the agriculture project move on to other communities, since they believed their communities were achieving sufficient yields and other communities should also benefit from the project. The leaders said the farmers in the community had now entirely adopted the new methodologies. The impact of the project can be clearly seen in these communities. Land that was once barren is now entirely green. Where bean mosaic viruses once ravaged the bean fields, hardly any evidence of the disease remains. The crops residues are no longer burned and wasted but rather composted or integrated into the soils through livestock.

While the main project objective was to boost agricultural production and local contribution to the SchFP, our staff recorded anecdotal information about the impact the project had on the beneficiaries' households. On a field visit in 2014 one woman said, "My family is healthy, my kids are going to school, I am growing crops for myself and market, and now my son says he wants to be an agronomist."

The success of this project can be attributed to four main factors. First, it was important to establish a contract with each beneficiary prior to their enrolment in the project that included

the required donations back to the SchFP. While these communities knew the benefits of the COH SchFP, some farmers were hesitant to offer 10% of the initial harvests and thus the local agronomists and staff sometimes had to refer to the contracts. This contribution played a large part in reducing dependence on imported food assistance; it also increased local ownership of the SchFP. Participants told COH staff during field visits that "they were now a part of the solution in Haiti", and in several instances farmers who were no longer participants in the project have continued to donate portions of their harvest to the SchFP.

Second, implementing the training sessions through local church networks increased the trust levels of local farmers. MOH has a history of partnership with local churches and pastors in the Turpin and Orange communities and the local pastors were respected community members. Furthermore, the pastors had a deep knowledge of the communities and could help COH target the most vulnerable farmers.

Third, COH conducted a series of field trials on different black bean varieties to determine which produced the highest yields in these particular communities. In April 2013, 20 different bean lines were tested using a randomised block design with four treatment groups and three replications. The experiment included a corn rotation and the integration of local pigeon pea and bean varieties as the control. In all varieties except DPC 40, the salinity of the soil at the experimental site limited all growth and most germination. In a follow-up experiment, a plot of land in the mountain communities was used to replicate the larger experiment with ten lines and three replicates. Once again, the DPC 40 experimental variety was the best performer in the Haitian environment. Given its performance, and since this variety was already being researched by a Haitian university (Faculté d'Agronomie et de Médecine Vétérinaire), the DPC 40 variety was selected for further distribution in the communities. The remaining data from the field trials were sent to the participating breeders to continue to work on new varieties, some of which are more salt-tolerant.

Finally, COH's commitment to working in these two communities for multiple years led to increasing yields for each new group of farmers. The cumulative effects of the local farmers' knowledge are likely part of the reason each subsequent group of farmers achieved higher yields than the previous group. Also, the open training sessions for any community member, including past or future participants, provided a level of ongoing extension and consultative services. By being inclusive instead of exclusive, everyone in the community was able to benefit from the project. It also created a deeper sense of shared understanding on improved farming techniques.

Several lessons were learned through particular implementation challenges. Primarily, it is important to focus first on improving the quality of soil prior to any seed distributions. Also, growing rice in this particular region of Haiti is challenging

due to lack of consistent water, thus the distribution of seeds for rice was discontinued after the first project cycle. Finally, the project faced initial issues with adoption of new techniques. Farmers in most communities need to see the profitability of the methods being taught before 100% adoption is realised. While working through local churches is believed to have reduced the reluctance, it was still apparent during the first several growing seasons of the project.

Discussion

COH's agriculture project contributed to a large and rapidly growing SchFP. It is likely that the full impact of this project on the nutritional outcomes of the children in the households of the participants was not fully recognised through the project monitoring. What is clear, however, is that a successful agriculture training project can directly contribute to SchFPs while also improving the livelihoods for the farmers and their households.

As COH continues to refine its programmatic strategy in Haiti, one point of focus will be to ensure the agriculture extension projects are more nutrition-sensitive. This will start by better capturing and evaluating the effects of the current projects on household-level nutritional outcomes. In addition, the project activities are being re-evaluated to determine areas where nutritional outcomes of children can be improved. For instance, local agronomists can more directly assist local schools in developing school or community gardens for fruits and vegetables that provide extra micronutrients and flavour to the school meals. Similarly, COH could include training sessions on how to develop household gardens that could enhance access to diverse diets. These gardens would be in addition to planting fields with the more traditional 'cash crops' of maize, sorghum, black bean and pigeon pea. Another interesting aspect is that 48% of the agriculture participants were women; this provides COH with the ability to directly reach mothers with nutrition and hygiene education during the in-classroom or in-field agriculture training sessions. This would require local agronomists to be cross-trained in nutrition and hygiene, but it could be a cost-effective measure for reducing stunting by improving the nutrition of children in the first 1,000 days.

The agriculture project is now being replicated in communities outside Turpin and Orange; the intent is to scale up the agriculture project to more communities so that the SchFP is supplied with an increasing amount of locally procured food and vulnerable households and communities can achieve food security.

For more information, email Nathan Mallonee: nmallonee@convoyofhope.org

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The REFANI Project in Pakistan: adapting research to a multi-sectoral programme for impact measurement

By Zvia Shwartz, Bridget Fenn, Riccardo Mioli, Ghulam Murtaza Sangrasi and Maureen Gallagher



Zvia Shwartz is currently the REFANI Communications and Research Uptake Officer, based in the Action Against Hunger office in New York.



Bridget Fenn is an experienced epidemiologist and longstanding ENN consultant. She is ENN's principal investigator for the REFANI Pakistan study.



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Ghulam Murtaza Sangrasi is the Study Manager of the REFANI Pakistan research. He has been working with ACF since December 2014 in Dadu district and has worked in Sindh province since 2010. He is leading the REFANI study in Pakistan.



Maureen Gallagher is the Senior Nutrition & Health Advisor Action Against Hunger US based in New York. She is an experienced public health specialist with an MSc in Social Policy and Planning specialising in health policy.

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A woman gets her mid-upper arm circumference (MUAC) measured

Zubaida Metlo/REFANI-AAH Pakistan, 2015

Location: *Pakistan*

What we know: Undernutrition is prevalent in Pakistan, associated with systemic poverty and shortcomings in feeding practices and maternal care that are compounded by food crisis and climatic challenges which impact on food security, such as flooding.

What this article adds: The European Union-funded Women and children/infants Improved Nutrition in Sindh (EU-WINS) project is a multi-sector approach to address undernutrition in the province, involving access to maternal nutrition and health services, SAM treatment, use of nutritious foods by women and children, and evidence-based learning. A randomised controlled trial, as part of the DFID-funded REFANI Research Consortium, is investigating the nutritional impact and cost-effectiveness of cash and voucher-based food assistance in the context of the WINS programme. Four research arms are being explored, led by ENN in collaboration with ACF. Results will be available in early 2017 that will include cost-effectiveness. Valuable learning regarding operational research in challenging contexts is emerging.

Introduction

Action Against Hunger (AAH) has been working in Pakistan since 1979 during recurrent humanitarian situations. Programming is now governed by a full nutrition security-oriented strategy, strengthening the links between Nutrition, Food Security and Livelihoods (FSL), Water, Sanitation and Hygiene (WASH) and Disaster Risk Management, to achieve a higher level of impact for the population at risk of malnutrition. Since 2011, Action Against Hunger has been successfully implementing intensive, community-based management of acute malnutrition (CMAM) and nutrition-sensitive programming in Sindh (Thatta, Tando Muhammad Khan, Badin, Dadu and Jacobabad), addressing the nutrition emergency affecting the entire province.

In 2013, AAH expanded its presence in Dadu through a four-year, nutrition security-focused development project funded by the EU – the WINS project – partnering with Merlin in Thatta and Sujawal districts and Save the Children in Shikarpur district.

Project context

Pakistan has some of the most serious undernutrition problems in South Asia, reflected in Global Acute Malnutrition (GAM) (17.5%), Severe Acute Malnutrition (SAM) (6.6%), underweight (40.5%) and stunting (49.8%) prevalence rates in children under five years old in Sindh province (NNS, 2011). Key attributable factors are reflected in data from Sindh province that include poor infant and young child feeding (IYCF)

Table 1 Results and activities/modalities of the EU-WINS programme

Result	Activities
1: Children with acute malnutrition and pregnant and lactating women (PLWs) receive treatment through supported government health services.	<ol style="list-style-type: none"> Joint programme needs assessment and planning with key stakeholders. Competency-based training and/or on-the-job support for government staff and stakeholders. Provide support mechanism for nutrition service delivery in the targeted district. Provide support mechanism for nutrition outreach service delivery in the targeted district on IYCF and hygiene. Establish efficient and effective nutritional monitoring and response system at district level in collaboration with relevant stakeholders.
2: Improved access to food (quantity) of vulnerable households with a focus on nutritionally vulnerable communities and women and children, especially through nutrition-sensitive food security support mechanisms.	<ol style="list-style-type: none"> Community sensitisation and set-up of community-based groups/organisations, Achieve increased food security, focusing on home production of nutritious food, through community-based animal health management and pooled horticulture groups (including household gardening seeds, tools and training provision). Provide social safety net financial support to nutritionally vulnerable households to be further integrated in the Government Benazir Income Support Programme (BISP) system. Support community-based contingency planning for enhanced resilience and disaster preparedness.
3: Improved food intake (quality) and enhanced hygiene and childcare practices of vulnerable households with a focus on PLW and children under five through a combination of nutrition-sensitive food security and WASH activities.	<ol style="list-style-type: none"> Undertake area assessment for food security and behaviour change through multiple quantitative and qualitative surveys, including baseline and endline Knowledge, Attitudes and Practice assessments. Provide complementary feeding vouchers to increase the nutrition security of children under five (discharged from nutrition CMAM programme). Develop new and rehabilitated water points and household water treatment devices to improve access to safe drinking water at village level. Sensitisation and awareness-raising for behavioral change based on a context-tailored behaviour change and communication (BCC) strategy.
4: Development of evidence-based learning and stakeholder engagement to equip and encourage key stakeholders to strengthen nutrition management and prevention in Sindh.	<ol style="list-style-type: none"> Develop and disseminate best practice documents, training materials and guides. Advocate nutrition-sensitive programming in Sindh, as well as adoption of the EU-WINS BCC strategy, through stakeholder engagement. Design, develop and disseminate WINS newsletters, highlighting case studies and best practices reinforcing stronger ONE WINS identity. Develop and showcase joint WINS documentary with high-level decision makers, donor, development partners and media to advocate priorities for actions. Conduct joint project midline and endline evaluations.

A man waits at the collection point



Zubaida Metla/REFANI-AAH Pakistan, 2015

Table 2 Nutrition Survey results, Luwingu District, 2014

	EU-WINS targets	Targets reached by end of Year 3
1	28,631 SAM children under five (curative).	21,011 SAM children under five (curative) (79%).
2	99,155 PLW and 68,169 caretakers of children aged 6-24 months (preventive).	100,704 PLW (102 %) and 43,389 (64 %) caretakers of children aged 6-24 months (preventive).
3	49,100 nutritionally at-risk households with attention to PLWs and caretakers of children aged 6-24 months.	41,273 nutritionally at-risk households with attention to PLWs and caretakers of children aged 6-24 months (84%).

practices (40.5% breastfeeding initiation, 64.7% exclusive breastfeeding); low dietary diversity for children 6-23 months (4.6% minimum acceptable diet for 6-23 month olds); women's micronutrient deficiency (60% anaemic, 49.5% zinc deficient); low birthweight (11.2% and 10.1% in north and south Pakistan respectively); poor access to safe drinking water, sanitation and health services (50% prevalence of diarrhoea in under fives, 21% of boreholes not protected (AAH, 2011)); and high food insecurity (72% of Sindh population in state of severe and moderate hunger) (NNS, 2011 unless otherwise stated).

Systemic poverty coupled with the lack of alternative income sources affects the capacity of households to cope with shocks and climate trends in a sustainable manner (Nutrition Causal Analysis (NCA), ACF, 2012). This is compounded by high incidence of illnesses due to poor access to water and sanitation infrastructures, and poor knowledge and practices regarding child feeding, hygiene and care. The already limited access to nutritious food among chronically poor households in Pakistan has further deteriorated in recent years due to the 2007-2008 global food crisis and continued high volatility in food prices. This impacts intra-household food security, determining dietary patterns in pregnancy and early childhood. As reflected earlier, the scarcity of iron, zinc, iodine and vitamin A in the diet and poor IYCF practices contribute significantly to child undernutrition in the country.

Project approach

An integrated, multi-sector approach was recommended by the 2012 ACF NCA to tackle the identified basic causes of the high prevalence of SAM in Sindh. The NCA was conducted in Thatta and Dadu districts in Sindh Province. In response and in line with the Pakistan Integrated Nutrition Strategy and the Poverty Reduction Strategy Paper, in-country partners developed the EU-WINS project. The programme's objective is to strengthen the capacity of district and provincial governments to address high rates of undernutrition in Sindh Province. The four key results and specific activities/modalities of the multi-sector approach are summarised in Table 1. EU-WINS targets, projected and reached by Year 3, are included in Table 2.

Nutrition-sensitive FSL and WASH activities were designed to integrate the nutritional treatment and prevention components of the programme. For example, complementary feeding food vouchers, livestock vaccination interventions, construction and rehabilitation of water points often happen in common geographical areas and will always include the same BCC/community mobilisation component. Since the start of the programme in 2011, strong synergies have developed at community level, as all components also involve community-based organisations.

The long-term vision is that local communities, healthcare workers and nutrition and food security stakeholders at the district and provincial levels will benefit from the project as key activities

become accessible through government mechanisms. Within the scope of EU-WINS, all health and nutrition-related activities are undertaken in close collaboration with the Department of Health and the Provincial Nutrition Cell (Sindh), as well as the People's Primary Healthcare Initiative. Cash-based interventions are linked with the BISP in order to support improvement in policy and delivery of social safety net services. The close synergy of all aspects of the project with government policies and processes is the foundation for achieving the longer-term vision.

The focus of this article is on the operational research, which has been designed to look more closely at the nutritional impact of this type of intervention.

Challenges of measuring nutritional impact of interventions

ACF's International Nutrition Security Policy, published in 2014, specifically calls for a multi-sector approach in order to achieve a long-term and sustainable impact on nutrition (through 12 guiding principles specifically; see separate article in this edition of Field Exchange). The Policy also promotes mixing curative and preventative measures for undernutrition and targeting its underlying causes, as well as other structural factors. However, there are challenges in circumventing the barriers which exist between nutrition-related sectors.

Overall monitoring and evaluation mechanisms were put in place for the various WINS activities (including baseline/endline and external evaluations), yet there was still need for robust impact measurement. The DFID-funded REFANI project (see Box 1), further supported in its intervention component with one additional research arm by ECHO, proved a unique opportunity to scientifically measure impact of the nutrition-sensitive aspect of EU-WINS in relation to the social safety net cash-based interventions.

The REFANI Project in Pakistan

The REFANI-Pakistan study is a collaboration between ENN, as the lead research partner, and

Action Against Hunger, as the lead implementing partner. The study specifically looks at the effectiveness of different cash transfer programmes (CTPs) in reducing the risk of undernutrition in children under five years of age from households who also have access to the same elements of the programme covered by the EU-WINS activities, which in this case are nutrition and BCC programming. The specific research arms are detailed in Box 2.

The process of developing the REFANI project in Pakistan followed a number of steps and will provide useful ways of working and lessons learned for partnerships engaging in developing research as part of an operational programme already in place. It was agreed by partners that a cluster randomised controlled trial (cRCT) of CTPs, focusing on nutritional outcomes in Dadu, was possible. The CTP is designed to address a seasonal hunger gap, where ideally the transfer transitions from an emergency setting to a national/regional safety net approach, which would offer the research teams an opportunity to address common research questions related to CTPs, their methodology and sustainability.

The overall research structure includes six rounds of quantitative data collection, including baseline and endline surveys, one more data collection round after one year, a mixed-methods process evaluation, a qualitative research component, and a cost-effectiveness analysis study. The total planned sample size is 2,496 households from poor and very poor households located in 17 union councils from different livelihood zones (barrage and riverine). The particular study design allows for probability analysis of the impact of different cash transfer interventions on undernutrition, comparing three different interventions within the same population and region to a control group.

A cRCT study, especially in humanitarian settings, brings a number of challenges. The difficult context of the study (including conflict, security issues, religious holidays, weather conditions, and risk of emergency) can easily impact on implementation. The potential for flooding in the area was a major concern, so a contingency



A woman collects her cash transfer

plan covering three levels of flooding (mild to severe) was built into the study. The REFANI project has successfully recruited a qualified study manager, deputy study manager and qualitative researcher under Action against Hunger protocols. The national team has been successful in ensuring high standards of data collection, with remote supervision from the ENN team and good collaboration between ENN and ACF.

The REFANI-Pakistan study has been approved both by the National Bioethics Committee in Pakistan and the Western International Review Board. The study has been registered as an International Standard Randomised Controlled Trial (ISRCTN10761532). The study is mid-way completed; baseline and five consecutive months of data have been collected (see Table 3). Qualitative data collection is ongoing, adapted as results from the quantitative research comes in. First results will be available later in 2016. The aim is to publish at least three peer-reviewed publications, as well as disseminate findings at relevant conferences, stakeholder and other meetings.

Challenges

The EU-WINS programme encountered a number of challenges in the operationalisation of a multi-sector approach, mainly as a result of vertical sector-based government systems and dramatically variable climate in the intervention area. The REFANI-Pakistan study has been able to effectively and quickly address some challenges that arose within the first year of implementation. These included:

Recruitment: There was some difficulty around recruiting and retaining female data collectors, which is essential for accessing female household members. However, the Action Against Hunger office in Pakistan managed to locate the necessary female enumerators. Action Against Hunger also focused on capacity-building of staff on re-



REFANI project beneficiaries

BOX 1 REFANI Project

The REFANI Pakistan study is part of a larger DFID-funded REFANI programme of study currently also being implemented in Niger and Somalia. The REFANI programme aims to assess the impact of cash transfer programming on nutrition in humanitarian contexts. There is evidence that shows that CTPs increase income and protect family assets from being sold, which in turn favours behaviours that could protect children from undernutrition by increasing the number of calories consumed and improving dietary diversity (Manley, Gitter & Slavchevska, 2012; DFID, 2011). However, more evidence is required to understand how and whether CTPs with and without complementary interventions are effective in preventing or reducing the risk of developing malnutrition. (ACF 2015 [2]).

The REFANI project aims to provide more data on the nutritional impact and cost-effectiveness of cash and voucher-based food assistance programmes, as well as identify the mechanisms through which this is achieved. The study is designed to understand the factors that determine the ways in which households use

the different transfers. It explores the role of the different processes influencing the intervention outcomes and how they interact with the context using both quantitative and qualitative data. A separate qualitative study will help to understand any associations found (or not) within the quantitative analysis, as well as explore further differences in undernutrition between the study arms.

REFANI partners (Action Against Hunger, Concern Worldwide, University College London (UCL) and ENN are running a series of three complementary country studies in Niger (Concern/UCL), Pakistan (ACF/ENN) and Somalia (Concern/UCL). This will inform the evidence base regarding timing of CTPs, duration, amount, frequency, cash vs. vouchers, targeting criteria, etc. It will also inform on the sustainability of CTPs and their cost-effectiveness. Results from all three countries will be available by early 2017.

For more information, visit: www.actionagainsthunger.org/refani

search during the implementation in order to counter the difficulty in hiring female staff.

Timing: The study overlapped with Ramadan (June-July 2015) as well as extremely high temperatures (>50 degrees Celsius), which resulted in more time needed to cover all eligible households, since office hours are reduced during this period and the capacity of staff was lower. This resulted in the baseline data collection taking longer than expected; as a result of this delay, the ENN principal investigator decided to forgo the first month of the monthly data collection as this would have impacted on the timing of subsequent programme implementation. This is not expected to impact negatively on the study.

Access: Floods and tribal conflicts occurred in August 2015, which led to the replacement of some study areas and participants (in case of security risk).

Loss of study participants: This was noted during the second month of data collection, mainly within the control group, and reflected lack of incentive to participate. Efforts to reduce this were made through regular sensitisation carried out with the help of community mobilisers.

BOX 2 The four REFANI-Pakistan research arms

The study specifically compares four different arms of intervention:

- 1) Households receiving the standard EU-WINS intervention (control group);
- 2) Households receiving the EU-WINS care and 1,500 rupees per month (funded by the EU);
- 3) Households receiving the EU-WINS care and 3,000 rupees per month (separately funded by ECHO); and
- 4) Households receiving the EU-WINS care and a monthly fresh food voucher worth 1,500 rupees per month to be exchanged for fresh foods at specified traders (funded by the EU).

The standard EU-WINS intervention includes SAM treatment at an outpatient therapeutic programme (OTP) site for all research sites, micronutrient supplementation, complementary food vouchers for OTP discharged children, IYCF services and integrated sensitisation sessions on six key behaviours for prevention and treatment of malnutrition.

The additional cash-based support is provided for six months; thus totalling 9,000 rupees for

arm 2 and 4 and 18,000 rupees for arm 3 beneficiaries.

Primary and secondary outcome data being collected to compare levels of risk of undernutrition are*:

- 1) Primary outcomes – prevalence of wasting (as measured by weight-for-height Z-score (WHZ) <-2) and mean WHZ score in children;
- 2) Secondary outcome in children – cumulative incidence of wasting, prevalence of SAM (<-3 WHZ), low mid-upper arm circumference (MUAC) (<125 mm & <115 mm), stunting (<-2 height-for-age Z-score) and morbidity (mainly diarrhoea, difficulty breathing/cough, malaria);
- 3) Secondary outcome in mothers and children – mean haemoglobin concentration (Hb g/dL) and prevalence of anaemia (children: Hb <11.0 g/dL; severe anaemia as Hb <7.0 g/dL; non-pregnant women Hb <12.0 g/dL; pregnant women Hb <13.0 g/dL); and
- 4) Secondary outcome in mothers – prevalence of low body mass index (<16, <17, <18.5 kg/m²), low height (<145 cm) and low MUAC (<230 mm & <210 mm).

* Measurements are collected on all study households (household questionnaire) and participants (mother and child questionnaire) at month 0, 1, 2, 3, 4, 5, and 12 and are collected during the week following the receipt of each transfer.

Opportunities for operation research development

There is a growing trend among organisations to use cash transfers in their food assistance programming to combat growing rates of undernutrition, especially during emergencies. The process and results of the EU-WINS and REFANI interventions will be of use to many stakeholders, both in Pakistan and globally. There are lessons to be learned on the optimal design of operational research and on the nutritional impact of multi-sector interventions. These can be used to inform and provide evidence to support scale-up and change.

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Table 3 Study timeline

			2015	2016
Jan-March	April-June	June-July	Lean period/ACF Intervention	April-May
Planning	Wealth-ranking exercise	Baseline data collection	Monthly data collection	One-year data collection
Questionnaire design	Piloting		Cost-effectiveness analysis	
Formative research	Household enrolment		Qualitative study	
Ethics approval/WIRB/Trial number	Staff training			

Child Development Grant Programme (CDGP) in northern Nigeria: influencing nutrition-sensitive social policy programming in Jigawa State

By Fatima Adamu, Maureen Gallagher and Paul Xavier Thangarasa



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Beneficiary electronic registration, Jigawa State

Blessing Lass/ACF, Nigeria, 2014

Location: Nigeria

What we know: Despite an annual growth rate of 6.6%, acute and chronic malnutrition are prevalent in Nigeria, associated with poverty and inequality. Political will supports social protection to address poverty but investment remains low.

What this article adds: The Child Development Grant Programme is a five-year programme in Jigawa State and Zamfara State that involves a monthly, unconditional cash grant coupled with behaviour change communication (BCC) to address maternal education, healthcare facility access, improved household economic status, infant feeding, food consumption and women's empowerment. Implemented by Action Against Hunger (Jigawa) and Save the Children (Zamfara), it targets women through pregnancy and until the child reaches two years of age. Key multi-sectoral practices are the basis for behaviour change. The CDGP includes nutrition-sensitive objectives, targets the full 1,000 days, integrates a robust monitoring and evaluation (M&E) system, prioritises women's empowerment, and includes an independent research component. Final outcome analysis will be available in 2017; improvements in antenatal attendance are already being observed. Findings will inform nutrition-sensitive social protection policies and schemes in Nigeria.

With a population of approximately 170 million people, Nigeria is the most populous country in Africa. It is the 12th largest producer/exporter of petroleum worldwide with an annual Gross Domestic Product of USD262.6 billion in 2013 (World Bank, 2013) and an annual growth rate of around 6.6% (National Health Demographic Survey, 2014). Despite this, it has one of the highest numbers of people living in poverty and inequality. National prevalence of global acute malnutrition (GAM) is estimated at 7.2% with severe acute malnutrition (SAM) at 1.8% (SMART Survey 2015).

Action Against Hunger (AAH) has operated in north-eastern Nigeria since early 2011, focused on nutrition, water, sanitation and hygiene (WASH) and food security, working closely with UNICEF and Save the Children. In 2013, the Child Development Grant Programme (CDGP) was developed by a consortium led by Save the Children with AAH in order to pilot and build evidence on social protection schemes in Nigeria and their specific impact on undernutrition and the first 1,000 days. It is hoped that this five-year programme will lead to further development of nutrition-sensitive social protection policies and schemes in Nigeria. The programme is being implemented

BOX 1 Social protection programmes in Nigeria²

The **Conditional Cash Transfer in Care of People** funded by the office of the Millennium Development Goals (MDG) targets poor, female-headed households with members who are elderly, physically challenged, HIV/AIDS patients, and with children of school age. Beneficiaries receive 12 monthly payments of USD10 per child with USD33 cap for households with four or more children. Conditions attached include enrolment of children in basic education, participation in free healthcare programme and attending business and life-skills training.

The **Maternal and Child Health care programme** is a health-fee waiver for pregnant women and children under five implemented by the office of the Senior Special Assistant to the President on MDG in collaboration with the National Health Insurance Scheme. This is only implemented in selected states and coverage within areas of implementation is not 100%.

A **community-based health insurance scheme** implemented in several states (Holmes et al, 2012).

in Jigawa (AAH) and Zamfara (Save the Children) states. This article focuses on the Jigawa State context and activities and includes excerpts from a case study produced by the Cash Learning Project (CaLP) (Trousseau, 2014).

Project context

Acute undernutrition is the major contributor to death of children under five years old. In northern Nigeria, half of all children under five are stunted and one in ten suffers from acute undernutrition. Jigawa State has a GAM of 11.9% (9.5-14.9%), with reported prevalence of SAM of 1.7% (0.9-3.4%) (SMART, 2015). Nutritional status is influenced by factors related to food, health and care. Household food production in the north-west region covers on average less than 20% of household's needs (Kuku-

Shittu, Mathiassen, Wadhwa et al, 2013). Children are directly affected by limited food access in terms of quantity and quality. Other contributing factors include the absence of skilled health workers and husband's disapproval of the use of health services by family members (UNICEF, 2013)

Social policy context¹

The Government of Nigeria with support from development partners has identified social protection as a tool to tackle the country's high rate of poverty, yet investment remains low. Social protection has been on the Nigerian policy agenda since 2004, when the National Planning Commission (NPC), supported by the international community, drafted the first social protection strategy. Since 2004, the strategy has

generated limited political traction, despite a chapter dedicated in Nigeria's most recent national policy implementation: Nigeria Vision 20:2020 (Holmes, Akintimisi, Morgan et al, 2011). Social protection schemes are estimated to cover less than 0.02% of the poor at country level and impact is affected by short-term participation and low transfer value. There has been some progress with the recent appointment of a special advisor on social protection to the Vice President, who is working closely with the NPC to move the policy forward. DFID is also following this closely, as the World Bank and President Buhari's Government has pledged for specific funding in 2016 (See Figure 1). Most recent revisions have included specific services for internally displaced people. Presently, social protection programmes are implemented *ad hoc* in various parts of the country by the federal and state governments under different ministries and agencies (see Box 1 for examples). The absence of a finalised policy on social protection at the federal level is a major constraint for effective social protection programming in Jigawa State. Nonetheless, several programmes are run at individual ministry and agency level without a state coordinating body.

In Jigawa State, social protection programming has been a priority with funding of schemes prioritised over civil servants' payments. Through collaboration of some international non-governmental organisations and the Food and Nutrition Committee, a Food and Nutrition policy is under development to address child-related concerns which will be informed by the CDGP pilot project. However, despite the political will and previous achievements, there is still some way to go towards finalising and achieving a state policy on social protection.

The CDGP consortium is currently closely working with State Governments through the State Steering Committees (SSC) for the adaptation of the draft National Social Protection Policy to define a state-focused/state-specific social protection policy. This aims to generate political commitment and funding for social protection programmes and to establish a sustainable coordination mechanism for social protection interventions. CDGP had recently facilitated a presentation for the key members of the SSC on setting the context for social protection policy, supported by the Sector Lead for Social Protection from the Federal Ministry of Budget and National Planning. Jigawa State is planning to domesticate the National Social Protection Policy after it has been passed into a law and, at the same time, the SSC for CDGP has shown commitment to develop a state policy on social protection if the National Social Protection Policy is further delayed in becoming law.

CDGP in Jigawa State

In Jigawa, CDGP is being implemented in three local government areas (LGAs) (equivalent to district and county administrative units in other countries): Buji, Gagarawa and Kirkassamma. It provides unconditional monthly cash transfers of 3,500 Naira (USD12) to 30,000 pregnant

BOX 2 Social protection programmes in Jigawa State

The **Conditional Cash Transfer in Care of People** funded by the office of the Millennium Development Goals (MDG) targets poor, female-headed households with members who are elderly, physically challenged, HIV/AIDS patients, and with children of school age. Beneficiaries receive 12 monthly payments of USD10 per child with USD33 cap for households with four or more children. Conditions attached include enrolment of children in basic education, participation in free healthcare programme and attending business and life-skills training.

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A **community-based health insurance scheme** implemented in several states (Holmes et al, 2012).

Training of trainers for Community Health Extension Workers



BOX 3 Key nutritional behaviours promoted as part of the CDGP programme

- Mothers to eat one additional meal each day during pregnancy.
- Attend antenatal care at least four times during pregnancy.
- Place the newborn on the breast within 30 minutes of delivery (early initiation)
- Do not offer pre-lacteal feeds to your baby.
- Practice exclusive breastfeeding (from birth to six months of age) – no water, no breastmilk substitute.
- Introduce complementary foods at six months of age (180 days) while continuing to breastfeed.
- Use good hygiene practices (three practices – wash hands with soap before food preparation, wash your hands and the child's before and after feeding baby/child, wash hands each time after using toilet or cleaning baby's bottom).
- Purchase healthy/nutritious foods for your family.
- Feed your child a variety of foods and increase that variety as the child gets older.

BOX 4 Beneficiary testimony on improved access to health, education services and economic empowerment

Hadiza, a beneficiary in Gagarawa LGA:

"From the money, I buy food and nutritious meals for my family. Also, through saving which I do with other women in the programme, I have been able to treat myself in the hospital because I have high blood pressure. Before the programme my husband and I found it difficult to pay fees for my children's education but now I can do that. I have even bought a bicycle for my son to use as means of transport to school because his school is far from the house and I have also started a small business, selling soya bean cake."

women in Jigawa State through pregnancy and until the child reaches the age of two. The transfer is accompanied by nutritional advice and counselling. The programme vision is to produce evidence of impact and ensure the takeover of the programme – with eventual scale-up – by the Government in the intervention states. The combination of cash transfers and BCC is geared to be more politically acceptable by State Governments' stakeholders than stand-alone unconditional cash transfers; many actors fear the latter may be used for expenditures that do not serve the programme purposes. It is also expected to serve as a model for nutrition-sensitive social protection programmes and pave the way for other state and federal level social protection schemes. It includes a government contribution-tracking tool that will help calculate the monetary value of the State and LGA contribution to the programme. The assumption is that demonstrating nutrition impact on mothers and children will generate long-term government buy-in. However, more work is needed on estimating costs for a sustainable government-funded and led scheme.

The CDGP outputs are:

1. Secure payment mechanisms providing regular, timely cash transfers;
2. Effective systems for mobilisation and complementary interventions, including BCC;
3. Enhanced government capacities for managing cash transfer in target states; and
4. Evidence of impact provided to policy-makers.

Since April 2014, 14,960 pregnant women have been registered on the programme and as of September 2015, 13,065 beneficiaries had received payment in Jigawa State. A complaints and response mechanism is in place that includes involvement of community-level committees (Beneficiary Reference Groups) as well as LGA officials.

The nutrition-sensitive component of the CDGP follows the following principles (reflecting

the recommendations of the ACF's Nutrition Security Policy):

- Includes nutritional-specific objective and indicators;
- Focuses on the most nutritionally vulnerable population and areas;
- Considers potential negative impacts on undernutrition and how to mitigate these;
- Is of adequate duration and timeliness to influence nutritional status of children (1,000 days);
- Monitors nutritional effects and outcomes;
- Empowers women, and considers women's time allocation; and
- Includes nutrition promotion and behaviour change strategies.

A set of key practices is the basis for promoting improved behaviours amongst beneficiaries, as seen in Box 3 (Holmes et al, 2011). The design reflects the multi-sectoral nature of the project in bringing together better nutrition, health, food security, and hygiene practices. The cash mechanism provides flexibility for caregivers to have better access to services for children, such as education and health services. In some cases, caregivers engage in economic activities as shared by one beneficiary in Box 4. The main aim of the programme remains in food and nutrition security of households.

State engagement and advocacy³

A Political Economy Analysis (PEA) was conducted in 2014 at the inception of the programme to capture the political enabling and constraining factors. Findings will influence the state engagement strategy that is currently being developed (Zasha & Magaji, 2014). The work of ministries and department agencies on social protection and child nutrition are key existing opportunities in the State. The Ministries of Women's Affairs and Social Development, the Rehabilitation Board and the MoH are all champions of social protection and child nutrition programming. More importantly, there is a body of multi-sector experience in policy development in Jigawa State exemplified in the gender mainstreaming in policies of the Ministries of Education, Health, Environment, Water Resources and Women Affairs and Social Development. One major constraint is the lack of coordination in the execution of state social protection programmes; there is also no coherent framework or policy that initiatives can draw upon. This makes for a less cost-effective and cost-efficient service delivery platform for beneficiaries. Furthermore, with the change in the governing party in Jigawa State, there may be a need to conduct a new PEA.

The government of Jigawa State is progressive with regards to social protection and willing to implement such programmes. This is reflected in a recent request for an impact assessment to be carried out on the cash transfer programme for people with disabilities funded by the state and also the women empowerment initiatives (see Box 2). The Ministry of Local Government & Chieftaincy Affairs is responsible for super-



Table 1 Impact and outcome indicators, baseline and target for CDGP in Jigawa and Zamfara States*

Indicators	Baseline (2014)	Target (2017/2018)
Impact Indicator 1		
Prevalence of stunting among children under five reduced by 10%	63%	53%
Outcome Indicator 1		
Status of state policy, legislative support and approval of plan for non-contributory social protection	No policy or plan available	Approved policy and strategy in place; regular annual budget provision
Outcome Indicator 2		
% of households who borrowed money in the past one year to cope with insufficient food availability	27%	17%
Outcome Indicator 3		
Proportion of children aged 6-23 months who receive foods from four or more food groups	16%	24%
Outcome Indicator 4		
% of children aged 0-6 months who are exclusively breastfed	10%	20%

* CDGP Logframe; no state specific baseline information is available.

vising, monitoring and coordinating the activities of the Local Government councils in the State and in Jigawa, is the focal agency for social protection programming. The selection of the hosting Ministry was based on four criteria:

1. The capacity to facilitate government support in the development of Social Protection Policy;
2. The capacity to provide sustainability and support government takeover of the programme;
3. The provision of personnel and funds to support programme implementation;
4. The technical and political capacity for institutionalisation of the programme.

Other key stakeholders such as the Directorate for Budget and Economic Planning, and Ministries of Health, Women Affairs and Social Development, will constitute a committee that will help by financing social protection programmes and implementing schemes like the CDGP.

Since inception, state government, local government and traditional leaders have been involved in programme management through a three-tier system of committees. These are the SSC (programme oversight); LGA Technical Working committee (implementation support); and the Traditional Ward Committee comprising traditional leaders in the communities (community-level implementation). Activities aimed at informing and mobilising state, LGA and

community stakeholders were conducted from the early stages of the programme with the support of the SSC.

Project impact on undernutrition

The CDGP is being evaluated by an external partner, ePACT. The key nutritional outcome indicators to be measured at baseline and endline and the targets are presented in Table 1. Key features of the monitoring plan include:

- Baseline (qualitative and quantitative) – 2014;
- Midline (process monitoring) – 2016;
- Endline (qualitative and quantitative) – 2017; and
- Quarterly and bi-annual post distribution monitoring (PDMs).

Positive results for some key health-seeking behaviours are already noted; 55% of pregnant women beneficiaries attend antenatal care in Jigawa (45% baseline) (CDGP, 2015). In relation to the nutrition and food security aim of the project, the same report revealed that nearly all (99%) of beneficiaries ticked food as one of the items they spent money on. Thirty-nine per cent of respondents solely spend the cash transfer on purchase of food and food-related items (CDGP, 2015).

Lessons learned

• Elements to consider in designing a nutrition-sensitive intervention

Key components to consider when designing a nutrition-sensitive approach include defining nutrition-sensitive objectives, targeting the full 1,000 days for better impact, integrating a robust monitoring and evaluation system, and prioritising women's empowerment. There is value in including an independent research component to strengthen capacity to produce evidence to influence national and state nutrition-sensitive social protection policies.

• Nutrition and BCC

The nutrition component is very dependent on the work of community volunteers. The complementary nutrition and health BCC can be strengthened with the cash disbursement. A wider range of activities that involve more time with the beneficiaries are required in order for behaviours to be adopted by women enrolled in the scheme.

• Roles and responsibilities

At the end of the inception phase, the involvement of the hosting ministry resulted in the provision of staff and facilities by local governments. Seconded staff have been provided and a counter-funding mechanism for the payment of secondees is already in place. This is expected to play an important role in programme sustainability and to help scale-up.

• Importance of multi-sector collaboration

Close collaboration with other agencies and state ministries that are not directly linked with the programme is needed. So far, CDGP has worked with the NPC and National Identity Management Commission to ensure that bene-

ficiaries are presented with birth certificates and appropriate identification mechanism; a practice which is not common in the northern part of the country that will improve the quality of national data.

Working closely with MoH, especially with the Gunduma Health System Board (GHSB), has facilitated an increased number of health workers in facilities in CDGP areas. CDGP relies on the health workers and Community Health Extension Workers (CHEWs) for verification of beneficiaries' pregnancy and health education. The GHSB provided ten CHEWs per LGA to contribute approximately 20% of their time to CDGP as a result of continuous sensitisation by the programme. This will support women's antenatal care attendance and behaviours for improved child nutrition and survival. In turn, it may also be a motivating factor for health workers in seeing that as a result of BCC, more women are seeking services.

Conclusion

Despite challenges, the CDGP looks to provide women with more flexibility in access and choice on where to invest resources towards improved nutrition and food security, including improved health and education. Impact on antenatal care attendance and food access is already indicated. The final outcome analysis will be available in 2017, as the 'first generation' of children will have graduated from the project by the latter part of 2016.

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¹ Based on the case study produced by the Cash Learning Project (CaLP). (Trousseau, 2014)

² Based on summary from CaLP.

³ Excerpt from CaLP.

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Integrated food security programming and acute malnutrition prevention in the Central African Republic



By Amanda Lewis



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Location: Central African Republic (CAR)

What we know: Since 2013 there has been an ongoing crisis in the Central African Republic (CAR) with associated food insecurity.

What this article adds: During 2015, ACF implemented a short-term (five months with a three-month extension) nutrition security project in Bangui, CAR that integrates food security, nutrition, and mental health and care practices (MHCP), targeting pregnant and lactating women and children 6–24 months of age. It comprises food voucher distribution, creative behaviour change communication, individual and group MHCP sessions, infant and young child feeding (IYCF) sensitisation and support, and one-off cash transfers. To date, women's individual dietary diversity score and IYCF knowledge, mother-child relationship, and maternal psychosocial functioning have improved considerably. Strong collaboration between food security and MHCP teams included cross-training, joint targeting, harmonised messaging, shared activity delivery and common monitoring and evaluation (M&E) indicators. Challenges related to beneficiary selection, low knowledge base of caregivers and staff, and ongoing insecurity. Further learning will be available post-endline evaluation in early 2016.

Introduction

Action Against Hunger (ACF-International) has been present in CAR since 2006, carrying out activities related to nutrition; water, sanitation and hygiene (WASH); food security and livelihoods; and MHCP. The crisis that began in 2013 has greatly affected the population in Bangui (see map), where food insecurity remains high and coping strategies are limited. In this context, ACF is using a nutrition security approach in one of the programmes to address both immediate and underlying causes of malnutrition, integrating food security, nutrition and MHCP. This project is financed by the Comité Interministériel d'Aide Alimentaire (CIAA) of the French Embassy.

This project was preceded by three short-term food voucher projects also funded by the CIAA. In the current project, ACF has expanded the nutrition-sensitive elements of the project to have a greater impact on preventing malnutrition and reducing food insecurity. Targeting 900 pregnant and lactating women (PLW) and

women with children under two years of age, this five-month project supported access to a diverse diet through the use of food vouchers, including nutrition messaging using a variety of communication methods such as cooking demonstrations and theatre groups, and provided support to improve childcare practices through group interactions and individual support to women in psychological distress.

The project was planned for a period of five months, from May to September 2015, with three months of coupon distributions (June to August). It was extended by three months (originally one month) due to violence leading to suspension of activities during October 2015 of several supplemental activities detailed below. These activities were due to be carried out in November and December 2015 at the time of writing.

Project context

The project was implemented in a context of high levels of food insecurity. The October 2014 Integrated Food Security Phase Classification

(IPC) analysis classified the food security situation in project areas as 'crisis' level. While this has improved to 'stressed' according to the April 2015 IPC report, the needs remain great, with 20% of the population in Bangui considered in a humanitarian needs phase. The nutrition situation in CAR is also worrying, with a classification by WHO in the 'alert' category. Nutrition statistics from the most recent SMART survey in 2014 are provided in Table 1.

Care practices that promote positive nutrition outcomes for infants and young children are weak. The exclusive breastfeeding rate in Bangui is 20.5%, and only 44% of mothers give at least two meals a day to their infants aged 6–8 months. Mothers feed cereal and clear gruel to young children in small amounts, while animal-source proteins and fruits and vegetables are less frequently given. Although the causes of malnutrition in CAR have not been systematically studied, issues related to food insecurity and care practices play a role, alongside other underlying causes such as limited access to health-

Table 1 Nutrition situation in the Central African Republic, SMART survey 2014

	Bangui	Country
Global acute malnutrition	6.0%	6.6%
Moderate acute malnutrition	5.3%	4.8%
Severe acute malnutrition	0.7%	1.9%
Chronic malnutrition (stunting)	23.1%	40.8%
Underweight	15.3%	20.8%

care services, water and sanitation. Figure 1 illustrates the ways in which the current crisis has heightened the risk of malnutrition.

Project approach

Objectives

This ACF project addresses these multi-sectoral issues with the objective of preventing severe and moderate acute malnutrition among 900 PLW and their children under two years of age in Bangui. The project has two specific aims:

- 1) Infants and children aged 6-24 months old and PLW will have improved access to sufficient amounts of high quality food; and
- 2) PLW and mother/infant pairs affected by the crisis will improve their feeding and care practices.

Location

The project is implemented in the 7th arrondissement in Bangui. ACF has worked with the nutrition treatment centre in this area, Centre St. Joseph, since 2009; the previous three food voucher projects also took place in this arrondissement. According to the most recent information available, there are 12,897 households living in the 7th arrondissement, thus this project covers 7% of the general population.

Beneficiaries and targeting

Beneficiaries were selected through a community-based committee that was established with a representative from each quartier (neighbourhood). Using population data, a quota was set for each quartier and the committee selected 900 beneficiaries according to vulnerability criteria. These included being in the last three months of pregnancy or having a child under

two and being economically vulnerable, i.e. having no or very limited income source (a list of economic activities was created with the community), and being isolated without a partner or family to provide financial support. The list of project participants was validated by ACF staff by checking a random selection of 10% of households to ensure that the criteria were followed by the committee.

Implementation

Each beneficiary received a monthly distribution of food coupons for three months, exchangeable in the local market. The coupons provided a nutritious food basket consisting of cassava, cowpeas, groundnut, vegetable oil, fish, beef, tomato, rice and salt, and were printed with the monetary amount exchangeable for each food item. This food basket was established with the input of ACF-CAR's nutrition head of department during a prior coupon project to provide 50% of the food needs for a household of five people (the official household average size). The coupons provide approximately 135,900 kcal per month per household. For a household of five people, this would provide the equivalent of approximately 900 kcal per person per day. The coupons provide a ratio of 11% protein: 56% carbohydrates: 33% fats.

To avoid negatively impacting markets and vendors, the quantity of food exchangeable for the cash amount was not prescribed. However, weekly market price surveillance and beneficiary feedback allowed the team to respond if food vendors increased prices for the participants. The food vendors participating in the project also received training on marketing and business management, as this was identified as a weak point in previous projects.

During the weeks when the voucher distributions were not taking place, the food security team carried out cooking demonstrations with small groups of project participants. This showed how to prepare a balanced porridge for complementary feeding, as well as training on household economics using an interactive game in which participants practiced decision-making and learned about balanced diets and the importance of savings. During the last voucher

distribution, a theatre group acted out a comic sketch summing up the different themes covered during the project, including dietary diversity, managing income and savings, and using positive care practices. A radio show with these messages was also broadcast for wider impact.

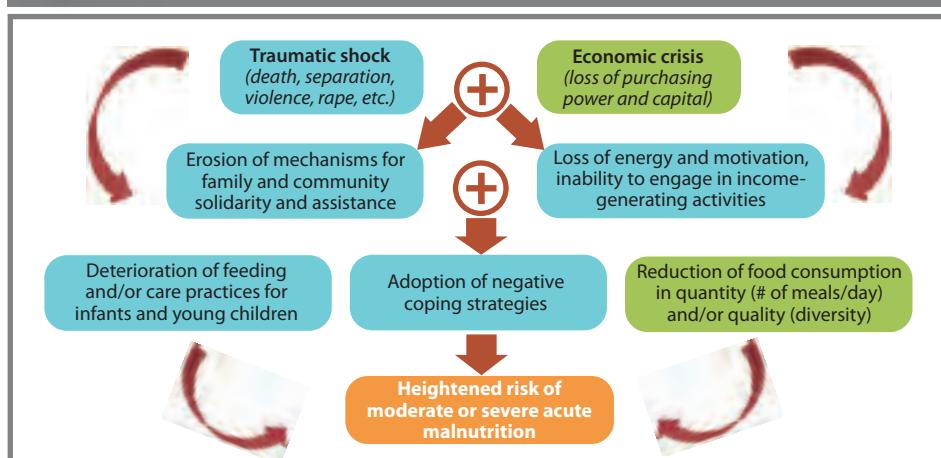
Alongside the food security team, the MHCP team provided individual and group support to the project participants. Many of the women had suffered loss and abandonment during the crisis and the team saw high rates of depression and anxiety. The individual case management helped mothers to bond with their infants and find strength and support. The group activities provided an environment for mutual learning, exercise of good childcare practices and reinforcement of social ties. The MHCP team also provided sensitisation on care practices, including breastfeeding and IYCF. These sessions were a chance for women to ask questions and discuss issues that were important to them, such as family planning and women's health. The team also trained 25 healthcare personnel from the St. Joseph's Health Centre, where the project activities took place, on topics including IYCF, mother-infant attachment and the relationship between patient and caregiver.

The project extension, referred to above, included a cooking demonstration for adults to complement the child-targeted porridge demonstration already completed; the distribution of a 'baby kit' containing cloth diapers, soap, and a bathing basin, as well as training on how to use these items; and the distribution of 10,000 CFA (approximately 16 USD) in cash, along with a final theatre group sketch to remind beneficiaries of the project messages. This activity was ongoing at the time of writing, so final evaluation findings related to these activities are not yet included.

Working multi-sectorally

To achieve both aims of the project an integrated approach is required, bringing together access to and use of nutritious food with support for MHCP. While both aims were present in previous projects, in this instance the activities were combined more intentionally, including training and collaboration between food security and MHCP teams. For example, the programme managers provided cross-sector trainings to ensure that food security field staff understood the MHCP messages and that the MHCP teams understood the food security messages. This allowed the food security team to refer beneficiaries to the MHCP team for individual support when they became aware of needs and it strengthened the team approach to the project. The beneficiary targeting and voucher distributions were carried out by both teams. Project activities and messaging were also harmonised; for example, the food security and MHCP teams worked together on the cooking demonstrations, highlighting messages on IYCF care practices, as well as dietary diversity and budgeting for a healthy diet. The two programme managers collaborated to create harmonised M&E questionnaires that addressed the indicators for both sectors. As described

Figure 1 How the current crisis in CAR has heightened malnutrition risk



above, the ACF-CAR nutrition department was also involved in determining the coupon food basket and validated the key nutrition messages for the trainings and the radio broadcasts.

Project impact

ACF's Nutrition Security Policy helped inform the mix of nutrition-specific and nutrition-sensitive activities in this project. The project includes specific nutrition indicators and focuses on the most nutritionally vulnerable population in an area with high levels of food insecurity. It also focuses on empowering women and includes behaviour-change strategies for nutrition and care practices. These nutrition-sensitive characteristics have been shown to have impact in other projects. While it is not possible to separate out the effects of the different components of this project, the project evaluations do point to a number of positive impacts, which are described below.

The women's average individual dietary diversity score (IDDS) was five at baseline, with a number of women declaring that they had not eaten at all the previous day. At endline, the IDDS average had increased to eight and all women had a score of at least four. Improvements in the food consumption score (FCS) were also noted. At baseline, FCS score was 31, with 33% of households in the poor consumption category. By endline, the average score had risen to 50 and no households fell into the poor category. For infants, at baseline there were two cases of SAM and one case of MAM. By the end of the project, there were no SAM or MAM cases and 65% of infants had improved their MUAC score, with 97% having an adequate MUAC in the endline sample. During the intervention (between baseline and endline), no MAM or SAM cases were detected by the team.

Using Knowledge, Attitudes and Practices (KAP) surveys allowed the team to evaluate changes in participants' perceptions relating to care practices. There was a significant rise in knowledge across all the key messages (exclusive breastfeeding, complementary feeding practices, maternal nutrition, etc.). Due to the short implementation period, feeding practices were not assessed. All the women who received individual MHCP case management had improved their mother-child relationship (ACF, 2013). In addition, 94% of women demonstrated improved psychosocial functioning; 'suffering scale' scores improved from an average of 9.24 at admission to 2.8; and the social support score improved from 3.8 to 8.6, using standard suffering and social support scales. (These use a set of drawings to capture participants' perceptions of social support they receive and their suffering. Decreasing suffering score denotes an improvement; an increasing social support score shows more support received.)

Despite the project's short duration, these results provide strong evidence for improvements in food security, knowledge related to IYCF and care practices, and feelings of social support among the project participants. The participants' response was overwhelmingly positive regarding the quality and usefulness of the different project

components, including both the access to food and the knowledge gained; 97% stated that they had learned a lot from the project activities.

Project reflection

The project was not without its challenges. These included issues with beneficiary selection, the short duration of the project that limited the depth of individual care that could be provided and limited the ability to measure longer-term behaviour change, and the fact that some beneficiaries (5% according to endline surveys) preferred to sell some of their coupons to have money for non-food needs.

Lessons learned from the challenges with the community-based beneficiary selection have helped us to adapt the selection methodology when designing another food voucher project (with a different donor). In this new project, beneficiary selection committees were developed in each quartier rather than one committee for the whole arrondissement, and the preliminary list of potential beneficiaries created by the committee was validated 100% by ACF teams to ensure that all potential participants met vulnerability criteria. This approach greatly reduced complaints and will be recommended for future coupon projects in Bangui, where the crisis, in addition to the urban setting, contributes to a lack of social cohesion and trust.

Some beneficiaries were selling or exchanging their coupons for cash. Reasons for this included the fact some young women were pressured by household members to provide for non-food needs and had little power to make their own decisions on the matter. In other cases, the women felt that having the cash to invest in their livelihood activities would give greater returns. While ACF staff emphasised the importance of a diverse diet and the use of the coupons to help achieve this, and stressed with the food vendors that exchanging coupons for cash was not allowed, it was not possible to avoid all exchanges for cash. Related to this issue, many women expressed a strong need for assistance not only with access to food, but more importantly for assistance to start or strengthen income-generating activities. Empowering women economically can be a tool for reducing malnutrition, especially when paired with behaviour change communication such as used in this project.

Furthermore, beneficiaries and even health centre staff lack knowledge on IYCF and care practices. Many of the participants did not have basic information on hygiene practices and dietary needs, and very few had knowledge of household money-management. In this context, the project participants were very eager for information and were active participants in the trainings; some even attended the same training several times. In order to make the information accessible within the short timeframe of the project, it was important to keep the activities interactive and participatory. Using games, theatre, hands-on demonstrations and small group activities helped to promote these messages and engage with the women. Other strengths of the project included having team members with ex-

perience from the previous coupon projects who were excited to add more depth to the project, and a programme manager who had strong creative, as well as team management, skills.

Further learning will be possible after the final evaluation following the extension activities. It will be especially important to see if food security indicators, perceptions of social support and knowledge of care practices remain positive, or if the situation has deteriorated despite the new distributions following the upsurge in violence in September and October 2015.

Conclusion

This article focuses on ACF's experiences at a programming level. While lessons learned from the project are being used to inform further programming, as described above, and have been used and shared in coordination with other NGOs working on food voucher programmes in the country through the food security cluster and other NGO coordination mechanisms, scale-up at the level of ministries or state institutions is not currently feasible due to the state of crisis in the country.

Drawing on the ACF nutrition security approach, which stresses synergies and holistic, integrated approaches, this project brought together the food security, nutrition, and MHCP sectors to create a multi-dimensional intervention that addresses a number of the possible causes of malnutrition in Bangui. By improving access to nutritious food and promoting positive care practices and psychosocial support while integrating nutrition messaging into all project activities, the project aimed to improve the food security, nutrition and coping strategies of the project participants. Even with a food voucher distribution project that is focused on responding to the short-term impacts of the current crisis, it is possible to work towards more sustainable, long-term goals of behaviour change and impact through engaging beneficiaries in relevant activities that creatively promote dietary diversity and improved care practices.

While this project took place in an emergency setting, it is possible to imagine a similar approach in other contexts where commodity vouchers are paired with multi-sectoral messaging and support for improved care practices, mental health for mothers, and dietary diversity. In the current context, ACF-CAR hopes to continue this approach, while adding further support to the development of women's economic activities as described above to promote resilience and economic empowerment that can also have an impact on food and nutrition security.

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Community Health Assistant and Agricultural Officer monitoring kitchen gardening in Mbale

Improving food and nutrition security for households with underweight children in Taita Taveta County, Kenya

By Dancliff Mbura, Caroline Chiedo, Fridah Mutea and Amelia Reese-Masterson



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Location: Kenya

What we know: The role of multi-sectoral initiatives in addressing malnutrition is reflected in Kenyan National Food and Nutrition Security Policy and associated action plans.

What this article adds: A collaborative, three-year programme of Integrated Maternal Child Health, Nutrition and Family Planning in Taita Taveta County in Kenya targeted the households of 200 underweight children with agriculture or livestock interventions accompanied by messaging on nutrition, water, sanitation and hygiene (WASH) and health-seeking behaviours, and establishment of hand-washing stations at household level. Adequate Integrated Management of Acute Malnutrition (IMAM) services were not available in the programming area. Ministries of Health, Agriculture, Programmes, and Interior Coordination were actively involved. Community health workers and community groups were central to delivery of the interventions. The children recovered (achieved weight-for-age >-1 Z-score) and the minimum acceptable diet rose from 23.5% (2013) to 33.85% (2015) among children under two years old. 'Bonus' developments included stakeholder's initiative to identify markets for surplus products, which generated income.

Background

Kenya, like many other countries, has put more and more effort into curtailing the heavy burden of malnutrition. One of the ways Kenya has demonstrated this effort is in development of the Food and Nutrition Security Policy, which addresses nutrition security in the country. The policy places nutrition central to human development and emphasises the need to ensure the rights to good nutrition, recognises disparities in nutrition, and provides relevant policy directions while ensuring a multi-sectoral approach to addressing malnutrition in the country.

According to the Kenya Demographic and Health Survey (KDHS) 2014, it is estimated that 26% of children under five in Kenya are stunted and 4% are wasted.

The Kenyan Government, in collaboration with nutrition partners, has put in place a National Nutrition Action Plan 2012-2017, which is a coordinated framework for nutrition interventions, outlining 11 strategic objectives and corresponding intervention actions.

International Medical Corps (IMC), in partnership with World Vision Kenya and a local organisation, St. Joseph's Shelter of Hope, is implementing a three-year (February 2013-January 2016), European Union-funded project called Integrated Maternal Child Health, Nutrition and Family Planning (IMCHNFP) in Taita Taveta County in Kenya. Taita Taveta is one of the six counties in the coastal region of Kenya characterised by a rapidly growing population, dry climatic conditions, food

insecurity and high poverty levels. The project's overarching goal is poverty reduction in the context of sustainable development, including the pursuit of Millennium Development Goals 4 and 5, to reduce child mortality and to improve maternal health. Currently, the project is aimed at Sustainable Development Goal 2 (ending hunger and achieving food security and improved nutrition and promoting sustainable agriculture) and Goal 3 (ensuring healthy lives and promoting wellbeing for all at all ages).

The project has three specific objectives:

1. Enhanced access to maternal child health services;
2. Improved nutrition status for pregnant and lactating women (PLW) and children under five; and
3. Scaled-up access and uptake of reproductive health services.

IMC is leading on the second objective. World Vision and St. Joseph's are leading on objectives one and three; St Joseph's focuses on all activities that are implemented at the community level, while World Vision supports implementation at health facilities. Through this project, IMC is addressing various strategic objectives outlined in the Kenya National Nutrition Action Plan. The implementing agencies work collaboratively to ensure maximum impact for improved health outcomes. This one-stop-shop approach to health service provision ensures that, for example, a mother taking a child for immunisation services is able to access nutrition services (counselling and micronutrient supplementation) and family planning services at the same time.

IMC is also implementing nutrition-sensitive programming, which complements direct nutrition interventions. According to a nutrition survey conducted in Taita Taveta in November 2013, minimum dietary diversity among children aged 6-23 months was found to be 23.5%, and stunting rates among children aged 6- 59 months was 27%. More recently, the KDHS from 2014 found stunting rates among children aged 6-59 months of 23.8%; slightly lower than that found the previous year in Taita Taveta. Although there are no recent data on minimum dietary diversity among children under five, the rate is likely similar to or slightly improved from the 2013 statistic. Poor dietary diversity has been linked to both stunting and wasting; in the target population, it was found that the most stunted children were also underweight, with poor dietary diversity cited as a likely risk factor. This need for improved dietary diversity in order to improve nutritional status formed the basis for the project's holistic intervention approach: addressing health and nutrition behaviours and practices through both nutrition-sensitive and nutrition-specific interventions.

This article describes the nutrition-sensitive programming approaches IMC has applied, including kitchen gardening, livestock keeping and WASH activities, and highlights key successes, challenges and lessons learned.

Nutrition-sensitive programming

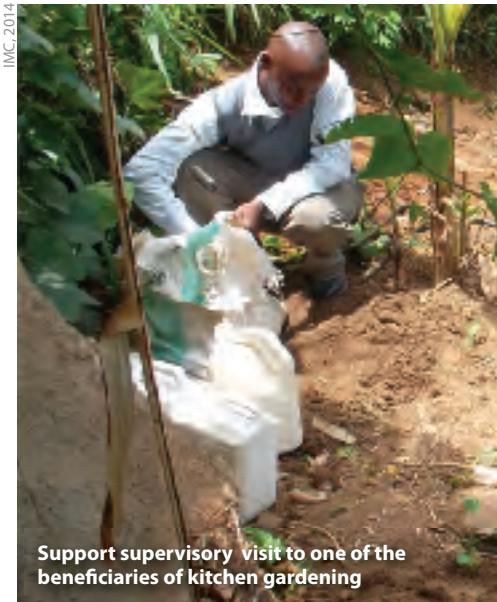
The project targeted pregnant and lactating women (PLW) ($MUAC < 23\text{cm}$) and underweight children under five (weight-for-age (WAZ) <-1 Z-score) identified through active case-finding in the community and at health facilities. Health workers did not have capacity to measure height, so WAZ was used rather than weight-for-length. The WAZ cut-off for children reflects the cut-off point in the mother-child booklet distributed by the government to all health facilities offering mother and child health and nutrition services. These booklets are then issued to the mothers and children attending clinic. At the health facility, underweight children are further assessed; children are weighed again, the measure is recorded in the child welfare clinic register (see below), and they undergo medical examination. Intervention involves nutrition counselling where caregivers are advised on what their children should eat, with attention to food variety. They also receive routine services provided to all the children, such as immunisation and vitamin A supplementation. For the child to be considered successfully recovered, he/she must achieve a score greater than WAZ -1.

At the time, there was no fully functional IMAM programme due to lack of adequate capacity in existing health services. Difficulties in some centres had emerged around reporting that impacted on supply chain and compromised service delivery. Taita Taveta County had not received any recent formal training on IMAM, and in the areas IMC was implementing the kitchen gardening and small-stock activities, there were no IMAM activities being implemented in the covering health facilities. However, on-the-job training on High Impact Nutrition Interventions (HINI), which includes IMAM, has been ongoing since the programme began; planning is currently underway (January 2016) to support training on IMAM and develop capacity, involving the Ministry of Health (MoH), WFP and IMC.

The malnourished women identified receive nutrition counselling from health workers. In the areas where IMC has successfully implemented the kitchen gardening and small-stock activities, the women are referred to the groups for mentorship from fellow women on improving household food security through kitchen gardening and rearing of small stock. In these groups, they also receive relevant farming information from area agricultural extension officers.

At the health facilities, the weight and age of all children under five that attend the facility are recorded in a permanent child welfare clinic register, including those identified through active case-finding. For the project in question, 200 underweight children were selected from the register and their caregivers provided with counselling on appropriate infant and young child feeding practices and supported with either kitchen gardening or small-livestock interventions. Representatives from the Ministry of Agri-

IMC, 2014



Support supervisory visit to one of the beneficiaries of kitchen gardening

culture, MoH, and Ministry of Special Programmes, county/sub-county nutrition focal persons, community authorities and community health workers participated in the selection of these households. The 200 households (with one child per household) were selected based on the following key factors:

1. poverty level of the household in addition to underweight status of the child;
2. inability to access food at household level;
3. proximity to active community units (to enable close follow-up by the community health volunteer);
4. topography and climatic conditions of the village where the children came from (the areas with relatively humid climates were targeted for sack farming interventions while the arid areas were targeted with live-stock interventions);
5. willingness of the caretakers to engage in farming or small livestock rearing; and
6. living in one of the five sites selected for the kitchen and small-stock farming.

Applying these criteria, 100 beneficiaries in Mbale and Njukini, of Wundanyi, and in Taveta sub-counties were identified for support, with farm inputs consisting of fertilisers and seeds for sack farming (kitchen gardening). Sack farming was encouraged as a means of farming since little water and space was needed. The agricultural extension workers provided training on kitchen gardening to equip the households with appropriate farming techniques. The training included the planting process, crop-care process, harvesting, post-harvest handling and preservation methods when the harvest is in surplus. Appropriate information on pest control and management at farm and storage level was also provided. The households supported with farm inputs were also encouraged and supported to set up communal nurseries. This was necessary to ensure the households worked in teams to support each other, as well as minimise the chance of failure. In addition, 100 households were selected in Sagala, Maktau and Ndilidau areas of Voi, Mwatate and Taveta sub-counties



for support with animal stocks. They were provided with rabbits, goats and chickens. These households were also trained on animal husbandry and how to maximise yields from their animals. The topics included choosing appropriate animal breeds, breeding, feeding, disease, pest control and management, and animal housing.

Government representatives from the Ministry of Interior Coordination to the area chief participated to ensure the beneficiaries used the input provided for the intended activity. The area chiefs were also instrumental in promoting the interventions at the community level, as well as mobilising other community members who were not selected to take up such interventions.

As a way of increasing the coverage of kitchen garden interventions, the stakeholders agreed to involve the community health volunteers; not only to monitor the interventions but also to practice kitchen gardening themselves. This would give them hands-on experience to enable them to train other community members, as well as scale up the interventions. A community unit is the lowest administrative level of the health system, rooted in the principles of universal health access and improved service delivery at the community level. It comprises a network of 50 frontline community health workers who deliver comprehensive primary healthcare services to households within the community unit and refer clients to the peripheral health facility for advance care. Each community volunteer provides these services to 20 to 30 households within the community unit. The nutrition officers in the MoH were involved in training the beneficiaries on food preparation methods for nutrient retention, selection of vegetables with high micronutrients levels, and the importance of micronutrients in the body, including their impact on the immune system. The training also included the importance of consumption of high protein foods from animal sources, especially among the children.

During the entire period, key messages on infant and young child nutrition were delivered, as well as other important messages such as good health-seeking behaviours, care of children, and good hygiene and sanitation practices. Beneficiaries were advised to practice a high standard

of hygiene by ensuring handwashing with water and soap at four critical points: before eating, after visiting the toilets, after cleaning the baby (after defecation), and before meal preparation. They were also advised on keeping sanitation facilities clean and setting up handwashing points near the toilets in order to promote handwashing immediately after toilet use. The 200 households, with the guidance of the area public health officers, established hand-washing stations (also known as tippy taps), which they use for hand-washing at their homesteads.

Key successes related to the nutrition-sensitive interventions

Among the 200 households who received nutrition-sensitive interventions, IMC identified a number of key successes. All 200 underweight children in the households participating in kitchen gardening and stock rearing recovered (i.e. they achieved WAZ >-1), with no notable difference between the two groups in terms of recovery time. As noted earlier, these children were not, at the time of data collection, receiving nutrition-specific interventions such as IMAM. Additionally, recent assessment found improvement in the minimum acceptable diet in children under two years old in the 200 households from 23.5% (2013) to 33.85% (2015), which could be linked to the kitchen gardening and livestock interventions, among other initiatives. Regular field-monitoring visits revealed that children were being fed eggs, vegetables and milk produced through kitchen gardening and small-stock activities. Another key success was related to the Government's buy-in to the project. The Government expressed remarkable support for kitchen gardening, and the number of people practicing kitchen gardening increased from 96 at baseline to over 500 at midpoint. This shows Government ownership of the project and potential for sustainability.

Added benefits are that, over time, the farmers have been able to form groups where they discuss solutions to challenges related to the market and surplus production. One solution was to maintain group membership; another was to assess market value of their products and identify markets for surplus production. These groups have also ven-

tured into table banking, whereby they save and then lend money to members (table banking is a group-funding strategy in which members meet regularly, place their savings, loan repayments and other contributions on the table, and then borrow long-term or short-term loans as needed). This project is attracting support from the Government and other local banks, who also train the farmers on marketing opportunities available. Participants have reaped economic benefits by selling extra farm and livestock yields, venturing into small-scale business, and forming investment groups through table banking. These economic benefits contributed to further improving their food security.

Challenges

During the course of the project, the most serious challenge faced had to do with barriers to community buy-in. Some community members prefer immediately realisable support, e.g. food aid. This challenge was addressed by holding regular discussions with programme participants on how undernutrition (both acute and chronic) impacts a child, and how food aid can displace local production and is not a sustainable solution. A second challenge related to market routes for surplus yield to be sold in order to reduce wastage and losses. The agricultural extension workers trained the farmers on post-harvest storage and, together with beneficiaries, engaged in discussions on market avenues available.

Lessons learned

By integrating nutrition-sensitive interventions – home gardening, small-stock provision and hygiene education – into a broader set of interventions, we were able to implement a well-coordinated, multi-sectoral project with strong stakeholder partnerships at all levels. At the community level, the community health workers and agriculture extension workers partnered in engaging the communities to improve household food consumption and thus improve their children's diet. At the county leadership level, the Ministries of Agriculture, Livestock and Health worked together to contribute to the agenda of improving nutrition at the household level.

There is a need to institutionalise multi-sectoral collaboration for nutrition-sensitive programming to ensure success. This project provided an example of such collaboration. Furthermore, strengthening of the existing county multi-sector steering group (which is coordinated by the National Drought Management Authority) should be explored, as this forum brings various sector heads and representatives together to discuss ongoing activities across sectors within the county, and occasionally includes nutrition on its meeting agenda. Such fora can be utilised to address the underlying causes of malnutrition and, in the long run, push forward the nutrition agenda.

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Evaluation of an integrated health-nutrition-WASH project to reduce malnutrition prevalence in children under two in Bangladesh

By Monsurul Hoq and John Brogan



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Terre des Hommes appreciates the approval and cooperation of the national and local structures of the Government of Bangladesh and the financial support of the Swiss Agency for Development and Cooperation, Swiss Solidarity, UNICEF, the World Food Programme and the European Commission. We extend thanks to Shahid Kamal, Pranab Kumar Roy, Laxman Kharal Chetry and the TDH team in Kurigram for project cycle management support and to Dr. Charulatha Banerjee, Ibrahima Diallo, Marie-Jeanne Hautbois and Mark Myatt for their technical support. Finally, we are grateful to the caregivers and community members of Kurigram Municipality, without whose courage and cooperation this project would have not been possible.

Location: Bangladesh

What we know: Poor water, sanitation and hygiene (WASH) is recognised as an underlying contributor to acute malnutrition. Evidence of impact of WASH interventions on undernutrition is limited.

What this article adds: An opportunistic comparison of an integrated WASH intervention site (infrastructure and intensified hygiene) with a comparison site was carried out by TDH in a peri-urban area of Kurigram Municipality, Bangladesh, based on service data available from a community health project over three years. While acute malnutrition prevalence (MUAC <125mm) fell in both sites, the rate of change was significantly higher in the intervention site. A proportional reduction in underweight was similar in both sites. Further research is required to explore context and mechanisms of impact of WASH interventions on nutrition.

Introduction

According to UN estimates, in 2011 more than 100 million children under five worldwide (15.7%) were underweight and more than 70% of the world's wasted children live in Asia; most in south-central Asia, where an estimated 10.1% (36.1 million) are affected (Black et al, 2013). Rates of malnutrition are also of concern in Bangladesh; the prevalence of acute malnutrition, defined by weight-for-height z-score (WHZ) < -2, is 11% in northern Bangladesh (FSNSP, 2013).

The causal path of malnutrition is complex where biological, cultural and socio-economic factors are interrelated. As described by UNICEF, the causal path of malnutrition is multi-factorial; inadequate dietary intake and disease are considered as immediate causes and poor sanitation and hygiene practice as one of the underlying causes of malnutrition in developing countries (SOWC, 1998). According to WHO (2008), half of malnutrition is associated with repeated diarrhoea or intestinal worm infection due to unsafe drinking water, inadequate sanitation and lack of hygiene practices. In order to

improve this situation, the recent Lancet series recommends WASH interventions as one of several interventions (Bhutta et al, 2013). The Lancet in 2009 hypothesised that prevention of tropical enteropathy will be crucial to normalise child growth and will not be possible without access to toilets (Humphrey, 2009). A systematic review by the London School of Hygiene and Tropical Medicine of available evidence on the effect of WASH on nutrition status of children also found a small benefit of WASH intervention on length growth in children under five (Dangour et al, 2013). Though there is need for better evidence to explore the impact of WASH interventions on undernutrition, there are few rigorous trials due to low priority given to WASH in medical research (Velleman et al, 2013).

The study described in this article reports the changes in prevalence of malnutrition, comparing an integrated WASH intervention site and a comparison site, based on service data available from a community health project in a peri-urban area of Kurigram Municipality. Acute malnutrition was defined by mid-upper arm circumference (MUAC) < 125mm and under-

weight as weight-for-age z score (WAZ) < -2, which were compared separately over time.

Methodology

Sites and target population

From November 2011 to December 2014, TDH implemented a comprehensive health and nutrition services project in line with Bangladesh's National Nutrition Service Operational Plan for women, infants and young children living in the nine wards of Kurigram Municipality of Kurigram District, northern Bangladesh (see model of action in Figure 1). The households were typically of low socio-economic status; poor environmental sanitation and food hygiene, as well seasonal flooding, were also common

issues in the area. Due to resource limitations, WASH activities were integrated in only two of the nine Wards - an intervention justified by the high prevalence of acute malnutrition among children under five years of age (29.0% prevalence of MUAC <125mm and 30.1% with WAZ < -2). The two wards were also among the areas of highest flood risk in the municipality. This project was later identified as an opportunity to evaluate the integration of WASH activities within a community-based health project aimed at reducing child malnutrition.

Interventions

Of Kurigram Municipality's nine wards, the two with the highest prevalence of acute malnutrition

were selected for installation of WASH infrastructures and intensified hygiene awareness within the community-based health project and considered as the intervention site. The remaining seven wards became the comparison site, having similar ecological and demographic characteristics, childcare practices, and hygiene behaviour and sanitation coverage. Over the project period, no other development projects were implemented in either of the sites. A summary of activities implemented in the intervention and comparison sites is given in Table 1.

The community-based health project activities included growth monitoring of children under two years; community management of acute malnutrition (CMAM) of children under five; facility-based Integrated Management of Childhood Illness (IMCI) and management of complicated cases of severe acute malnutrition (SAM); identification of pregnant and lactating women and referral for antenatal and postnatal care; and behaviour change communication (BCC) on infant and young child feeding (IYCF) practices and reproductive health-related issues, including early marriage and family planning. CMAM activities were implemented in TDH-run maternal and child health centres and TDH-run community-based outpatient therapeutic programme (OTP) centres at household level.

WASH-focused activities included construction of 119 community-managed, deep-tube wells and 1,280 household pour-flush twin pit latrines (offset and direct-drop pits according to space constraints). Well and latrine structures were raised to reduce the risk of inaccessibility during flooding. During the project, monthly campaigns for BCC to improve environmental hygiene were common to all nine wards. Beginning with Participatory Hygiene and Sanitation Transformation (WHO, 1998), follow-up activities included mothers' group discussions, public theatre, music, songs, and visual education materials as media. Topics and messages focused on the importance of hand-washing, safe drinking water and excreta disposal, household environmental hygiene, and diarrhoea prevention. In addition, project staff organised monthly children's club meetings and individual household visits to promote proper use and maintenance of the newly-installed infrastructure.

Figure 1 Model of action for Integrated Health Project to prevent acute malnutrition

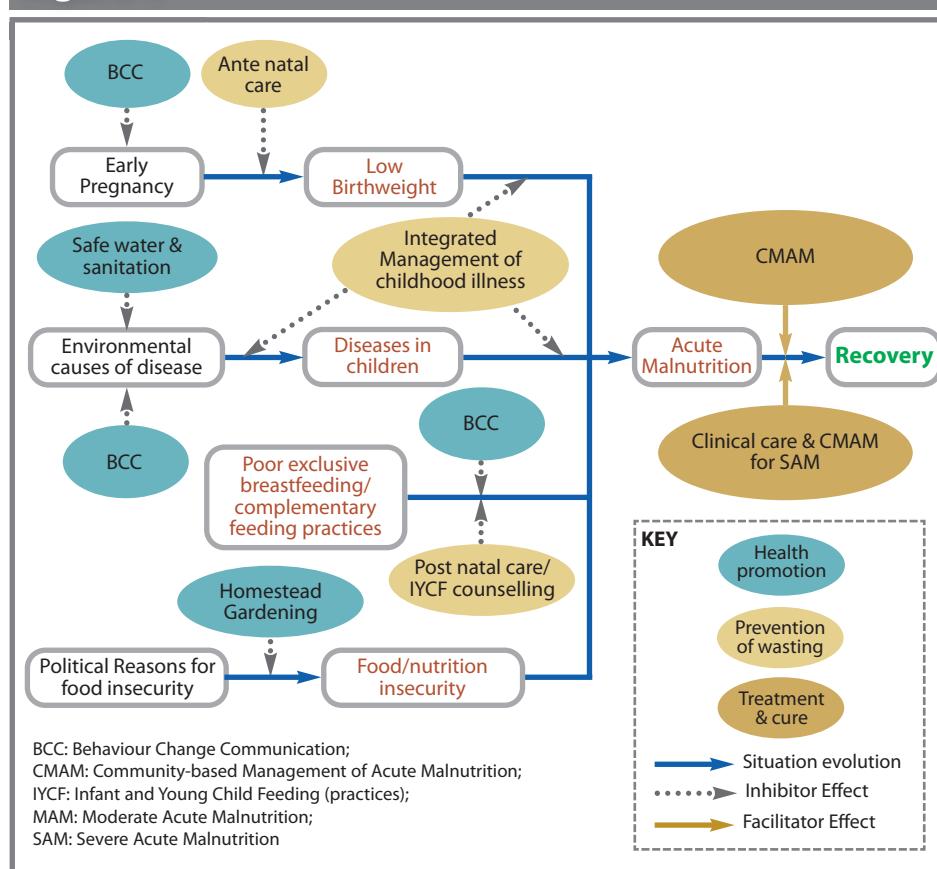


Table 1 Project activities in intervention and comparison wards

Activity	Intervention Wards (2)	Comparison Wards (7)
Quarterly growth monitoring (0-23 months)	X	X
Biannual nutritional screening (24-59 months)	X	X
CMAM (0-59 months)	X	X
Facility-based IMCI	X	X
Management of complicated SAM	X	X
Referral of women to antenatal and postnatal services	X	X
Monthly BCC various topics, including IYCF, Sexual and Reproductive Health and WASH	X	X
Community-managed tube wells	X	
Household pour-flush latrines	X	
Monthly neighbourhood WASH committee meetings	X	
Toilet maintenance promotion (one-time household visit)	X	
Monthly children's club meetings for hygiene	X	

Data collection

As part of the community-based health project, a survey was conducted including all nine wards of Kurigram Municipality at the end of first year of the project (December 2012). The survey findings were used as a secondary source to compare socio-economic status, disease prevalence, health-care-seeking behaviour and coverage of water and sanitation facilities between the sites.

In order to assess the nutritional status of children under two, weight and MUAC were measured by project staff every three months through growth-monitoring sessions in designated places of the community in each of the nine wards. There were 15 centres in the intervention site and 18 centres in the control site.

Children living in the neighbourhood came to the area for screening on the scheduled day of the session. The campaign team also visited households in the neighbourhood to ensure all listed children were measured. If any children missed the session, the project staff visited the households to ensure these children were included. The children born during the project period were included for screening and children over two were excluded. The number of children measured quarterly between March 2012 and December 2014 in nine wards ranged from 132 (6.47%) to 875 (42.01%) of 2,037 children registered during the project period. The ratio of children measured between the intervention and comparison sites was 1:1, similar to the ratio of total children under two in both sites. There was no significant difference in average age (in months) of children between the sites and ratio of girls and boys was 1:1 in all quarters.

Children's weight was measured using digital machines (Digital Lithium Scale, HD-318, Highest 150kg, China) with a precision of 100g and MUAC was measured by MUAC tape (S0146520 MUAC Child 11.5Red/PAC-50, UNICEF). All measurements were made in line with WHO

standard protocols (SMART, 2006). WAZ was calculated according to WHO's growth standard of WAZ by sex using Emergency Nutrition Assessment for SMART software (WHO, 2006; ENA, 2009) and WAZ < -5 or WAZ > 5 was considered as flagging criteria. Children with WAZ < -2 were identified as underweight, while children with MUAC < 125mm were identified as acutely malnourished. All project staff received training on anthropometric measurement as part of the project and were refreshed as appropriate. The project-monitoring staff measured children at random and cross-checked with project staff ensuring quality of the data, as well as checking age and sex distribution, digit preference and clustering effect. This service data was used to address the study objective.

Analysis

The socio-economic, health and hygiene characteristics of the intervention and comparison sites were compared using an appropriate statistical test (i.e. z-test) to confirm they were similar at baseline. In order to address the study objective, prevalence of underweight defined by WAZ < -2 and prevalence of acute malnutrition defined by MUAC < 125mm were estimated for

each quarter compiling growth monitoring data of children under two. Linear regression analysis was conducted, estimating rate of change in prevalence of malnutrition during 2012 – 2014 (i.e. regression coefficient of time) in intervention and comparison sites separately and compared using the Wald test between the two sites. All data were entered and analysed using IBM SPSS Statistics for Windows (IBM, 2010).

The intervention was approved by the NGO Affairs Bureau of Bangladesh. The identity of the children was anonymised and all malnourished children were enrolled in TDH-supported facilities. The OTP centres were independent of the state system but implemented with the necessary permissions. With the government subsequently moving to scale up CMAM rollout within the state health system, TDH has a Memorandum of Understanding with Institute of Public Health Nutrition of the Ministry of Health & Family Welfare to coordinate the rollout in Kurigram District.

Results

Socio-economic, health and hygiene characteristics

The socio-economic, health and hygiene characteristics of the integrated WASH intervention site and comparison site of children under two are summarised in Table 2. The survey confirmed that characteristics of the intervention site were broadly similar to the comparison site at the end of the first year of the project. The intervention site was similar to the comparison site in terms of ownership of cultivable land and coverage of improved water source, water purification and sanitary latrines. However, in the intervention site, more households were living in shelters built by zinc sheeting or bamboo (94.7%) compared to the comparison site (69.1%). Among children under two, Vitamin A and measles vaccination coverage and prevalence of illness in the past two weeks of survey were similar in the two sites. However in the intervention area, caregivers sought care more frequently than in comparison area (diff 0.11, 95% CI 0.01 - 0.22, p <0.07).

Between site comparison of prevalence of malnutrition

At the outset of the project (March 2012), the prevalence of underweight was higher in the intervention site (30.1% compared to 22.7%). Figure 2 reflects how the percentage of underweight children reduced over time in both sites, but the proportional difference remained consistent over time and between sites. Similarly in March 2012, the prevalence of acute malnutrition was higher in the intervention site (29.0% compared to 12.7%). However, the difference in proportion reduced over time between sites, due to a greater fall in prevalence in the intervention site (see Figure 3).

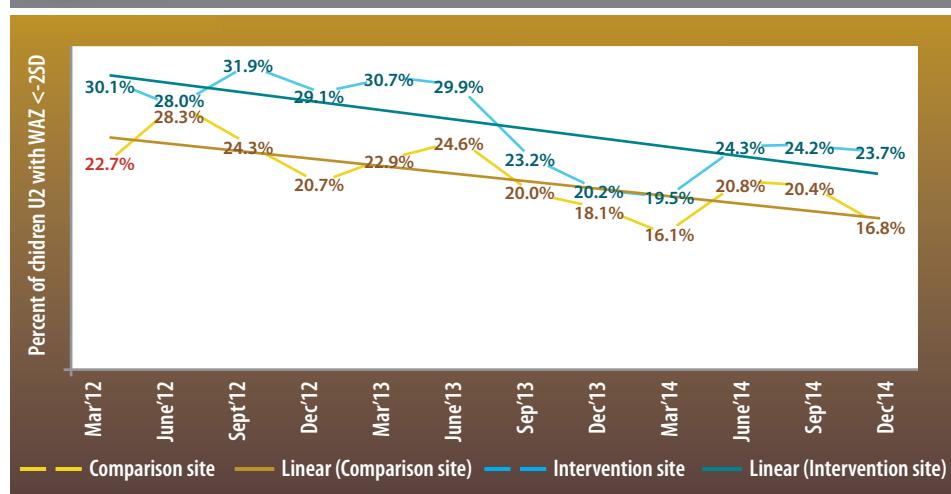
The prevalence of underweight among children under two in the intervention site reduced by 0.007% (95% CI 0.003% - 0.011%) and in the comparison site by 0.008% (95% CI 0.004% - 0.013%) over time. There was no significant

Table 2 Socio-economic, health and hygiene characteristics of the Integrated WASH and comparison site household with children less than two years old, Survey, December 2012

	Integrated WASH Intervention site (n = 76)	Comparison site (n = 97)	P value (Pr (Z < z))
House materials			<0.01*
Concrete	00.0%	06.2%	
Brick and zinc sheet	03.9%	24.7%	
Sheet/bamboo	94.7%	69.1%	
Others	01.3%	00.0%	
Ownership of cultivable land	14.5%	20.6%	.30
Vitamin A coverage	75.0%	80.4%	.47
Measles vaccination coverage	72.4%	80.4%	.22
Illness in the past two weeks (U2)	59.2%	60.8%	.83
Sought care for the illness (U2)	95.6% (n = 45)	84.7% (n = 59)	.07
Proportion of households with improved water source	39.5%	45.4%	.44
Water purification before drinking	01.3%	00.0%	.26
Proportion of households with a sanitary latrine	55.3%	53.6%	.82

*This is for overall difference for house materials. Pr ($\chi^2_{(3, .05)}$)

Figure 2 Percentage of children with WAZ < -2SD over time



difference in the rate of change over time between the two sites ($\chi^2(1) = 0.46$, p -value = 0.4969) (Table 3a). However similar analysis of prevalence of acute malnutrition reveals that the rate of change was significantly higher ($\chi^2(1) = 20$, p -value = 0.0001) in the integrated WASH intervention site (0.020%, 95% CI 0.014% - 0.026%) compared to comparison site (0.006%, 95% CI 0.002% - 0.010%) (Table 3b).

The increase in household coverage for improved toilets is estimated at 29.4%, while household access to improved water source increased by 27.6%.

Discussion

The study findings suggest that the percentage of children with $WAZ < -2SD$ reduced in both intervention and comparison sites but there was no significant difference in improvement between both sites. One possible reason for the result could be the effectiveness of growth-monitoring activities (that included BCC and cooking demonstrations) as part of the community-based health project, which was implemented in all nine wards. Similarly, a longitudinal study in rural Bangladesh has found behavioural change intervention effective in reducing percentage of children with $WAZ < -3SD$ (Nasar et al, 1993). However, Dangour et al (2013) in a review of 14 studies reported no evidence of effect of WASH intervention on WAZ .

In Bangladesh diarrhoea is a major contributor to malnutrition. Poor hygiene practice and environmental sanitation are major contributors of diarrhoea. However, it was not possible to examine the effect of the intervention on diarrhoeal or water-related diseases rates due to lack of project data (morbidity data is collected in hard copy only; electronic data are only available on the number of children under five who came to the TDH-run satellite clinics).

A randomised intervention trial was beyond the scope of this project, since this study was planned after project completion in 2014 and used available project data to evaluate the impact. The selection of the wards as intervention sites was justified by high percentages of children with $WAZ < -2SD$ and/or $MUAC < 125mm$ which increases the probability that measurable difference after the project would be attributed

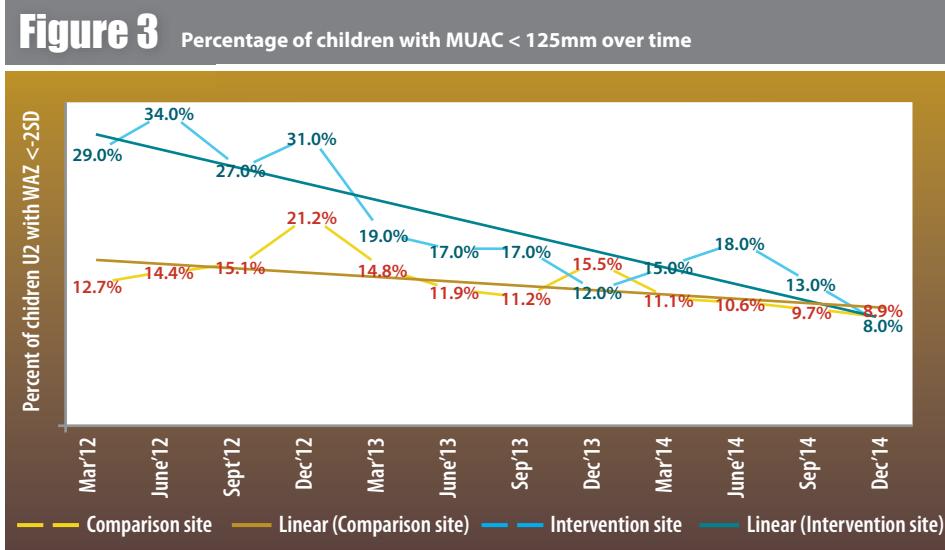


Table 3a Summary statistics of liner regression of proportion of children with $WAZ < -2$

Site	Variable	Coefficient	P> z	[95% Conf. Interval]
Intervention	Time	- .0070812	0.000	- 0.010805 - 0.003357
	Constant	.2591064	0.000	0.231700 0.286513
Comparison	Time	- .0085372	0.000	- 0.013117 - 0.003957
	Constant	.3178116	0.000	0.284105 0.351518

Table 3b Summary statistics of linear regression of proportion of children with $MUAC < 125mm$

Site	Variable	Coefficient	P> z	[95% Conf. Interval]
Intervention	Time	- 0.020420	0.0001	- 0.026324 - 0.014515
	Constant	0.332727	0.0001	0.289269 0.376185
Comparison	Time	- 0.005759	0.0070	- 0.009915 - 0.001602
	Constant	0.168348	0.0001	0.137755 0.198942

to the intervention rather than to site differences.

The methodology of inclusion and exclusion of children minimised maturation effect as children grow older and ensured similar distribution of children by age over the three-year duration. The designated places of conducting growth monitoring session were distributed throughout the community which reduced bias in selection of children based on location. As part of the community-based health project, project staff working in rotation measured the children which minimised enumerator bias.

The study shows evidence of the positive

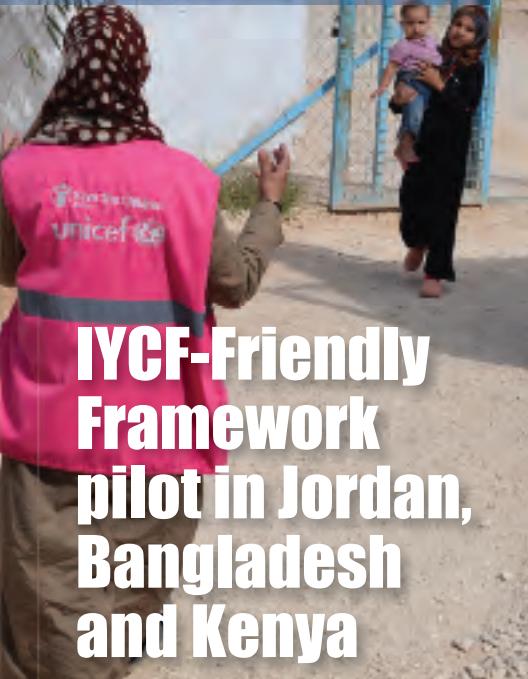
effect of integration of WASH activities within the community-based health project in reducing acute malnutrition defined by MUAC. The intervention comprised infrastructure and intensified hygiene awareness over the comparison sites. There are no studies showing the impact of WASH interventions on acute malnutrition. However further research is required to examine the impact of WASH on children's nutritional status, taking into consideration the context and explanation for the most effective components and the mechanisms.

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A community mobiliser collects her baby during the one-hour breastfeeding work break in Zaatari camp



IYCF-Friendly Framework pilot in Jordan, Bangladesh and Kenya

Save the Children, Jordan, 2015

By Bushra Rashid, Nicki Connell and Caroline Wilkinson



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Location: *Jordan, Bangladesh and Kenya*

What we know: There is increasing interest in Infant and Young Child Feeding (IYCF)-sensitive activities involving multiple sectors, including in refugee settings. Whilst IYCF policy frameworks exist, comprehensive IYCF programming is often limited in scope and scale.

What this article adds: UNHCR and Save the Children are finalising an IYCF-Friendly Framework to guide multi-sectoral programming in refugee settings. It includes practical examples of IYCF integration into multi-sector programming and how IYCF support contributes to sectoral priorities. Pilots in refugee camps in Jordan, Bangladesh and Kenya have been successful; examples of progress include impact on labour law to facilitate breastfeeding (Jordan), IYCF referrals via child protection teams (Jordan), integration of IYCF messaging in food ration distribution (Bangladesh) and IYCF criteria used to target livelihood programmes (Kenya). Identification of sectoral IYCF champions has been a key driver. Lessons learned will inform the first version of the Framework, available early 2016.

Background

The Innocenti Declaration (UNICEF, 1990), the Baby-friendly Hospital Initiative (BFHI) (WHO, 1989) and The Lancet series of 2008 (Lancet, 2008) set a new pace of global action to support optimal IYCF. Progress in raising awareness and changing caregiver habits to ensure appropriate IYCF practices has expanded from focusing only on nutrition-specific interventions to promoting nutrition-sensitive activities that integrate IYCF into other sectors. Cross-sector engagement is essential to protect and meet the nutritional needs of infants and young children and their mothers adequately and in a timely manner (Sphere Project, 2011; IFE Core Group, 2007). Encouragement and protection of breastfeeding is an important part of the health, nutrition and other social measures required to promote healthy growth and development of infants and young children (WHO, 1981). The UNICEF conceptual framework for malnutrition shows that compromised water, sanitation and hygiene (WASH), education, food security, caring practices, health services, etc. contribute to child and maternal undernutrition, not just inadequate dietary intake and disease (UNICEF, 2003). The Lancet series of 2013 highlights the potential for nutrition-sensitive interventions to improve nutrition. Despite these recommendations, the overall profile of IYCF in humanitarian response to refugee situations remains limited. Although breastfeeding difficulties and requests for infant formula are two common issues in emergencies, IYCF programming remains a low priority for implementation. Approaches are not institutionalised or standardised among donors and hence vary greatly, and are often driven by the personal interest of key decision-makers in implementing agencies.

Considering this, UNHCR and Save the Children are in the final stages of developing an IYCF-Friendly Framework to guide IYCF

programming in refugee settings. This Framework is designed as a tool to assist with implementing international policies, standards and guidance such as the Sphere Standards, the Operational Guidance on Infant Feeding in Emergencies, BFHI, and the International Code of Marketing of Breastmilk Substitutes (the Code). It operationalises their key provisions to facilitate IYCF support in different contexts, with particular attention to sectors that have not traditionally engaged with IYCF programming. The aim of the Framework is to:

- Take full advantage of all contact opportunities with infants and young children to improve their health, nutritional and developmental well-being;
- Provide simple IYCF tools to staff and partners to raise awareness and increase actions;
- Support development of concerted and harmonised IYCF messages and networks; and
- Wherever possible ensure that tools are based on or supported by existing materials.

This article shares the nutrition-sensitive components of the Framework and pilot experiences in three refugee camp settings.

Overview of IYCF-Friendly Framework

For an IYCF strategy to be implemented successfully, IYCF should be mainstreamed with all other relevant sectors operating in a given context. For inter-sector collaboration to be effective, all stakeholders should be sensitised to IYCF, even if they are not nutritionists or public health experts. Integration and coordination with other sectors are key enabling factors to ensure the success of IYCF programming and are two factors on which this IYCF-Friendly Framework is based. The Framework defines effective integration between two or more sectors when the sectors share common strategic ob-

BOX 1 The seven action points of the IYCF-Friendly Framework

- Action 1:** Advocate for relevant stakeholders to consider IYCF.
- Action 2:** Mobilise resources for IYCF.
- Action 3:** Endorse key policies and adhere to operational standards.
- Action 4:** Select appropriate IYCF activities.
- Action 5:** Integrate IYCF with other sectors.
- Action 6:** Coordinate IYCF-sensitive activities.
- Action 7:** Implement monitoring, evaluation, accountability and learning.

jective(s) and activities that respect all sectors' priorities, while contributing to a common goal. The common goal in this case is to protect infants and young children, enhancing their chances of survival and promoting healthy growth and development.

Structure and key features

The Framework includes a general overview and introduction, followed by sections (sector chapters) with examples of multi-sectoral integration. The core 'Framework for Action' section outlines seven actions with objectives and activities to create an enabling environment for IYCF integration with sectors (see Box 1). Practical examples of how IYCF can be built into multi-sector programming and contribute to the priorities of different sectors, cover child protection, education, food security and livelihoods (FSL), public health including mental health, reproductive health and HIV/AIDS, WASH, nutrition, and settlement and shelter (see Box 2 for some examples). These were developed in consultation with staff in relevant sectors within Save the Children and UNHCR. Snapshots of key information condense takeaway points from sectors. A clear and well-defined monitoring, evaluation, accountability and learning (MEAL) mechanism will be put in place to measure the impact of the Framework.

This Framework draws on short and longer-term refugee experiences, in camps in particular. However, its application is not limited to these contexts; many elements are applicable to non-camp settings, host communities, the internally displaced and urban and rural settings.

Process of development

The IYCF-Friendly Framework has been developed through collaboration between UNHCR and Save the Children, from discussions and in-person consultations from UNHCR field teams, UNHCR partners, the Ministry of Health and global technical experts. This has guided and inspired decision making of high-level managers, coordinators, advisors and field staff based on practical experiences in multiple sectors. The Framework is a living document and was piloted in 2015 in the following refugee camps: Dadaab in Kenya; Cox's Bazar in Bangladesh and Za'atari camp in Jordan.

Pilot experiences

Za'atari camp, Jordan

In response to UNHCR Jordan's initial encouragement to its partners in 2014, efforts to integrate IYCF with other sectors – education, child protection, health, WASH, FSL, camp management and shelter – started in Za'atari camp in Jordan Mafraq in March 2015. Before the Framework was introduced, strong IYCF programming and leadership (UNHCR and Save the Children were already in place (Al-samman, 2014). A Nutrition Working Group (NWG) was established in 2012; one of the sub-working groups in the health sector coordinating nutrition response in Jordan, chaired by Save the Children Jordan (SCJ) and UNICEF, attended monthly by partners working in nutrition in Jordan, and has developed Standard Operating Procedures (SOP) on management of breastmilk substitutes (BMS) and a guidance note on IYCF in emergencies. Regular reporting on BMS donations was in place. A system of individual-level feeding assessment and support is implemented for both breastfed and non-breastfed infants. All children under two in the camp are registered and there is a strong network of community mobilisers to identify feeding issues at household level. The Framework has made a difference on IYCF integrated programming in this 'enabling environment'.

Advocacy with relevant stakeholders was among the initial steps towards integration of

IYCF with other sectors. For this purpose, the NWG added 'Inter-sectoral collaboration' to its agenda to prioritise next steps for taking the IYCF-Friendly Framework efforts forward. An NWG member attended the Inter-sector Working Group (ISWG) and other sector meetings to generate interest and buy-in at different organisational staffing levels. The ISWG is the main bridge between the Sector Working Groups (Health, Food Security, Protection, Water and Sanitation, Shelter and Settlement, NFIs, Cash, Education). It meets monthly, with membership of the Sector chairs and representatives of the Jordan International NGO Forum. The ISWG also links the Sectors to the Country director-level refugee co-ordination body, the Inter-Agency Task Force (IATF). Individual meetings with sector chairs and separate presentations for the Framework for each sector were made. IYCF 'champions' – advocates of IYCF in sectors other than nutrition who constitute the backbone of IYCF advocacy – were identified during these meetings. At least one IYCF champion has been identified in the WASH, camp management and shelter sectors so far and recruitment of champions for the child protection, FSL, education and health sectors are planned. These IYCF champions will be briefed on their roles in taking the IYCF-Friendly Framework agenda forward in the sectors they represent.

The added value of the Framework has been to propel the endorsement of key IYCF policies

BOX 1 Examples of opportunities for integrated programming

Child Protection:

Extend community outreach by engaging members of existing community-based mechanisms to identify and refer children aged 0-23 months in need of case management and/or IYCF support.

Education:

Engage students through community-mobilisation opportunities and provision of key messages and information on IYCF through poems, drama, songs, stories and other methods; consider drama competitions related to IYCF.

Food security and livelihoods:

Coordinate in the design of rations and non-food items to ensure the needs of 0-23 month-olds and pregnant and lactating women (PLW) are considered and protected. For example, ensure rations include appropriate complementary foods for young children and sufficient food for at least one PLW; complement ration with fresh foods if necessary; and consider unintended consequences of food aid on feeding practices.

Public health:

Consider ways of incorporating IYCF indicators in the Health Information System (HIS) and UNHCR's reporting system (TWINE) to collect, analyse and utilise information related to IYCF. Train IYCF staff on psychological first aid. Foster the establishment of mother-to-mother support groups through delivery/postnatal care services.

Nutrition:

Nutrition services (such as outpatient therapeutic programme, blanket or targeted supplementary feeding programmes) should include IYCF counselling where appropriate, or link to/collaborate with specialised IYCF services, providing for the specific needs of PLW, infants and young children.

WASH:

Provide hygiene promotion and related non-food items at Mother-Baby Friendly Spaces, to allow complementary nutrition education, particularly around IYCF and care practices.

Settlement and shelter:

Collaborate in planning discussions on minimising environmental and health risks in Mother-Baby Friendly Spaces related to food storage facilities, food preparation (ventilation, water access, etc.) and vector control.

More actions by sector are included in the Framework.

in Za'atari camp in order to provide a conducive environment for promoting, protecting and supporting breastfeeding. Camp Management Committee (CMC) encouragement of the camp partners to follow the labour law of Jordan (which enabled enumeration for all lactating, working mothers having children less than one year to breastfeed for one hour each day during work hours) is a shining example of this effort. According to this law, mothers are able to take a break from their work to breastfeed their baby in peace. This gives them enough time to make a trip home to breastfeed and return to work. Adoption of this regulation throughout the camp has reduced breastmilk substitute (BMS) usage. If this regulation is not upheld by employers, it could lead a breastfeeding mother to request BMS from the health centre, triggering an alert and indicating the need for intervention.

Similarly, the SOP for IYCF, which was developed by the NWG in 2012, was disseminated under the Framework's initiative to sectors that had not yet been involved. This helped to formally flag the problems with untargeted distribution of BMS. Also, presenting the Framework to the CMC and SARD (police) led to the nomination of an IYCF champion from the SARD. Consequently, UNHCR and SCJ were able to advocate strongly for adherence to the SOP for the Handling of BMS in Refugee Situations (UNHCR, 2015). This led to removal of infant formula in camp shops; since infant formula is available on prescription based on individual level assessment, supplies are targeted and shop sales not permitted. The UNHCR SOP for handling BMS (2015) does not explicitly prohibit sale of BMS, but does specify the need for any supplies to be targeted to those who need infant formula, based on individual-level assessment. On this basis, general sale of BMS in the camps was stopped in the context of an alternative guaranteed supply and associated support being available.

Inter-sectoral referrals have also been strengthened. Infants identified during house-to-house visits as needing child protection and WASH support are now referred by the IYCF team through formal referral procedures, which is an improvement to the past practice of more sporadic referrals. Thus the Framework has catalysed a formal mechanism for implementation. Other developments include strengthening of joint promotion sessions with education and WASH. Adolescent girls aged 14 to 18 years are targeted with IYCF sessions, including key messages on anaemia and nutrition during pregnancy, as well as family planning advice.

Amid the successes, the IYCF-Friendly Framework has also faced a few challenges and learned lessons. These include:

- Ensuring buy-in from other sectors to consider and incorporate IYCF in their sectors. A top-down rather than a bottom-up approach emerged as a possible way to ease integration efforts. This highlighted a need for advocating for the IYCF-Friendly Framework with the agency's head first to help create favourable grounds for imple-



A community dialogue on exclusive breastfeeding discouraging prelacteal feeds for infants under 6 months, Dadaab camp, Kenya

Doris Mwedwa, ACF, Kenya, 2015

mentation and incorporation of activities at the field level with staff;

- Incorporating the recommendations from the Framework in active projects faced limitations. It is recommended that project proposals be reviewed through an "IYCF lens" or an "IYCF marker" similar to the "gender marker", which would facilitate sensitivity to IYCF at the start of the project cycle and avoid the neglect of IYCF in project designs;
- Interest in IYCF advocacy varies in the related sectors and is personality-driven at the moment; agency endorsement needs to be at a global level to facilitate country office engagement;
- Enabling policies such as BMS code and BFHI are not fully implemented in Jordan;
- A lot of time is required and close follow-up is needed to monitor how activities are moving forward. Without that, progress will be much slower.

Pilot in Cox's Bazaar, Bangladesh

Each year, UNHCR revisits the project agreements of all its partners in November to plan project activities for the coming 12 months. Since the IYCF-Friendly Framework was introduced in March 2015, UNHCR led partners in the incorporation of IYCF into existing activities where possible, but plans to work with partners towards the end of this year to incorporate the key actions of the Framework in 2016 through new programming. Currently, IYCF is integrated with some activities in the nutrition, health and FSL sectors, with IYCF staff supporting other sectors, as well as vice versa, including:

- Integration of IYCF key messages during ration distribution. The nutrition sector ensures that caregivers of children aged six-23 months receive key messages on IYCF during the bi-weekly distribution of micronutrient powders, weekly distribution of Wheat Soya Blend+ through blanket feeding, and monthly growth-monitoring visits. The nutrition volunteers and sector staff are trained on delivering key IYCF messages to sensitise the community on

appropriate IYCF practices, e.g. to protect and promote breastfeeding and age-appropriate complementary feeding;

- Improving complementary food choices in the food voucher system. With around 17 food items to choose from, information on age-appropriate complementary feeding can encourage families to make appropriate food choices;
- Training of nutrition staff on identification and referral of caregivers under mental stress to the mental health unit during household-level screening and during follow-up of malnourished children; and
- Referrals by nutrition staff to the WASH sector volunteers when the hygienic conditions of a household are deemed compromised.

The pilot has demonstrated the need for dedicated staff to report and monitor multi-sectoral integration of IYCF. It has also found that IYCF-Friendly measures should be incorporated in the project design phase, so that all aspects of implementation can be satisfactorily considered before the implementation phase of the project cycle.

Pilot in Dadaab camp, Kenya

The third pilot was conducted in Dadaab camp, which has had considerable investment in IYCF support over a number of years, including piloting of the UNICEF IYCF counselling package and more recent activities by ACF to integrate maternal and IYCF nutrition across sectors (see ACF article in this edition of Field Exchange). Building on this groundwork, in May 2015, a Framework orientation of key staff from different agencies was conducted, which laid the foundation for further multi-sectoral integration of IYCF in Dadaab camp. The ACF Nutrition Manager assisted at the outset of the pilot with technical inputs into the IYCF champions' training and was a key resource on key stakeholders, etc. ACF is no longer operating in Dadaab; agencies have cascaded this orientation in the form of training their staff on IYCF. Initially, the IYCF-Friendly Framework was integrated with the

health and nutrition sectors, but is now slowly gaining momentum in integration with FSL and child protection sectors (discussed below) as a result of the orientation exercise.

The Interagency Working Group, which meets once every two months to discuss programming concerns, has served as the platform to advocate to relevant stakeholders to incorporate IYCF and for carrying out discussions on the Framework. UNHCR spearheaded a coordination mechanism for IYCF by holding a coordination meeting in July 2015, which was followed by coordination meetings bi-monthly thereafter. UNHCR has identified an IYCF champion for each sector as the flag-bearer for IYCF in their respective technical sectors. They serve as a coordinating body between all sectors with IYCF, voluntarily attending agency meetings held every other month. Upon briefing on their role and orientation on IYCF, the champions feel empowered to carry out their set tasks without any handholding from a nutrition expert. At the same time, they know clearly who to approach if they have questions on IYCF or referrals to the IYCF programme. These IYCF champions are being appointed at manager, field staff and community levels to advocate for funding and integration across other sectors and to advocate effectively for optimal IYCF practices and referral mechanisms in the field.

Some successful examples of implementation of the Framework include:

- IYCF-sensitive selection criteria for livelihood projects adopted by Lutheran World Foundation and Danish Refugee Council, according to which 140 mother-to-mother support group leaders (mentor mothers) from the IYCF programme have been selected to directly support other mothers in establishing kitchen gardens and diversifying the diets of children and the household. Also, IYCF messages have been integ-

- rated into the livelihood programmes;
- Strengthening of the referral pathways from protection sectors by Terres des Hommes, Danish Refugee Council and Save the Children International, ensuring timely and appropriate follow-up of abandoned/separated/orphaned infants in need of IYCF support and of newly registered infants aged 0-6 months. This has also ensured informed referrals for BMS for infants;
- Referral of caregivers of all newborns to mother-to-mother support groups in the community with follow up by the Mother, Infant and Young Child Nutrition (MIYCN) counsellor;
- There is now a functional BFHI committee in place to encourage integration of IYCF at hospital level. The committee comprises an agriculture nutrition co-coordinator, reproductive health coordinator, hospital matron, clinical services coordinator, three nurses, one medical doctor and a hospital nutritionist. The nutritionist and an MIYCN counsellor are stationed in the maternity unit, conducting IYCF counselling focusing on early initiation and exclusive breastfeeding.

During implementation of the Framework, a few challenges were faced. A gap in having a streamlined reporting mechanism was most evident. Without concrete reporting tools and mechanisms, the outputs and outcomes of the IYCF-Friendly activities being implemented cannot be recorded and thus no evidence for their value is generated (this tool is under development). Also, a gap in having dedicated staff to follow-up on the implementation of the Framework pilot was seen as another major challenge. Conversely, an important success of the Framework was that agencies realised that IYCF could be integrated into each sector through sometimes very simple actions. The previous labelling of IYCF as a health intervention limited its potential for implementation in other sectors.

During piloting of the IYCF-Friendly Framework, a general increased awareness of IYCF was achieved. While conducting meetings and encouraging participation and interest in IYCF was comparatively easy, the implementation and commitment by agencies to follow through on the action plans was not. Recurrent emergencies also shifted focus from planned activities and thus delayed progress. Another lesson learnt was the need to ensure application of the Framework in the project design phase.

Way forward

The pilot experiences have highlighted the next steps for each pilot country, while the lessons learnt during the adoption will inform the finalisation of the Framework itself by the end of 2015. Specific country actions include:

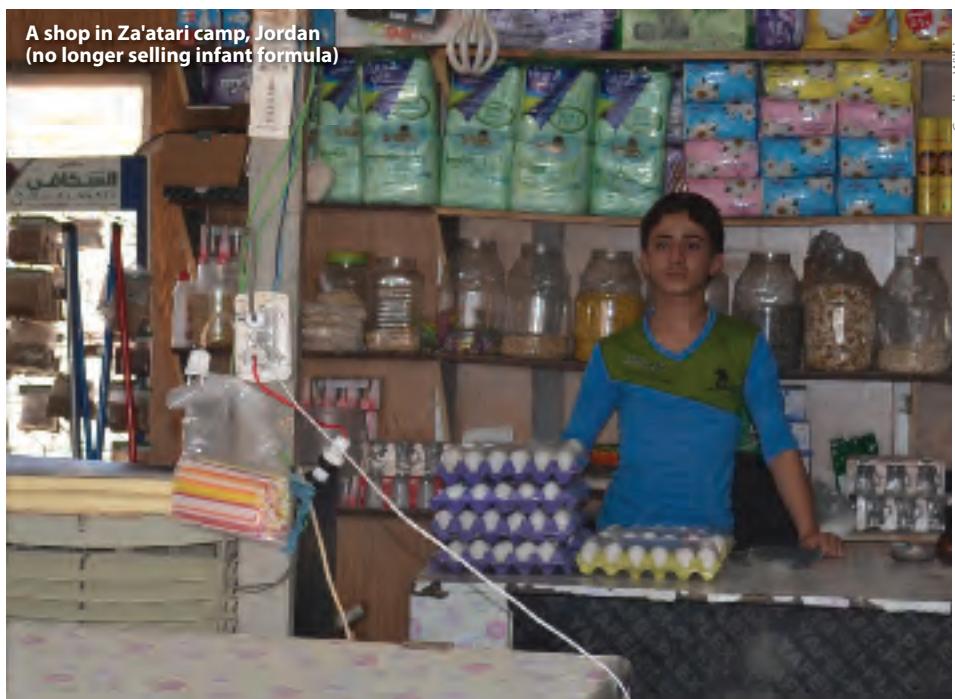
- The Jordan office will work on developing additional tools for reporting and monitoring referrals. Champions for all sectors will be appointed. The experience of piloting in Za'atari camp will be extended to Azraq camp;
- The Cox's Bazar office in Bangladesh will incorporate specific activities outlined in the Framework for the next project cycle in 2016. A recently completed nutrition survey will help to identify critical IYCF-sensitive activities for improving IYCF outcomes in Cox's Bazar;
- The Dadaab office in Kenya will work on strengthening reporting on IYCF indicators and inter-sector referral mechanisms.

The IYCF-Friendly Framework will be available in early 2016. Plans are in development for rollout in more UNHCR camp settings and ongoing experience capture to inform future iterations in a 2016-2018 programme of work.

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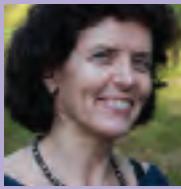


Building the 'enabling environment' via a multi-sector nutrition platform to scale up micronutrient supplementation

Peer education and community dialogue session

HPI Nigeria, 2015

By Paula Quigley, Emmanuel Sokpo and Kate Godden



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Location: Northern Nigeria

What we know: Maternal anaemia increases maternal and infant morbidity and mortality. Zinc supplementation improves diarrhoea management outcomes. Northern Nigeria is a particularly challenging context to achieve coverage of key nutrition interventions such as micronutrient supplementation.

What this article adds: The ZIFAS multi-sectoral project (2012-2015) combines efforts in health systems strengthening (HSS), including commodity procurement and supply chain management, women's empowerment, and governance to provide a platform for improvements in nutrition. It built upon the earlier successes of a strong Immunisation/ Maternal Newborn and Child Health programme in northern Nigeria. Achievements include increased coverage and utilisation of antenatal iron and folic acid supplementation (IFAS), improved health workers' awareness of zinc and L-ORS in diarrhoea management, zero stockouts of commodities at health centres, and costed, integrated health plans that include IFAS. It has proved an efficient and feasible approach at scale in a challenging context.

Background

Northern Nigeria presents some of the greatest challenges globally in providing adequate healthcare to its population and has extremely poor health indicators that are consistently worse than the rest of Nigeria (NPC, ICF, 2014). Nutritional indicators are equally worrying, with all northern states performing worse than their southern counterparts. Jigawa and Katsina have the highest prevalence of acute malnutrition in the country: in Jigawa, the prevalence of stunting in children under five is 59% and that of wasting is 17%; in Katsina, these figures are 58.5% and 24% respectively; in Zamfara, they are 56% and 16%; and in Yobe, 49% and 24%. In contrast, the figures for Lagos are 17% for stunting and 11% for wasting. On average, 61% of pregnant women in Nigeria receive antenatal care (ANC) from a skilled provider; in Katsina and Zamfara States, only 22% do so. Likewise, the North East and North West zones have the lowest levels of children with diarrhoea who are given oral rehydration therapy (ORT) or increased fluids.

In order to help address this situation, a three-year project, ZIFAS, led by HPI in consortium with NPHD Ltd, a Nigerian consultancy, and funded by the MI (March 2013-April 2015; £1.25m) was implemented between 1 December 2012 and the end of March 2015. It built on earlier successes in northern Nigeria achieved by the PRRINN-MNCH, which combined HSS with routine immunisation and maternal, newborn and child health interventions. PRRINN-MNCH was managed by a consortium of HPI, Save the Children and GRID Consulting, and was funded by UK aid from the UK Government (2006-2014; £68.5m). It achieved dramatic reductions in child mortality rates and large increases in immunisation coverage. The achievements from the PRRINN-MNCH provided an anchor for launching and scaling up additional nutrition-specific interventions.

ZIFAS is a multi-sectoral intervention that combines efforts in HSS, women's empowerment, and governance to provide a platform for improvements in nutrition. ZIFAS is developing innovative strategies to

improve upon the existing low coverage of low-osmolarity oral rehydration salts (L-ORS), zinc, and iron and folic acid supplements in the four states of Jigawa, Katsina, Zamfara and Yobe. ZIFAS focuses on increasing the coverage and quality of ANC using low-dose IFAS to reduce illnesses and deaths resulting from anaemia in pregnancy. It is also improving the quality of diarrhoea treatment and prevention in children under five using zinc, L-ORS and other preventive strategies. The importance of such forms of micronutrient supplementation is well established in the academic literature (Lancet 2008, 2013) and recommended in the Framework for Action from the International Conference on Nutrition (ICN2) held in November, 2014 (ICN, 2014).

HPI is coordinating inputs to achieve the following project objectives:

- Achieve and sustain coverage for diarrhoea treatment in children under five with zinc and L-ORS in the target states;
- Ensure sustainable supply of zinc, L-ORS and IFAS in public health facilities in the target states for the duration of the contract and beyond it;
- Strengthen the public health system in provision and monitoring of zinc and L-ORS for treatment of diarrhoea in children under five;
- Improve access to diarrhoea treatment for children under five through outreach activities;
- Increase and sustain the proportion of pregnant women who consume sufficient amounts of IFAS during pregnancy; and
- Stimulate demand from the community for services through Social and Behavioural Change Communication (SBCC), including community engagement to enhance early ANC attendance and early presentation for treatment of diarrhoea in children under five.

An innovative policy framework coupled with supply and demand side interventions was introduced to promote the use of zinc and L-ORS to treat diarrhoea in children and daily low-dose IFAS for pregnant women. As well as managing the ZIFAS programme, HPI enhances the enabling environment for nutrition action in areas such as improving service delivery systems, governance, community engagement in health and financing through:

- Integration of funding into public sector budgeting processes, thus laying the foundation for future funding from domestic sources, including the establishment of basket funds to enhance sustainability. (Basket funds are pooled funds from various public health sector partners and other sources with a clear management structure where transparent, joint decisions are taken on priorities for funding, thus enhancing accountability and drive for results.);
- High-level health policy dialogue strategy development and planning;
- Supporting government to develop legislation and regulation to guide policy implementation;
- Establishing platforms for donor coordination,

- harmonisation and resource mobilisation;
- Capacity-building of government partners on leadership, governance and service delivery for sustainable impact;
- Simplifying existing monitoring and evaluation (M&E) systems in the health sector using District Health Information System (DHIS) technology for collective action;
- Improving quality of care, including training of health workers and strengthening quality improvement processes in health facilities;
- Increasing demand for and equitable access to health services by building community knowledge and capacity to identify and put in place community systems to tackle key barriers to access to health. Examples of this include increasing the number of women who have standing permission to attend a health facility in the absence of a male companion; developing the skills of community volunteers to reach the most excluded and vulnerable families; and establishing community support systems such as mothers' helpers and community funds.

Cross-sector implementation in ZIFAS

HSS efforts

Using an HSS approach, ZIFAS seeks to ensure long-term sustainable supply of essential commodities in the public health system. This includes improving systems for forecasting and procurement as well as supply chain management, capacity-building for health managers and service providers, and strengthening government systems for policy, planning, budgeting and coordinated implementation, as well as joint M&E. The platform for HSS interventions was developed during the PRRINN-MNCH programme, which supported the principle of one health plan and budget, one implementation and one monitoring and review process, and strengthened health workforce capacity, planning and management, drug procurement and supply chain management, service delivery and health governance.

Having reliable data is essential for appropriate decision-making in the health sector and routine health information systems were strengthened in Nigeria under the Partnership for Transforming Health Systems (PATHS1) programme in 2002, using the DHIS. The DHIS is free and open-source software that is used in many countries in Africa, such as Ethiopia, Botswana, Tanzania, Zambia, South Africa and Nigeria. The upgraded DHIS2 is a web-based data management tool that provides a comprehensive system for capturing complete, correct and consistent data at all levels, in both online and offline modes. Information can be accessed from any location with a computer and an internet connection. DHIS2 has revolutionised access to Health Management Information System (HMIS) not just in the northern states, but across Nigeria, allowing real-time information to influence decision-making. Mobile phones are changing the way health workers are recording essential data. PRRINN-MNCH tested user-friendly mobile phone applications linked to the DHIS2 and

achieved impressive improvements in data completeness and timeliness at relatively low cost. ZIFAS has been able to benefit from this platform to further strengthen health facility attendance data availability, which has helped in tracking coverage of implementation and monitoring of required indicators.

Commodity procurement and supply chain management

Although states have procurement policies, their experience in responding to market situational changes is ad hoc in nature. The common procurement challenges across all the states include the absence of formal annual procurement and distribution plans; the lack of procurement skills by staff; and the absence of reliable drug quantification data. The ZIFAS project built on the PRRINN-MNCH platform to establish a harmonised system on the supply chain management system of ZIFAS commodities with other drugs, in line with the medium-term procurement and distribution guidelines, produced by ZIFAS. This collaborative effort was supported by other organisations such as UNICEF to strengthen the integrated management of ZIFAS commodities within the public health sector by providing more reliable data for an effective drug supply chain management system.

Women's empowerment

Improving access to MNCH services in rural northern Nigeria requires a strategy that addresses all household and community barriers simultaneously and systematically. ZIFAS was able to build on achievements of several other programmes in the region, including PRRINN-MNCH, which works with isolated young women and their communities to improve their knowledge of MNCH issues and increase their access to key services. These successes were largely achieved through the efforts of community volunteers, many of whom were women themselves and who, as working women, also experienced a significant degree of empowerment from newfound respect within their communities. Volunteering is a valuable asset, putting local knowledge, skills, dynamism, creativity and concern for others to good use. Well-designed and managed community volunteer programmes can be effective and sustainable, with benefits beyond the health sector. The concept of a 'community health team' to complement health services and medically trained health providers is gaining traction in northern Nigeria.

Religious leaders play an important role in disseminating MNCH information across a large population and persuading communities to change established behaviour and attitudes. They can also help to promote a shift in thinking away from 'charity' towards broader-based support for those who are likely to suffer the heaviest burden of ill health. We found that a facilitative approach is required, wherein religious leaders are supported to use health-related information to devise their own key messages and preferred means of communicating them. ZIFAS is now able to build on this and promote nutrition-related messaging through community leaders.

Governance

The fragmented nature of healthcare delivery in northern Nigeria often results in intermittent programmes that are narrow in focus and limited in duration. State-wide health and coordinated planning has led to improved leveraging of extra resources that can be used more effectively. The extra resources, and their better use, led to health improvements in all four PRRINN-MNCH states and this now benefits ZIFAS. This sector-wide approach to health service provision can offer a variety of benefits to both governments and development partners and strong advocacy was used to ensure that the integrated health plans of each state included ZIFAS activities. The Primary Health Care Under One Roof strategy is another approach that was used by PRRINN-MNCH to bring together, through a legal framework, all the government health institutions and actors under one management and one authority to jointly manage health resources – money, manpower and materials – for the implementation of health interventions and to account for health outcomes. This framework was used by ZIFAS in mainstreaming its interventions into the state health sector; for improving the voice on nutrition-related issues; and enhancing the effective deployment of ZIFAS resources for greater value-for-money.

Results

Impressive results were achieved by PRRINN-MNCH in a highly challenging operational environment exacerbated by security concerns, including:

- Infant mortality reduction of 44% (from 90/1,000 live births to 51);
- Under-five mortality reduction of 41% (from 160/1,000 live births to 95); and
- Maternal mortality reduction of 6% (from 1,271/100,000 live births to 1190).

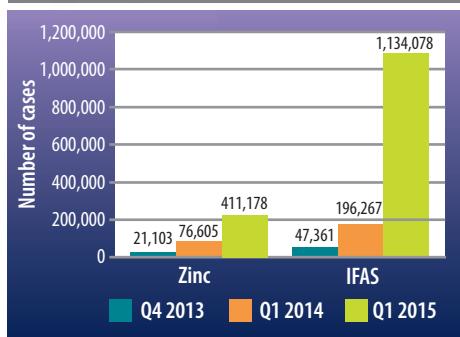
Contributing to these outcomes and a key result of these complementary areas of support was improved availability and quality of ANC, with the average proportion of women receiving ANC by a skilled healthcare worker doubling from 25% to 51% in the four states between 2009 and 2013. Women delivering their babies by skilled birth attendants increased from 11% to 27%. Women attending ANC with trained health care providers are more likely to receive nutrition advice, multiple micronutrient supplementation and malaria prevention, which all

reduce the risk of maternal death and having babies with low birth weight (Lancet Nutrition Series, 2013). Those delivering with skilled birth attendants (SBA) are also more likely to start early breastfeeding and know about danger signs for themselves and their babies. Thus, PRRINN-MNCH was already implementing a nutrition-sensitive approach.

These successes have laid a strong foundation for ZIFAS and other programmes and initiatives to build on and expand and have enabled ZIFAS to reach more women from the start of the programme and achieve faster results. Likewise, the increased access of children to essential child health services has allowed ZIFAS to scale up improved treatment of diarrhoea with zinc and L-ORS. ZIFAS has resulted in increased outcome indicators for coverage and utilisation of low-dose IFAS for ANC and has improved IFAS commodity distribution and availability to over 1,000 health facilities (see Figure 1) in four states covering a population of approximately 19 million. Further achievements to date for nutrition from the ZIFAS programme include:

- Through the UN Population Fund (UNFPA), 93 million IFAS tablets have been procured and distributed to the health centres in the four states to meet a two-year need of these states;
- Costed, integrated health plans that include ZIFAS activities have been produced in the targeted states;
- Medium-term procurement and distribution plans and stock management tools have been developed;
- The existing HMIS is used to track key project indicators;
- Percentage of girls and boys with diarrhoea whose treatment included zinc and L-ORS in the recommended dose increased from a low level of 4.2% up to 54.5%;
- Percentage of frontline health workers aware of the need to use zinc and L-ORS in treatment of diarrhoea rose from 9% at baseline to 100% at the end of the project;
- Percentage of LGAs with zero stockout of ZIFAS commodities increased from 0% at baseline to 100% at the end of the project.
- All community engagement sites in the four states are fully mobilised and SBCC materials have been used (fact sheets, posters and TV/radio jingles).
- Advanced progress has been made in collaboration with the Federal Ministry of Health and other partners towards revising the national essential medicines list and standard treatment guidelines to incorporate low-dose IFAS.

Figure 1 Utilisation of zinc, L-ORS and IFAS, 2013-2015



Key lessons learned

ZIFAS uses an innovative, integrated approach that built on HSS achievements, an extensive community-engagement approach and stronger governance in northern Nigeria, which has facilitated significant scale-up of nutrition interventions. HSS measures, including health management information systems, have led to the improved use of commodities and better tracking

of micronutrient supplements. This has resulted in increased outcome indicators for coverage and utilisation of low-dose IFAS for antenatal care and has significantly improved IFAS commodity distribution and availability.

Successes have been achieved by working in innovative ways with government and communities to address political and social barriers at all levels, and thereby create an enabling environment. The community-engagement approach addresses all barriers faced by communities in accessing essential MNCH services, and builds social capital and cohesion to increase participation of the most marginalised families and reach those most at risk of ill health. The retention rate of volunteers was very high, indicating sustained commitment. The proportion of women with standing permission to take their child to a health centre when sick increased from 40% to 83%. In our approach, we work together with the Ministry of Women's Affairs and Social Services, linking appropriate health-seeking behaviour to women's empowerment, social protection, and safety nets through the community response systems supported and the inclusive approach taken to reach the most isolated and vulnerable families. Ensuring involvement of religious and community leaders, men, local government and other key stakeholders is an important way to build partnerships, promote mutual awareness of different perspectives, and increase accountability.

Conclusion

This type of comprehensive programming promotes efficiency through implementation of mutually beneficial interventions and a life-cycle approach to individuals and their health. PRRINN-MNCH delivered a range of outcomes at an estimated cost per person of £0.43 in 2013 (this equates to a cost of between £16 and £33 per child life saved). The programme's comprehensive approach to health system strengthening contributed to positive changes in a challenging setting; this has enabled ZIFAS and other programmes to build on this foundation and achieve faster and more sustainable results. This approach strives to address inequity by eliminating a critical set of barriers to access; providing the local insight that can enable health workers and volunteers to address nutrition, health and social issues by close interaction with key stakeholders in their communities; and ensuring improved disaggregation and use of data to demonstrate coverage and progress of the project objectives.

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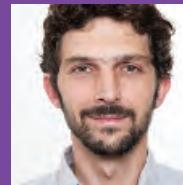
Action Against Hunger/ Action Contre la Faim:

Promoting a comprehensive nutrition-security approach and organisational culture to enhance nutrition-sensitive programming

By Maureen Gallagher and Julien Morel



Maureen Gallagher is Senior Nutrition & Health Advisor with ACF-USA



Julien Morel is Senior Nutrition Security and Social Protection Advisor, ACF-France

Location: *Global*

What we know already: The multisectoral nature of immediate and underlying factors leading to undernutrition calls for coherent and coordinated multisectoral responses that transcend sectors.

What this article adds: Since 2011, ACF has engaged in an institutional process to better align its interventions with nutritional outcomes. In 2014, an organisational Nutrition Security policy was developed to provide a framework for action that prioritises high burden areas and nutritionally at risk populations. Initiatives to support rollout have included awareness raising, capacity building, documentation of experiences, research, and guidance development. Outstanding challenges to full implementation are lack of evidence of effectiveness and cost-effectiveness and complexities in measuring effectiveness, limited time, energy and motivation to interact across sectors, and limited time for analysis within the humanitarian response cycle. A global learning review is planned for 2016.

Despite a renewed focus on nutrition by the international community and some achievements in agricultural productivity, basic health access and education worldwide, the progress on reducing undernutrition has been comparatively slow. While international and national commitment has grown, along with funding and civil society attention, this has not yet been translated into sufficient progress in reducing the prevalence of undernutrition globally. Improvements in nutrition still represent a massive challenge.

During the last decade, scientific knowledge around the most efficient and cost-effective ways to tackle undernutrition has progressed: the publication of *The Lancet* Series 2008 and 2013 on Maternal and Child Undernutrition identified a series of effective nutrition-specific interventions, which, if implemented at scale at the right time, could reduce undernutrition-related mortality and disease burden by 25% in the short term (*The Lancet*, 2008 and 2013). As a follow up, the international movement Scaling Up Nutrition (SUN) called for the scale-up of those nutrition-specific interventions, as well as an increase in the design of more nutrition-sensitive strategies to tackle the underlying causes of undernutrition.

To accelerate the progress being made, nutrition-sensitive programmes tackling key immediate and underlying drivers of undernutrition

are needed in addition to the immediate impact of nutrition-specific and curative approaches (Ruel & Hoddinott, 2008). Investment in nutrition-sensitive programmes can play a pivotal role in preventing undernutrition and impaired child development that cannot be resolved by a scale-up of nutrition-specific interventions alone. In addition, it is recognised that the multisectoral nature of immediate and underlying factors leading to undernutrition calls for coherent and coordinated multi-sectoral responses that transcend traditional sector boundaries in order to be effective and translate into improved nutritional outcomes.

In order to increase the organisation's impact on undernutrition, curatively and preventively, Action Against Hunger | ACF International (ACF) has, since 2011, engaged in an institutional process to better align its interventions with nutritional outcomes. One key action of this process has been the development, in 2014, of an organisational Nutrition Security policy (ACF, 2014) to provide a comprehensive and consolidated framework for mobilisation and action in the fight against undernutrition. The policy aims are:

- To highlight issues and challenges, and define concepts around nutrition security;
- To define the organisation's vision and position for a systematic nutrition-oriented approach;

- To provide overall principles, ambitions and commitments to apply this vision at institutional, strategic and programmatic levels.

Aiming for a long-term, sustainable and wide-scale impact on undernutrition, the Nutrition Security policy calls for adopting a multi-sectoral approach and acting in an integrated way on all causal context-specific factors leading to undernutrition. It also promotes multi-level response strategies, linking curative, preventive and longer term structural actions, to act jointly on existing immediate and underlying causes of undernutrition, as well as mid to long-term risks and structural factors. It is based on a set of core programmatic and institutional principles (see Figure 2) defined to maximise the organisation's impact on undernutrition.

The policy calls for prioritising high-burden areas and nutritionally at-risk populations. The priority target populations are communities, families and individuals who are most affected, vulnerable to or at risk of undernutrition. While it is recognised that the focus should be placed on the 1,000-days window of opportunity, preventing undernutrition during this critical period often requires engaging with other relevant members of the family and community at different periods of the life cycle. The policy also calls for programmes to be defined based on a

comprehensive, contextual nutrition situation and response analysis, involving all relevant sectors, in order to gain a holistic perspective of the needs, risks and causes and the best way to answer these in an integrated manner. Furthermore, response strategies and interventions should aim for nutrition impact and incorporate specific, explicit and attainable nutritional objectives, targets and indicators. The policy also stresses the need to sustainably influence the nutrition security of populations, alongside addressing the immediate and underlying causes of undernutrition.

To support the translation of the Nutrition Security policy and principles into practice, a number of initiatives were implemented. These aimed to promote and embed a nutrition security culture across the organisation, targeting technical as well as management personnel, at headquarters and country levels concomitantly. The institutionalisation strategy was defined, overseen and coordinated by an internal, cross-sector working group dedicated to promoting and strengthening the nutrition security approach and interventions internally and externally. The initiatives are summarised in Box 1.

Figure 1 Nutrition security at the intersection of multiple sectors

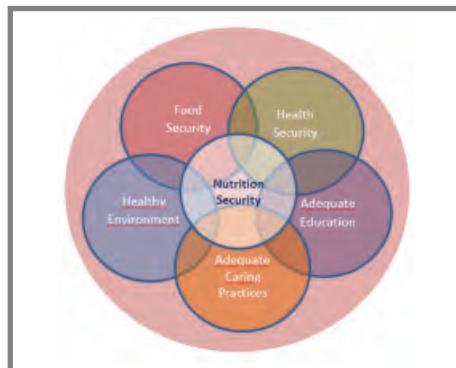


Figure 2 ACF Nutrition Security policy guiding principles

- I. Embed nutrition security into policies, strategies and programmes
- II. Promote and ensure coordination, coherence and synergies
- III. Prioritize high burden areas and nutritional at risk populations
- IV. Base programming on multisectoral nutrition-sensitive analysis
- V. Design holistic, integrated, at scale and long term response strategies
- VI. Aim for nutrition impact and enhance nutrition-sensitivity of interventions
- VII. Do no harm to nutrition
- VIII. Apply a systematic gender analysis & mainstream women empowerment
- IX. Assess, document and be accountable for nutritional impact
- X. Build and foster adequate skills and capacity
- XI. Align to local priorities and realities
- XII. Advocate for lasting changes in policies, practices and capacity

Despite these investments in institutionalisation and operationalisation of a systematic nutrition security approach in programming, a number of challenges and limitations remain, preventing the complete application of a comprehensive nutrition security approach. They relate for instance to:

- 1) **Lack of evidence of effectiveness and cost-effectiveness:** There is very little evidence of preventive and multi-sectoral approaches on nutrition, which limits the support that can be given to designing interventions based on clear and agreed criteria and principles to maximise nutritional outcomes.
- 2) **Complexity to measure effectiveness:** There is a lack of simple, easy-to-use methods and indicators to measure nutritional effects and impact of nutrition-sensitive interventions in a systematic way. Project outputs monitoring and reporting, within organisations, the cluster system or for donor reporting remain highly sectoral, preventing an understanding of the benefits and achievements of more integrated interventions.
- 3) **Limited time, energy and motivation required to interact:** Engaging in cross-sector dialogue and programming is more complex than the traditional siloed approach. This requires strong leadership and support from management, as well as clear incentives for stakeholders who need to invest in lengthy dialogue and interaction. They need to be convinced (based on evidence) and understand the direct benefit of any joint effort in order to be fully engaged. The premium of time required for multi-sector coordination is even more critical in emergency response.
- 4) **Limited time for response analysis:** In the humanitarian project cycle there is limited time for investment in assessing the situation and designing the response. This prevents a holistic analysis of the undernutrition which would entail cross-fertilisation of ideas among multiple stakeholders from different sectors and drawing on community experience and know-how. While identification of theories of changes or programme impact pathways is a recognised good practice to support adequate programme design, this type of pathway analysis is very often not undertaken.

- 5) **Existing funding mechanisms:** Funding for fully integrated, multi-sectoral response to undernutrition remains limited, with mechanisms still not adapted. Funding approaches remain very sector-specific and rarely lead to financing projects and programmes which seek to tackle the identified factors leading to undernutrition in a specific setting simultaneously and comprehensively.

Institutionalisation and operationalisation of the Nutrition Security policy is currently ongoing. It is too early to formally assess the effectiveness or actual buy-in, increased capacity and changes in programming to date, but qualitative analysis and case studies indicate an evolution in thinking and action, with an increasingly stronger focus



Ghana-girl with baby uses mortar and pestle to grind food

on comprehensive undernutrition responses in country strategies and programmes. Examples are provided in this issue of Field Exchange, where ACF programmes have incorporated a nutrition security approach, their results and lessons learnt. These examples reflect how institutional policy and processes can lead to shifts in approaches and drive stronger multi-sectoral interventions and outcomes. The Nutrition Security policy has led to an increased understanding, knowledge and appetite for nutrition-sensitive approaches among ACF staff and is increasingly being reflected in intervention design and implementation, as reflected in these examples.

A more global learning review is expected in 2016 to examine in greater depth how the nutrition security approach has influenced ACF programming and the extent to which this has impacted nutritional status of programmes participants.

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BOX 1 Nutrition security institutionalisation main activities

Awareness and buy-in activities:

- Rollout of the Nutrition Security policy to all personnel at headquarters and country offices level, through sensitisation sessions during country directors' annual meetings, annual technical workshops and webinars.
- Design and dissemination of standard sensitisation session material, easily replicable by headquarter and country staff, using a participatory approach to highlight key principles and how to operationalise them in day-to-day work, as well as identification of barriers, benefits and levers.

Capacity-building activities

- Development and implementation of a three-day nutrition security training session to develop country teams' skills and capacity, from programme design to evaluation through implementation. The training kit provides a full set of material and targets ACF staff in charge of planning, designing, implementing, coordinating and monitoring any intervention with a nutrition objective.
- Incorporation of key principles of nutrition security approach in internal sectoral and management-specific training curricula.

Field experience and good practices documentation and dissemination

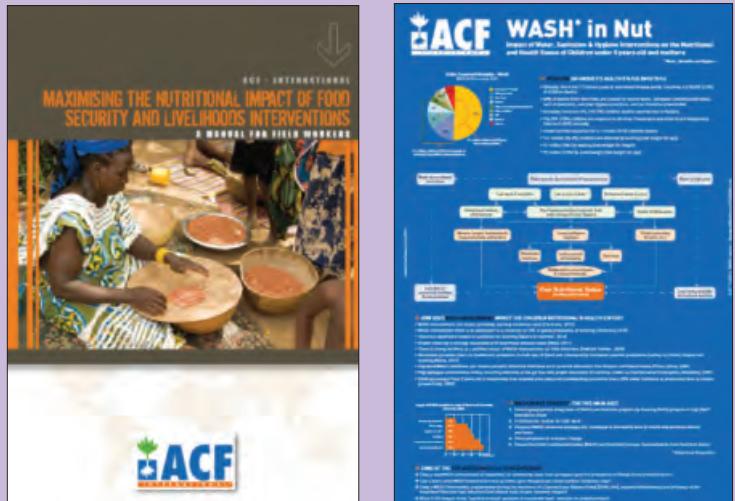
- Development and dissemination of field experiences and lessons learnt on nutrition-sensitive interventions through the production of case studies (see www.actioncontrelafaim.org/fr/content/aligning-casestudies).
- Publication of a technical newsletter (*Tech the News!*) compiling short articles prepared by country teams on their multi-sector experiences.
- Organisation of joint technical workshops for sharing of experiences between sectors.

Field experience and good practices documentation and dissemination

- Development and participation in research initiatives to build the evidence on the effectiveness of nutrition-sensitive interventions (e.g. MAM'Out (see <https://clinicaltrials.gov/ct2/show/NCT01866124>); REFANI (see <http://www.actionagainsthunger.org/refani>); Ouadi'Nut (see <https://clinicaltrials.gov/ct2/show/NCT02486523>).
- Development and testing of a structured method to assess plausible causes of undernutrition in a local context, with the aim to better inform nutrition security programming. The Link Nutrition Causal Analysis (NCA) method has now been released (see www.linknca.org) and technical and operational guidance is being provided to implement nutrition causal analyses in a range of contexts (Van Klinken, Parnaby, Acosta et al, 2015; Mutegi & Korir, 2016).
- Investment in research to strengthen ACF's capacity to assess effectiveness of ACF interventions on nutrition status and resilience*, and understand the pathways through which nutrition-sensitive interventions leads to better nutrition outcomes.

Guidance and tools

- Development and dissemination of practical manuals and tools for field practitioners providing guidance, best practices and examples for mainstreaming nutrition objectives into sectoral or multi-sectoral programming. For instance:
 - ACF, 2011, *Maximising the nutritional impacts of food security and livelihoods intervention. A manual for field workers*;
 - ACF, 2012, *Manual for the integration of child care practices and mental health into nutrition programmes*;
 - ACF, 2012, *Nutrition Multi-sectoral Seasonal Calendar A rapid and multi-sectoral tool to better understand and address the seasonal peaks of wasting*;
 - ACF, 2012, *Emerging Good Practice in the use of fresh food vouchers*;
 - ACF, 2012, *The Essential Nutrition & Health. The key to understand Nutrition & Health and ACF position*;
 - ACF, 2015, *Nutrition Security – Country Strategy Check-list. User guidance*;
 - ACF, 2015, *Link NCA Overview and guidelines*;
 - ACF, forthcoming, *Multi-sectoral monitoring and evaluation guidelines*; and
 - ACF, forthcoming, *Wash in nutrition operational manual*.



Operational initiatives

- The Nutrition Security policy was set as a basis for the ACF International Strategic Plan 2020 development process.
- Mainstreaming Nutrition Security in other relevant ACF policies, strategies and guidance (e.g. gender policy, evaluation policy, M&E guidelines).
- Mainstreaming coordination and working together in job descriptions, and highlighting management position roles to support and incentivise cross-sector exchanges.
- Participatory working sessions at country level (as part of the NS training kit) on barriers and response analysis and action planning, so that global principles are reflected and translated practically within local/country processes and contexts.
- Institutionalising common monitoring and evaluation frameworks by sector and across multiple sectors.

* Resilience refers to the capacities of people, communities and the systems on which they depend to resist, absorb, cope and adapt when exposed to a hazard or a set of hazards - while preserving, restoring or enhancing their food and nutrition security. ACF, 2012, Enhancing Climate resilience and food and nutrition security.

Developing guidance and capacities for nutrition-sensitive agriculture and food systems:

lessons learnt, challenges and opportunities

By Charlotte Dufour



Charlotte Dufour has worked as Food Security, Nutrition and Livelihoods Officer in the UN FAO's Nutrition Division in Rome since 2010, focusing on sub-Saharan Africa. Her current work includes support to mainstreaming nutrition in agriculture policies and programmes and incorporating food and agriculture in multi-sectoral approaches to nutrition.

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Location: Global

What we know already: There has been recent unprecedented interest and growing support for enhancing agriculture and food systems' contribution to nutrition.

What this article adds: Since 2011, ACF A series of guidance and tools have been collectively developed and compiled by the UN's Food and Agriculture Organization (FAO); these have been informed by regional and country lessons learned, to strengthen nutrition within agricultural structures and complementing broader capacity development efforts. Key principles in this process have been demystifying nutrition, using experience-based evidence, consultation and experience sharing, being practical and meeting the target audience's programming needs. Such resource development is part of a continuous learning process. Making food and agriculture nutrition-sensitive requires significant shifts in perspective and approaches. The political environment has never been more favourable.

A growing momentum for nutrition-sensitive agriculture and food systems

In the last two years, the international development community has seen an unprecedented interest and growing support for enhancing agriculture and food systems' contribution to nutrition. The Rome Declaration on Nutrition and its Framework of Action, adopted by 170 countries during the Second International Conference on Nutrition held in November 2014, placed a strong emphasis on the role of food systems. In countries that have made nutrition a development priority, in particular members of the Scaling Up Nutrition (SUN) Movement, partners in the agriculture sector are strengthening their engagement in multi-sectoral nutrition efforts. Major development partners have made nutrition a priority of their agriculture and rural development portfolio (EU/FAO/WB/CTA, 2014; IFAD, 2014; USAID, 2014; DfID, 2015). The global governance mechanisms for agriculture are also repositioning nutrition as central to the evolution of agriculture and food systems: nutrition is being mainstreamed across the work of the FAO, and nutrition challenges and solutions are discussed in the Committee for World Food Security (CFS), as well as the Committees for Agriculture (COAg), Fisheries (COFI), and Forestry (COFO).

This political momentum is both carried by, and giving rise to, a growing body of work on crop production and nutrition, livestock and nutrition, nutrition-sensitive value chains, biodiversity and nutrition, natural resources and

nutrition and integrating nutrition in agriculture extension.

It is hard to believe that less than five years ago, if one discussed nutrition with an agriculture professional, the reaction would be either: "Nutrition? That's the business of health, isn't it?". Or: "Of course we improve nutrition. We raise income and staple food production." Meanwhile, many nutritionists with a public health background would remain sceptical of agriculture's contribution, referring to the limited availability of impact evaluations. To the question: "What are the top ten interventions agriculture can implement to improve nutrition?", many remained unconvinced by the answer: "It depends on the context. Are you working in a pastoralist setting? With fishermen? In a peri-urban slum?".

This article describes some of the guidance materials that have been developed to accompany the transition towards a greater understanding of nutrition within the agriculture sector and a greater understanding of agriculture among public health nutritionists. The article focuses on FAO's experience, but the authors fully ac-

Note on terminology

In this article, 'agriculture' encompasses all food production activities, including crop production, horticulture, livestock, fisheries, and forestry. Programmes commonly called 'agriculture investment' programmes are seldom limited to food production and often include value chain development, social development, and rural development. 'Food systems' encompass all processes whereby food is produced, processed, transported, marketed and consumed. Finally, the term 'food and agriculture' is used to cover both food systems and agriculture.

knowledge that what has made progress possible is the collective engagement and efforts of all major development partners. The article highlights lessons learnt regarding the development of these tools that can be of value for other sectors.

These tools are not intended to be stand-alone products that can strengthen capacities in and of themselves. They are meant to complement broader capacity development efforts, in particular country-level technical assistance delivered through on-the-job mentoring, training, and organisational strengthening. Furthermore, they have been produced by building on lessons learnt from country and regional level capacity development efforts, and designed to help scale up similar capacity development initiatives. Indeed, while there has been much progress in terms of building ownership and commitment to strengthen agriculture and food system's contribution to nutrition, most of the work still lies ahead. And it is urgent to scale up efforts of sensitisation, training and innovation to ensure food and agriculture policies and programmes can help eradicate malnutrition in all its forms.

Existing and upcoming resources for nutrition-sensitive agriculture and food systems

The present section describes a selection of materials developed by the FAO Nutrition Policy and Programme team to guide the design of nutrition-sensitive agriculture policies and programmes, as well as interventions related to social protection and resilience, and multi-sectoral programming for nutrition. This list is not exhaustive. FAO's Nutrition Division produces a broader range of resources on nutrition education; dietary assessments, for example (www.fao.org/nutrition/en/). And many other organisations have developed useful resources for nutrition-sensitive planning. The Secure Nutrition Platform resources pages (www.securenutritionplatform.org/Pages/Home.aspx) and USAID SPRING Library (www.spring-nutrition.org/library) provide access to many of these tools and resources.

The following set of tools has been developed to guide the design of nutrition-sensitive agriculture policies and programmes:

- ***Key Recommendations for Improving Nutrition through Agriculture and Food Systems*** (www.fao.org/3/a-i4922e.pdf) This document is composed of two sets of recommendations. The first ten describe what are key features, or guiding principles, for designing agriculture programmes in a nutrition-sensitive way. It is complemented by a list of five recommendations for optimising the nutritional impact of food and agriculture policies.
- ***Designing nutrition-sensitive agriculture investments: Guidance and checklist for programme formulation*** (www.fao.org/documents/card/en/c/6cd87835-ab0c-46d7-97ba-394d620e9f38/) This guide is designed to assist programme planners to operation-

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A shepherd and his herd in Senegal

alise the Key Recommendations for Improving Nutrition in Agriculture and Food Systems, through the design of nutrition-sensitive agriculture investments. The guide is composed of a series of key questions, tips and sources of information, which can be used for situation analysis, programme design and programme review.

- ***The Compendium of Indicators for Nutrition-Sensitive Agriculture*** (to be published early 2016) This document describes a range of indicators, which can be used to monitor and evaluate the nutrition-related impacts of investments in agriculture and rural development. It is structured around major impact pathways that link agriculture investments to nutrition outcomes including: on farm food production and availability; food environment in markets; income; women's empowerment; and natural resource management practices. It provides guidance on what each indicator measures and key features of data collection, as well as references to relevant manuals.
- ***The Compendium of Food and Agriculture Actions for Nutrition*** (to be published early 2016) This compendium provides a list of interventions related to crop production, horticulture, livestock, fisheries, food processing, forestry and nutrition promotion, which can contribute to improving nutrition as part of a multi-sectoral nutrition strategy. It also includes advice as to how policies and programmes in each of these fields can be better linked to other sectors relevant to nutrition. (Note: the Compendium is an adaptation of the Food, Agriculture and Diets section of the REACH Compendium of Actions for Nutrition. Both publications will be released in 2016.)

FAO is now engaged in developing a set of e-learning modules on nutrition and food systems, which will capture the content of the guidelines described above, in an interactive way using a scenario-based approach and experiential learning. These are being developed through a consultative process involving multiple organisations from academia, civil society, UN organisations and donors. The first module was released in

September 2015 and others will be gradually released over the course of 2016.

FAO has also developed specific guidance oriented towards ensuring investments in resilience-building and social protection are nutrition-sensitive:

- Technical paper on ***Nutrition and Resilience – Strengthening the links between resilience and nutrition in food and agriculture*** (www.fao.org/3/a-i3777e.pdf): this paper argues that good nutrition is both an essential "input" for resilience and an outcome of resilience. It highlights key areas of convergence between the two concepts, as well as opportunities to enhance the nutritional impact of resilience-building programming in the context of the food and agriculture sector.
- Technical paper on Nutrition and Social Protection (www.fao.org/3/a-i4819e.pdf): the paper identifies how the main social protection instruments can address the causes of malnutrition, and proposes guiding principles to make these instruments nutrition-sensitive. It also presents each social protection instrument and describes how its impact on nutrition can be enhanced, illustrating propositions with case studies.

Finally, a key feature of making a programme nutrition-sensitive is ensuring it is well embedded in a multi-sectoral approach. FAO has developed the guidelines ***Agreeing on causes of malnutrition for joint action*** (www.fao.org/3/a-i3516e.pdf). This document presents a workshop methodology that uses the problem/solution tree approach to inform the design of integrated information systems and programmes, and to develop partnerships for sustainable improvements in nutrition. This tool is very effective to foster a better understanding of the interactions between causes of malnutrition and build consensus among professionals from different sectors on a common strategy.

Principles and approach

The following principles have informed the overall approach for developing guidance and organising capacity development activities for professionals working in food and agriculture:

Demystifying nutrition: One of the obstacles preventing agriculture professionals from addressing nutrition is the anxiety associated with being tasked with doing something beyond one's competencies, or which increases one's workload. An important part of developing guidance was thus to emphasise that agronomists would not be asked to distribute vitamin A capsules or measure weights and heights, for example, but rather to apply a 'nutrition lens' to the activities they already carry out. It was also important for the message to be conveyed by peers, using the language and approaches common in food and agriculture.

Using 'experience-based evidence': When the momentum around agriculture-nutrition linkages started growing around 2010, the scientific evidence base was very limited, especially if one limits 'evidence' to randomised control trials, which are usually difficult to apply to research in agriculture and food systems (Pinstrup Andersen, 2013). But the lessons learned emerging from the experience of dozens or hundreds of professionals across institutions tended to point towards similar advice. In 2010, FAO commissioned a review of recently published guidance on agriculture-nutrition linkages and carried out an extensive stakeholder consultation, to assess the level of consensus that existed between organisations on this topic. The rationale was that experience-based evidence should be harnessed to inform policies and programmes concurrent with the gathering of further experimental evidence. The result was the *Synthesis of Guiding Principles on Agriculture Programming for Nutrition* (www.fao.org/docrep/017/aq194e/aq194e.pdf), which were the foundation for the *Key Recommendations for Improving Nutrition through Agriculture and Food Systems* (www.fao.org/3/a-i4922e.pdf) (see below). These proved to be a key reference for many institutions and were used to inform advocacy and capacity development activities at global, regional and country level. (Herforth & Dufour, 2014).

Consultation and experience sharing: The business of making agriculture 'nutrition-sensitive' is not an exact science, nor are there 'magic bullets'. It is one which entails identifying entry points and solutions according to local malnutrition problems and livelihoods, the agro-ecological context, and the framework of the programme in which nutrition is integrated. De-

veloping guidance therefore requires the perspectives of professionals from different disciplines and regions, with experience from a diversity of programmes. Much of the guidance has therefore been developed through extensive consultation processes using a variety of forums including the Ag2Nut Community of Practice and the FAO Food Security and Nutrition Forum. Tools have been informed by, and enriched with, the lessons learnt and case studies gathered through knowledge sharing events such as the regional workshops organised by the African Union and New Partnership for African Development for the CAADP Nutrition Capacity Development Initiative (Dufour, Jelensperger, Uccello et al, 2013) and the USAID Agriculture-Nutrition Global Learning and Evidence Exchange (see www.spring-nutrition.org).

Being practical and meeting the target audience's programming needs: developing guidance for nutrition-sensitive agriculture and food systems requires an understanding of the priorities and planning cycles and processes of the different sectors and sub-sectors involved. For this reason, in FAO, the professionals from the Nutrition Division worked very closely with colleagues from FAO's Investment Centre, which specialises in the formulation of agriculture investment plans. Guidance for professionals working in livestock, crop production and horticulture, fisheries and forestry, as well as on social protection and resilience, was developed in close collaboration with sub-sector specialists. We also sought inputs from specialists in information systems, monitoring and evaluation, gender and food safety. Many of the tools were first elaborated as guidance for hands-on exercises with field practitioners in the context of training and planning workshops. Practitioners' feedback on these exercises was then used to inform the design of published materials.

Looking ahead: challenges and opportunities

The experience of developing these guidance materials, and the broader capacity development efforts of which they are part, have shown that it is important to consider such activities as part of a continuous learning process, where materials are regularly enriched with experience. Opportunities for inter-organisation and inter-country experience exchange, dialogue and shar-

ing of experiences are thus essential to ensure relevance and effectiveness. Furthermore, materials are, of course, ineffective if not part of a broad capacity development strategy that simultaneously strengthens individual skills and knowledge, the organisational structures within which individuals work, and the overall policy and programmatic environment within which structures operate (FAO, 2015).

Making food and agriculture nutrition-sensitive is on one hand accessible and not 'rocket science', but on the other does require significant shifts in perspective and approaches. For example: adopting a consumer-centred approach as opposed to a food supply-driven approach; nutrition objectives can be at odds with economic objectives of agriculture programmes, or entail opportunity costs. Finally, integrating nutrition in individual programmes may be feasible, but making food and agriculture nutrition-sensitive also requires changes in policies affecting each stage of the food system (input supply, production priorities, regulations around marketing, food standards etc.). Going beyond sensitisation and generating a genuine shift in the way agriculture and food systems operate will thus take time and investments. It will require innovation, multi-stakeholder dialogue, trial and error, improved monitoring and learning, and perseverance.

The political environment has never been more favourable. The growing interest in social protection, which presents big opportunities to leverage agriculture in favour of nutrition outcomes, is an illustration of this. And the centrality of nutrition-sensitive food systems to the ICN2 Framework for Action and the Sustainable Development Goals provide an opportunity to accelerate the strengthening of capacities to make food systems environmentally sustainable and conducive to good health and nutrition.

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Reflections on 30 years of nutrition-sensitive agriculture

By Heather Danton



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At the age of 20, I found my passion – and it was not what I expected it to be. I was an undergraduate pre-med student at Stanford thinking that I would specialise in neurology or pathology, as my sister did a few years later. But my best friend convinced me to take time off before my senior year to teach English in Indonesia. I returned home to Palo Alto 10 months later with a changed world view and a mission: I wanted to figure out how to link what people were growing in the developing world to better health and nutrition for families there. I had decided to save lives in a different way – by becoming an agriculturalist.

At the time, I would not have thought to ask about chronic malnutrition or to wonder whether there were more cost-effective planting techniques for the acres and acres of rice I saw. And value chains? The term was not even used by agricultural economists at the time. What I did know was that at 5 feet 8 inches, I was always the tallest person in the village. I saw that although Indonesia had the climate to support the growth of the most amazing array of fruits and vegetables I had ever seen, and the food was some of the most exquisite and diverse I had ever experienced, rural families ate mostly rice; they were simply not consuming the diversity of foods that I found in most rural markets. Women were too busy taking care of their homes, their families and their farms to worry about the nutritional value of the food they prepared. It took time to adjust to the lack of sanitation, too. In fact, sanitation systems in Surabaya, the city where I was living and teaching, seemed worse than in the villages. People used the open sewers for just about everything that required water: defecation, washing clothes, washing bodies, washing bicycles, “becaks” (bicycle rickshaws), and cars, and –yes– even drinking. Water, sanitation, and hygiene were challenging in rural areas as well. Only the wealthiest had toilets, and few families had latrines. Defecation into streams and rice paddies was standard practice.

Development agencies and donors were focused on their own sectors: the Food and Agri-

culture Organisation (FAO) meant agriculture; the World Health Organisation (WHO) did health. That laser focus powered the Green Revolution and the development of food fortification to increase availability of the range of micronutrients needed for good health. At the same time, among NGOs that sought to improve well-being, concepts of sectoral integration were common, in recognition that families do not function in sectoral silos. The era of farming systems research was in; the concept of food systems had not yet been devised.

With *The Lancet*'s 2013 call for agriculture and other sectors to do more for nutrition, nutritionists have been working hard to educate agriculturists in nutrition basics and to figure out how to better integrate key approaches, targets and resources across and between sectors. This work has yielded a range of terms that many have sought to define, share and build consensus and evidence around. Over the past two years, workshops, trainings and conferences have focused on sharing these terms and ideas, and it has been heartening to view the effort dedicated to research designed to build evidence around what agriculture can do to better support nutrition – and how best to do it. The term “nutrition-sensitive agriculture” and the concept behind it is now part of national food and nutrition policies and donor strategies; the concept has become the basis for a range of departments, bureaus and staff positions within the very organisations that worked in sectoral silos 30 years ago.

Today, I lead a team of agriculture and nutrition experts working together to better understand and document how agriculture can better contribute to improving nutritional outcomes, especially in countries with the highest burdens of malnutrition. Some days, as I struggle with colleagues to reach agreement about a term or the interpretation of a conceptual framework for multisectoral project design, I remind myself of what it was that coloured my world as a 20-year-old in Indonesia. I did not need terms to make the links. Conceptual frameworks would have taken my attention away from what I observed in the places I lived and travelled and

from what I learned from the people I met. Sometimes, I wonder whether our information- and terminology-driven age distracts us from seeing, hearing and experiencing the world in a way that would better answer the challenge of working together.

Does nutrition-sensitive agriculture address the underlying contributors to malnutrition in Indonesia today? The situation there continues to be challenging. Significant reductions in poverty, increased levels of education, greater accessibility of health services, and improvements in transportation, market, and food production systems have shifted the way we need to think about agriculture's contribution to nutrition in Indonesia. Rice is still a key part of the diet. But so are packaged, processed and affordable fast foods. The double burden of malnutrition—where overweight and obesity exist side by side with under-nutrition—is a menacing reality, even in the most remote communities. Women's time is still oversubscribed, and diets are still not ideal.

What can agriculture do? Should agriculture extension agents deliver messages on dietary diversity? Do seed purveyors need to promote plant varieties that are more nutrient-rich or biofortified? Can labour-saving technologies be more widely promoted? The answer may be yes to all those questions. But worrying less about whether an approach is “nutrition-sensitive” and working harder to look through the eyes of families who struggle every single day with the complex choices associated with food, health, and care might be a good place to start. Agriculture can do more to improve the quality, safety, availability, and accessibility of more-nutritious foods. And it can do more to promote better health—or, at least, to “do no harm” in the production, storage, processing and marketing practices being promoted. Providing healthier foods in a way that does not expand the demands on women's time and labour should also be possible. With these changes in how we think about solving the complex problems that smallholder farm families face, I firmly believe it IS possible, as an agriculturalist, to save lives in a different way.



Impact of agronomy and livestock interventions on women's and children's dietary diversity in Mali

By Damouko Bonde



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This project was implemented and supported by Agronomists and Veterinarians Without Borders (Agronomes et Vétérinaires Sans Frontières (AVSF)), the Initiatives Advice Development (Initiatives Conseils et Développement (ICD)) and the European Union. The ENN extend thanks to Translators without Borders for translating this article from French to English, with special mention of Dona Petkova and George May. The authors also extend thanks to ICD Mali in this regard.

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Location: *Mali*

What we know: Acute malnutrition is prevalent in the agriculturally dependent population of the Mopti region, Mali, despite surplus grain production.

What this article adds: Between 2011 and 2015, AVSF implemented an agronomy and livestock programme to improve dietary diversity of women and children under five in 2,000 vulnerable households. Household dietary diversity scores improved in both the post-harvest and the lean period. During the lean season, the dietary diversity score rose in children aged between 24 and 59 months from 3.9 to 4.4. The proportion of mothers with a low food diversity score fell significantly from 46% to 26% ($p<0.05$). Maternal dietary diversity was greater than their young children (aged between six and 24 months); complementary feeding knowledge requires further strengthening. Provision of goats is recommended with support for animal feed and health (particularly brucellosis in a milk-drinking population).

Background

Mali is a landlocked country with large fluctuations in rainfall. This makes food security a prerequisite for development. The programme described in this article took place in the Mopti region of the Cercles of Bankass and Koro, Mali between July 2011 and May 2015. The majority (78%) of the population of the Cercles practice agriculture but malnutrition remains prevalent and a severe problem. According to Dr Dembélé (Head of the Health Division of the Mopti Regional Health Directorate, Mopti Regional Forum on Nutrition, March 2010): "Malnutrition is a leading cause of morbidity and infant mortality in Mali in general and in Mopti figures from the Demographic and Health Survey in 2006 show that the moderate acute malnutrition rate is 12.7% and severe acute malnutrition prevalence is 5.9%." The Mopti Regional Forum on Nutrition in March 2010 identified the priority issues in the region for dealing with nutrition as: (1) the availability of food and care for all groups; (2) access to drinking water; (3) diversification of agricultural production; (4) intensifying advocacy and the activities of the IEC/BCC (Information, Education and Communication/Behaviour Change Communication); and (5) ensuring strong management of nutritional activities.

The Cercles of Bankass and Koro are characterised by a surplus of grain production. (According to the 2009 agricultural census, in the Cercle of Bankass, 624 kg of cereals are produced per inhabitant, while the need is 250 kg (FAO standards). For Koro, the

rate of production is 437 kg per inhabitant.) However, there are food accessibility issues (quantity, quality and price) due to strong exports of products during the first three months following the harvest. A study by AVSF in March 2011 found that three months after the harvest, 50% of the population of the area were already vulnerable to food insecurity and that 4% were already in a food-insecure situation. In addition, diarrhoea frequency among children aged between six and 59 months was high (64%) and can be attributed to poor hygiene. There was also very low food diversity (50% of children had an insufficiently varied diet). Agricultural produce is often sold at low prices to satisfy immediate basic needs and cereals are often the only source of income.

Overview of the project and its objectives

The overall objective and priority of the programme was to improve the diets of children aged between nought and two years and women of childbearing age. This was to be achieved by developing plant and animal production, reducing the drudgery of women's chores, a range of training (e.g. nutrition, hygiene, horticultural practices and cheese production), and improving food quality in 40 villages in the Cercles of Koro and Bankass. The intervention targeted households vulnerable to food insecurity. These households received support for small-scale livestock breeding. One thousand vulnerable households with at least two children under five have received two goats. An additional 1,000 vulnerable households with one child under five received

Table 1 Distribution of food diversity score of mothers with children, post-harvest, 2012 v 2014

Dietary diversity score* (calculated on the basis of the aggregation of nine food groups)	2	3	4	5	6	7
Baseline survey, post-harvest period, November 2012	8%	39%	36%	14%	3%	0%
Final survey, post-harvest period, November 2014	1%	25%	30%	32%	10%	1%

* The dietary diversity score is obtained by adding the number of food groups which an individual consumes in the 24 hours preceding the survey.

ten hens plus a breed-improving rooster and improved seeds. The recipients were trained to look after small ruminants and to breed poultry.

Training and education sessions on nutrition and hygiene were organised for the benefit of people in the area covered by the project. Radio programmes on nutrition were broadcast on local FM radio stations. Similarly, cookery demonstration sessions using recipes based on local products were performed for the local populations. Awareness-raising sessions discussed how gender and nutrition were interrelated. Mass screening for malnutrition is regularly carried out by traditional birth attendants (TBAs) and community health agents. Malnourished children who were detected were referred to the nearest health centre for attention. Community health agents and TBAs demonstrated hand-washing using soap to encourage good hygiene practices. In order to reduce waterborne diseases, dilapidated large-diameter wells were restored at all the project intervention sites. The project also initiated training on the drying and storage of horticultural products and the manufacture of dry cheese; the latter to deal with the surplus of fresh milk in periods of abundance, thereby making dairy products available year-round.

Results

Dietary diversity scores were measured by AVSF with the assistance of the European Development Fund's National Authorising Officer and the EU delegation. Results suggest that the package of activities contributed positively to improving food access for households in the implementation area. The proportion of households with ac-

ceptable food consumption increased from 67% to 85% during the lean period, largely exceeding the forecasted 75%. In the post-harvest period, the percentage of households with acceptable food consumption rose from 81% to 89%, close to the target of around 90%.

For individual dietary diversity (children aged between six and 23 months, children aged between two and 59 months, and mothers with children), the lowest recorded acceptable rate of 50% was registered during the lean period for mothers and for children aged between 24 and 59 months. During the lean season, for children aged between 24 and 59 months, the dietary diversity score rose from 3.9 food groups out of nine to 4.4 groups by the end of the project. During the same period, for infants aged six to 23 months the average dietary diversity score increased from 2.3 to three food groups out of seven at the end of the project.

FAO methodology was used to analyse the dietary diversity of women with children under five and children aged 24 to 59 months. The WHO methodology was used to analyse the dietary diversity of children aged six to 23 months. This explains the difference in the number of food groups included in the calculation of the individual dietary diversity score bracket according to the child's age.

The percentage of mothers with a low food diversity score (≤ 3 food groups) decreased between the post-harvest baseline (46%) and the final post-harvest survey (26%); this decrease being significant ($p < 0.05$). Almost twice as many mothers had a high food diversity score

(≥ 5 groups) in the final post-harvest period (44%) than in the baseline (18%).

Challenges and lessons learned

Mothers consumed more food groups than children aged between six and 23 months, with the exception of milk (29% of children consumed it compared with 20% of mothers). These findings highlight a significant need for strengthening the food knowledge of mothers concerning the feeding of young children. There is also a problem regarding the limited amount of time available for mothers to prepare children's meals.

Small-scale breeding and providing agricultural equipment had a significant impact ($p < 0.05$) on the dietary diversity scores of mothers. The mean dietary diversity score of mothers who had benefited from small-scale breeding was 4.4 out of nine food groups compared with 4.0 for groups for mothers who had not benefited. The dietary diversity score of mothers who had benefited from the provision of agricultural equipment was 4.6 food groups out of nine compared with 4.2 for mothers who had not benefited from this support.

The monetary income generated by small-scale breeding facilitated greater access to certain foods. Similarly, providing farming equipment allowed each family to diversify its agricultural production.

We recommend that scaled-up programming should be initiated by providing dairy goats. However, animal feed during the lean period will need to be introduced into the programme. It will also be important to test for brucellosis to ensure that the additional fresh milk consumption is safe. Work is needed to strengthen the knowledge of mothers with children and women of childbearing age concerning diets for young children. This can be achieved by promoting various recipes with high nutritional values based on local products.

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WASHplus in Mali: Integrating WASH and nutrition for healthy communities

By Renuka Bery, Sahada Traore
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WASHplus would like to thank USAID, in particular USAID/Mali, for its support of this programme.

Location: Mali

What we know: Undernutrition remains prevalent in Mali; food insecurity and inadequate water, hygiene and sanitation are two important contributing factors.

What this article adds: In 2012, an integrated water, sanitation, and hygiene (WASH) and nutrition project was initiated by CARE (part of USAID) WASHplus project in northern Mali. It revolves around community-led total sanitation (CLTS) using behaviour-change approaches to improve nutrition and hygiene practices. Activities include hygiene promotion, water treatment, breastfeeding counselling, media and advocacy, and identification/referral of malnourished cases. Achievements include improved regional policies; increased district capacity on WASH and nutrition interventions; and improved community infrastructure and practices around women and child health. Local stakeholders have proved critical to success. Endline results are due in 2016.

Background

Mali is currently ranked 179 out of 188 countries on the 2015 Human Development Index. It has one of the highest fertility rates in the world at 6.6 children per woman (USAID, 2014) and a 2015 child mortality rate of 115 per 1,000 live births (World Bank). The country experiences food insecurity and hunger. Poverty and food insecurity that contribute to undernutrition rates – wasting prevalence is 15% (State of the World's Children, 2015) – have changed little in Mali and are exacerbated by inadequate feeding practices; most children are not exclusively breastfed, and few children under two receive a minimum acceptable diet (USAID, 2014).

The causes of undernutrition are complex, varied and many, including inadequate WASH and nutrition-related behaviours. The behaviours result from a range of factors: insufficient information on appropriate hygiene and nutrition practices, along with poverty, lack of key critical supplies and services and food insecurity. Cultural practices and social norms, such as extended family dynamics and unequal gender relations, also affect family food allocation.

Project overview

The WASHplus project, led by FHI 360 with CARE/USA as a core partner, creates and supports interventions that lead to improvements in WASH and explores and promotes innovation in the WASH sector, including integrating WASH into related sectors such as nutrition (see Box 1). In 2012, USAID/Mali requested that the WASHplus project submit a plan for an integrated WASH and nutrition project in the Mopti region. WASHplus subsequently targeted 180 villages in 18 communes in three districts (Mopti, Bandiagara and Bankass) in northern Mali, USAID's priority areas. The programme benefits from CARE's presence in each district; however, the communes selected had not yet received WASH programming.

Working through CARE Mali, the overall goal of WASHplus in Mali is to improve the nutritional status of 187,000 women of reproductive age and 60,000 of their children (especially those under two) in poor, rural households and communities. The programme had three objectives to reach this goal:

1. Increase supply of appropriate, affordable,

BOX 1 About WASHplus

The WASHplus project supports households and communities by creating and delivering interventions that lead to significant improvements in access, practices, and health outcomes related to WASH and household air pollution (HAP). This multi-year project (2010-2016), led by FHI 360 in partnership with CARE and Winrock International, is funded through USAID's Bureau for Global Health. WASHplus has been engaged in Bangladesh, Benin, Burkina Faso, Kenya, Liberia, Madagascar, Malawi, Mali, Nepal, Uganda and Zambia.

The objectives of the WASHplus project are to:

- Reduce diarrhoeal diseases and acute respiratory infections in countries, using at-scale approaches;
- Integrate WASH and HAP interventions into education, HIV/AIDS, maternal and child health, and nutrition programmes;
- Promote innovation; and
- Foster strong in-country partnerships.

WASH and HAP are integrated with other health and non-health programmes to expand uptake and sustainability of WASH and HAP services. The project tests behavioural, programmatic and technological innovations and fosters creative partnerships to enhance funding, advocacy and impact for WASH and HAP improvement.

For more information, visit: www.washplus.org

each village were trained in latrine construction. The masons learned simple techniques to identify the type of pit required, protect the wood, and strengthen the waterproofing of the slab. Training masons before triggering the villages ensured that when households were ready masons were able to construct the latrine for a small fee using materials secured by the villager.

Rehabilitation of water access points was planned to incentivise villages to become ODF. At the start of the project, WASHplus inventoried the existing water points in the target villages and identified problems. Villages were ranked by district and by commune based on their CLTS+ progress. In each district, the first two villages in each commune to reach ODF status were selected to have their water point rehabilitated or to receive a new water point. This competition helped motivate communities to become ODF quickly. WASHplus intends to assist all villages that have reached ODF status to rehabilitate at least one water point by the end of the project.

Behaviour change efforts/hygiene promotion

Community health workers, called relais, play an important role in the Malian health system as messengers of information and promoters of healthy behaviours. WASHplus works closely with relais to promote behaviour change at the household and community levels and to offer support, outreach and extension services to the commune health clinics. WASHplus organised training and capacity-building sessions and taught relais how to negotiate improved behaviours with mothers, using Ministry of Health-approved WASH-nutrition job aids that WASHplus developed to facilitate behaviour change. A competition was initiated among target villages to create and use tippy taps to promote hand-washing.

The relais use the existing women's groups – village savings and loan associations (VSLA) – as entry points to promote improved nutrition and hygiene behaviours. During household

and sustainable WASH solutions;

2. Increase demand for low-cost sanitation; and
3. Improve sanitation and hygiene practices and nutrition behaviours.

Implementation villages were selected using a participatory methodology orchestrated by the government to allow for transparency using an objective, needs-based approach that avoids duplication with other development partners working in the same communes. The process also effectively garnered broad institutional support among government stakeholders in the district offices of health, water, and sanitation.

Stunting, wasting, mid-upper arm circumference (MUAC) and diarrhoea prevalence will be measured at endline, along with WASH and nutrition practices and WASH supplies (anthropometry was not measured at baseline). Results will be available March/April 2016.

Project activities

WASHplus's core activity revolves around Community-Led Total Sanitation (CLTS). The project emphasises improving nutrition and hygiene practices through a range of behaviour-change approaches. It also identifies undernourished children who are referred to the community health/nutrition centres for treatment.

CLTS+

CLTS+ is a participatory approach to improve access to and use of latrines and eliminate open defecation. Community members analyse their traditional sanitation practices and discuss publicly what happens to all that 'shit' in the environment. Effective CLTS community 'triggering' events 'ignite' a sense of shared disgust and shame when members realise they are ingesting one another's faeces. This spurs latrine construction at the village level. WASHplus introduced a CLTS+ approach that also promoted hand-washing with soap.

Since CLTS is a process rather than a one-time community mobilisation event, WASHplus



Table 1

Referrals of malnutrition cases in project intervention villages

WASHplus, Mali, 2014

	Referrals April-June 2014	Referrals April-June 2015
Moderately malnourished children	2,050	334
Severely malnourished children with complications	269	38



Community health worker (relais) gives a water treatment demonstration

visits, relais counsel caregivers on practices such as hand-washing with soap; safe treatment and storage of drinking water; exclusive breastfeeding; complementary feeding; and safely disposing of faeces. Relais organise awareness-raising sessions with community groups using the WASH-nutrition job aids. After the Ebola virus was detected in Mali, WASHplus integrated Ebola messaging into the training.

Water treatment

WASHplus, in collaboration with the Regional Directorate of Health, trained community health workers in different point-of-use water treatment methods. They further refined the materials and cascaded the training to all community health workers and community health agents in the 18 project communes. In 2015, WASHplus began conducting water treatment demonstrations using PUR which clearly showed that unprotected water in villages is not safe. (PUR is a water purification technology developed by Proctor and Gamble and applied in collaboration with the U.S. Centers for Disease Control and Prevention. The water purification packet contains a powdered mixture that removes pathogenic microorganisms and suspended matter, making previously contaminated water clean.)

Exclusive breastfeeding

The project promotes exclusive breastfeeding in two steps. First, the relais visit VSLA and use the counselling cards to talk with new mothers about the importance of exclusive breastfeeding. Second, the relais identify champions during these visits and use these women to conduct household visits to support breastfeeding mothers and promote exclusive breastfeeding to other family members, such as husbands and moth-

ers-in-law. Radio spots and live debates support these messages.

Nutrition demonstrations

Nutrition demonstrations show parents the possibilities of expanding children's diets by introducing locally available and affordable food products. WASHplus trained community health workers and agents to organise and lead nutrition demonstrations at the commune and village levels, as well as at community health facilities. The demonstrations discuss infant and young child feeding practices, including how much children of different ages should be eating. In addition, they classify foods and food groups so parents understand the importance of feeding children a variety of foods. The majority of the demonstrations promote enriched porridge made of millet, beans, peanuts, salt, sugar, baobab tree fruit, or tamarind – a nutritious meal that can be made with affordable, readily available foods. WASH is integrated into these demonstrations; hand-washing with soap before touching food is modelled and point-of-use water treatment is demonstrated or discussed.

Media and advocacy

WASHplus developed a radio strategy to improve communication and raise awareness about WASH and nutrition. Each radio station uses a weekly time slot to broadcast the results of CLTS+ monitoring visits in local languages to create a sense of friendly competition among the villages. The station then hosts debates with local champions. Radio spots also advise taking severely malnourished children to health centres. These programmes are helping to maintain community momentum around constructing and using latrines and screening for malnourished children.

WASHplus has worked closely with the regional directorates for health, sanitation and water services to plan celebrations of the various global days related to WASH and nutrition. In addition, WASHplus showcased its activities and innovations at a national forum on water and sanitation, as well as at regional WASH dialogues that fed into a national event.

Nutrition referrals and support for accompanying caretakers

During their household visits, relais screen children under five for malnutrition by measuring MUAC. Severely and moderately malnourished children are triaged and referred to health centres. Health centre personnel also attend village events and screen children. WASHplus supports health workers at the referral centres to screen children and enter data into registers. When WASHplus began to refer children in January 2013, 17% in Bankass and 6% in Bandiagara did not attend the health centre because caretakers could not afford to go. To promote adherence, WASHplus began to cover the transport and food costs for caretakers of all children with complications; now families bring their children to the referral centres. Children without complications are treated directly in the villages or at the community health centres, so travel is not an issue.

Project accomplishments

After 30 months of implementation, WASHplus has progressed toward accomplishing its objectives: improved policies adopted at the regional level that may become national standards; increased capacity within the intervention districts to provide WASH and nutrition interventions; and improved infrastructure and practices at the community level that will help to enhance the health outcomes of women and children in the targeted villages.

Policy

The Mali Government's national CLTS policy was updated to incorporate the WASHplus-developed latrine options for different zones: flood-prone, sandy and rocky. Further, the Government has advocated that masons be trained prior to CLTS triggering to ensure that demand for latrine construction is met in a timely and responsive manner. WASHplus is also working with the Government to improve the training guide for post-ODF action planning; first to develop a module to help CLTS facilitators revitalise WASH committees and implement a sustainability plan; and second to promote tree planting to mitigate the effects of constructing traditional latrines using wood.

Increased capacity

WASHplus has trained over 400 community extension workers to negotiate improved WASH and nutrition practices at the household level in 180 villages. Activities include CLTS triggering and nutrition and water treatment demonstrations at the community level and individual household visits that focus on promoting exclusive breastfeeding, hand-washing with soap, and nutrition counselling and referrals. These workers regularly



monitor and refer malnourished children in project intervention villages. In the target areas the number of children referred has diminished drastically as shown in Table 1. The reduction in referrals is attributed to the early detection of growth faltering in communities through regular village screenings and treatment given at the community health centre before severe malnutrition occurs. It also could indicate that the health of children has improved while food insecurity has decreased. The endline survey may help to clarify the reasons behind this dramatic fall in referrals.

Improved community infrastructure and practices

Communities have eagerly embraced the ODF village concept. To date, over 75% of villages triggered by WASHplus have been certified as ODF. Within these communities, almost 10,000 latrines have been constructed, rehabilitated or upgraded since the start of this project and over 2,000 existing latrines without a hand-washing device have been equipped with one. Several villages also built communal latrines in farms, gardens, schools and markets to ensure the community remains ODF. Almost 50 water points have been constructed or rehabilitated to ensure communities have access to water. Furthermore, households now understand that most water is not safe to drink and are purchasing water treatment tablets (over 30,000 tablets per quarter). With project support, communities are planting fruit trees to mitigate the environmental impact of using wood to build latrines. To date, 8,300 fruit trees, which can further improve nutritional status, have been planted.

To sustain ODF status, WASHplus assisted the first 100 ODF communities to develop post-ODF action plans. All the communities have implemented these plans. WASHplus has also assisted all ODF villages to improve their environmental sanitation.

Lessons learned

Local stakeholders are critical to success
WASHplus Mali engaged local stakeholders at different levels throughout the process of implementing the WASH-nutrition interventions. Community leaders and local government officials were all involved in making decisions and

monitoring implementation and thus had a stake in seeing progress and success. Facilitating community discussions using the participatory decision-making approach helped to develop sustainable local systems to finance operation and maintenance costs of water points and triggered income-generating activities that also improve health behaviours. Involving masons from the community in producing new designs of cheaper, traditional latrines adapted to the environment was embraced by communities. Monitoring visits revealed that masons trained to construct low-cost latrines continued to innovate to adapt their products to the local context. These masons are being viewed as change agents in the villages. They take great pride in their work and are dedicated to achieving universal latrine coverage in the villages they serve.

Demonstrations expose problems and help define solutions

The project found that demonstrating water treatment with PUR powder visibly showed that water is not safe, which reinforced the need to treat drinking water. Showing men and women in the community how to prepare nutritious recipes using local products encourage families to accept and adopt such improved practices. Engaging community champions to convey new ideas in radio programmes increased understanding and encouraged healthy competition between communities in implementing good WASH practices.

Competition spurs action and innovation
WASHplus found that inciting competition among communities was effective in changing behaviour and achieving results in a short time-frame. It also helps maintain a community's momentum. Further, providing incentives to benefit the community, such as rehabilitating a broken water point, encouraged them to move quickly. One community used village funds to purchase chlorine products and then established a sanitation shop in the village to provide regular access to these products. Another village created a sanitation store to provide durable latrine covers. Households that did not purchase a cover or used a damaged cover were fined. Finally, the villagers of Yarou Plateau emulated its neighbours from nearby Gouna by building latrines, sweeping the whole village every Thurs-

day, and treating drinking water that resulted in reduced incidences of diarrhoea and a clean community.

WASH-nutrition integration presents challenges but offers promise

Anecdotal evidence from this project indicates that the integrated programming has positively influenced behaviours and health. Village women see changes in their children's health; households are purchasing water treatment to ensure drinking water is not contaminated; communities are building latrines in fields and at bus stations to prevent open defecation; and other communities are cleaning their villages of plastic and animal waste and becoming entrepreneurs by creating businesses to support nutrition and hygiene.

Conclusions

Attributing reduced undernutrition to WASH-focused activities in general is difficult. Even if WASH programmes collect anthropometric indicators such as stunting or wasting, which most do not, it is difficult to determine to what extent the inclusion of WASH interventions has influenced changes in nutritional status and growth. Measuring such changes requires much more sophisticated evaluation design and analysis. In addition, detecting changes in stunting, for example, often requires timeframes longer than typical WASH programmes and funding cycles (this programme was initially planned for a two year period, hence baseline anthropometry was not included). While evidence exists to support WASH and nutrition integration, more data are needed to demonstrate how and in which ways specific WASH mechanisms affect nutrition outcomes and determine which implementation modalities are most likely to lead to strong and sustained impact. WASHplus will collect endline data that will help answer some of these questions, but because the project did not collect anthropometric data at baseline, it can only compare the differences in stunting and wasting between intervention and control communities at the endline.

The WASHplus project in Mali ends in April 2016. Efforts are underway to document the lessons learned and harmonise the WASH-nutrition materials so that partners who continue to provide WASH and nutrition services can build their programmes on things that have worked or not. WASHplus is actively sharing experiences with the government and USAID implementing partners, including exchange visits and preparing written and visual materials, as well as sharing experiences globally to the extent possible.

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A tippy tap in Malawi

Goal Zambia

Nutrition Impact and Positive Practice: nutrition-specific intervention with nutrition-sensitive activities

By Sinead O'Mahony and Hatty Barthorp



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The authors would like to thank the GOAL health, nutrition, and monitoring, evaluation, accountability and learning (MEAL) teams across the five countries where NIPP is implemented (Malawi, Zimbabwe, Niger, Sudan and South Sudan); particularly Muchadei Mubiwa, Chipo Tafirei, Jimmy Harrare, Gift Radge, Lemma Debele, Sara Ibrahim Nour and Araman Musa and their wider teams for their ongoing dedication to the NIPP approach implementation and learning process. We would also like to acknowledge Alice Burrell, who conducted the NIPP research quoted in this article and the Malawi and Zimbabwe Nutrition and MEAL teams who facilitated this research.

An article introducing the NIPP concept when it was first being piloted was published in *Field Exchange*, issue 47 (Chisnau, Okello, Nour et al, 2014). This article presents an update on the rollout and implementation of NIPP over the past 18 months since this article was published.

Location: *Niger, South Sudan, Sudan, Malawi and Zimbabwe.*

What we know: Nutrition Impact and Positive Practice (NIPP) is a participatory 'circle' approach developed by GOAL that uses positive deviance implemented by trained volunteers in short cycles (2-12 weeks) to improve nutrition security and care practices of households prone to malnutrition.

What this article adds: Since 2013, the approach has reached 14,000 beneficiaries in Niger, South Sudan, Sudan, Malawi and Zimbabwe. NIPP has been successful in treating mild and moderate malnutrition; outstanding moderate acute malnutrition (MAM) cases have continued to recover for up to six months post-discharge, suggesting sustained positive practices. Stigma and time constraints have contributed to high default rates (28%) in pregnant and lactating women (PLW). There is good uptake of nutrition, WASH, livelihoods and health knowledge and practices. Knowledge of nutrition, health and hygiene behaviours is maintained post discharge; WASH and livelihoods positive behaviours decline (under research). Low male engagement has improved with innovation. Extended Nutrition Impact and Positive Practices Approach (eNIPPA) has been developed, linking more closely to agriculture and biofortification. Pilots are taking place in urban settings and in other contexts measuring impact on chronic malnutrition and being implemented alongside cash transfers. Further scale-up and a continued research programme is planned for 2016.

What are NIPP circles?

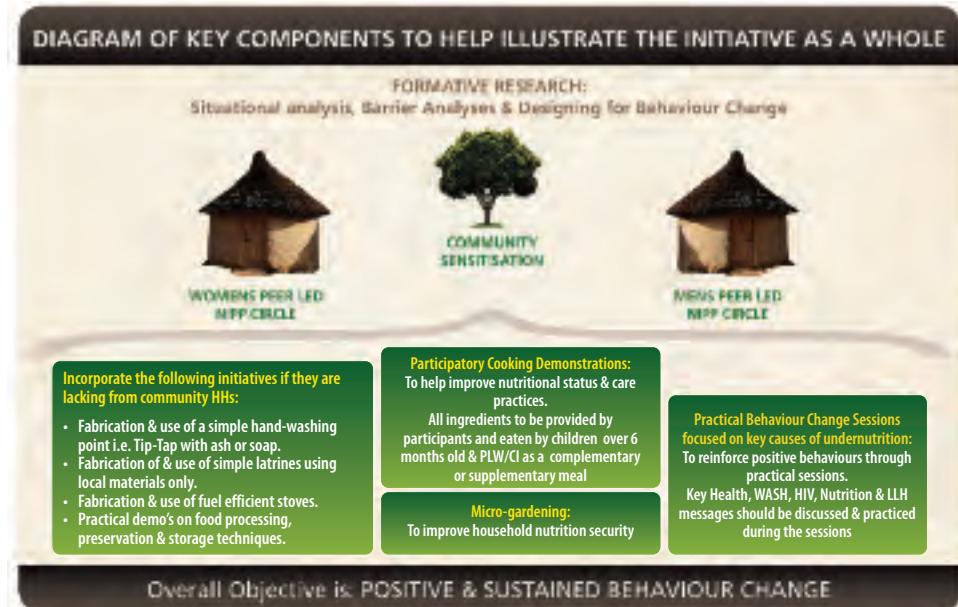
NIPP circles are gatherings of male and female community members who meet on a regular basis for up to 12 weeks to share and practice positive behaviours. NIPP circles aim to improve the nutrition security and care practices of households either affected by, or at risk of suffering from, malnutrition through participatory nutrition/health learning (including hygiene-sanitation) and diet diversity promotion. The circles aim to facilitate knowledge and skills sharing of both men and women using locally-available resources. Circles use discussion, practical exercises and positive reinforcement to help families adopt sustainable, positive behaviours. The concept is focused around there being easy and viable solutions accessible to all participating families.

Through formative research, the NIPP approach identifies key causes of malnutrition

within the community. It then uses positive deviance to find parents or caretakers from well-nourished but equally poor households and harnesses and hones their knowledge of successful behaviours and practices, reinforces them and provides a forum in which to transfer them to households with 'at-risk' members, such as those with undernourished children. To promote sustainability, NIPP circles use trained volunteers from positive deviant households in the communities who facilitate a series of fun, interactive and engaging sessions using peer-led education to induce and reinforce positive behaviour change and replace negative practices.

To ensure a holistic approach, the NIPP model is multi-sectoral and covers nutrition-sensitive topics including health, hygiene, sanitation and small-scale agricultural issues. NIPP provides participants with knowledge and skills through three main components, including a

Figure 1 Diagram of key components of the NIPP circles approach



package of 'must-have' or 'non-negotiable' extras:

- 1) *Practical Behaviour Change Sessions* – focused on key causes of malnutrition for improved awareness and practice. These sessions also include the 'non-negotiable' activities: if any of the following initiatives are absent from communities, circle participants will cover manufacture and use of local hand-washing facilities with soap or ash; manufacture and use of simple latrines using local materials only; manufacture and use of fuel-efficient stoves; practical demonstrations on food processing, preservation and storage and any other feasible and useful initiatives, such as drying racks, rubbish pits, etc. Lastly, all participants are requested to bring health/vaccination/growth monitoring cards (children and mothers) for promotion and support for timely health-seeking behaviour;
- 2) *Micro-gardening* – for improved house-

- hold nutrition security; and
- 3) *Participatory Cooking Demonstrations* – for improved nutritional status, feeding and care practices.

(See Figure 1 for an overview of the key components of NIPP.)

It is understood in many cultural settings that women are often not the sole decision-makers with respect to family food, household sanitation and hygiene, childcare and family feeding practices, etc. although they are often the primary implementers. Men, mothers-in-law, elders, traditional healers, community leaders, religious heads and others all play a role in determining what are deemed acceptable practices within a community. Consequently, NIPP circles not only address women (as primary carers), but also engage others who play influential roles in their day to day life. Therefore, each 'macro circle' is broken down into three separate circles

which are tailored individually to both female and male representatives of targeted households, with a separate circle for key community figures. By maximising transparency, we can try to ensure understanding and acceptance of new behaviours and/or changes to household routines. This will help to maximise results of sustained, positive behaviour change.

The duration of circle cycles and session length are based on flexible timeframes to best suit the context and the participants. It is possible for short-cycle projects (i.e. two weeks) to be run daily, linked to facility-based nutrition programmes with a rapid turnover, i.e. community management of acute malnutrition or growth-monitoring promotion programmes. Conversely, circles might be run on 12-week cycles, meeting three times a week; this is the most common modality of implementation used by GOAL country programmes.

NIPP includes an extensive monitoring and evaluation package as well as an auto-calculating database, which enables implementing teams to see the outputs and outcomes of the programme immediately as they enter the data. This extensive monitoring and evaluation package also includes 12-month longitudinal follow-up periods of a representative sample from each geographical area per year. This longitudinal data helps monitor and provides evidence of the continued adoption of positive behaviours and maintenance of nutrition outcomes at two, six and 12 months post-graduation from the NIPP circle.

NIPP rollout, outputs and outcomes to date

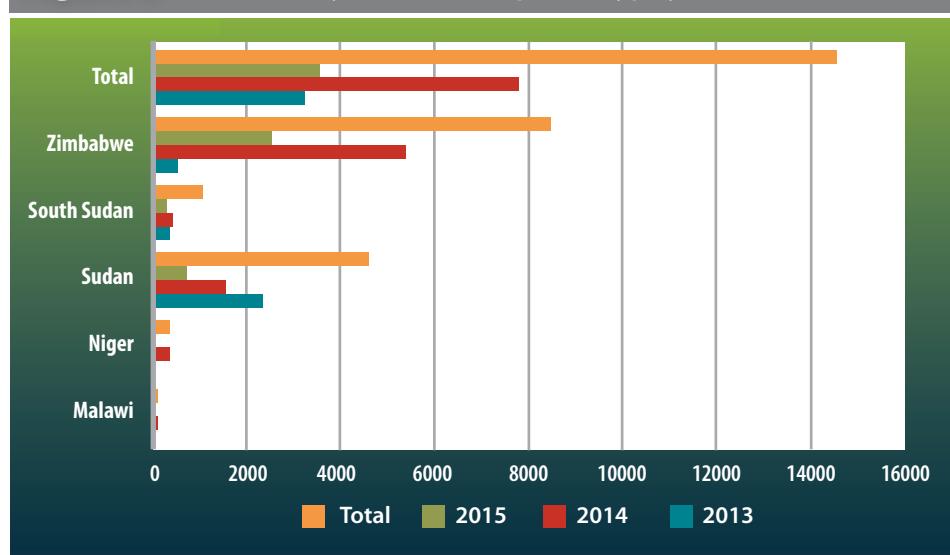
Since NIPP was last described in *Field Exchange*, it has grown rapidly and has expanded into two more countries; it is now implemented in Niger, South Sudan, Sudan, Malawi and Zimbabwe. Since 2013, the approach has reached over 10,000 female and 4,000 male beneficiaries (see breakdown by country in Figure 2). This article reports on data for 9,852 female beneficiaries and 4,172 male beneficiaries available for analysis at the time of writing.

NIPP has a wide admissions basis with 13 categories, including infants, children and women either suffering from some form of malnutrition or deemed at risk, the purpose of which is to ensure all those who are vulnerable to malnutrition in the community are included in the programme. Caregivers who wish to participate irrespective of a child's nutritional status may also do so. The breakdown of admission categories of female beneficiaries can be seen in Table 1.

Cases of severe acute malnutrition (SAM) that are identified are referred to the existing Outpatient Therapeutic Programme (OTP). Where no programme is available for the treatment and management of MAM, any identified cases during community screening are referred to the NIPP programme. MAM admission criteria to the NIPP circles are:

- Children 6-59 months with MUAC 11.5cm - <12.5cm or with WHM <80% referred

Figure 2 NIPP beneficiary numbers reached per country per year



BOX 1 The seven action points of the IYCF-Friendly Framework

- A. Infants <2 months who are visibly thin
- B. Infants 2-5.9 months with a MUAC < 11.0cm
- C. Children 6-59 months with a MUAC between 11.5-12.4cm (MAM)
- D. Children 6-59 months with a WFH (%) or z-score referred from a health clinic (MAM)
- E. Children 6-59 months with a WFA < 80% on the Road-to-Health chart (underweight)
- F. Children 6-59 months with a H/LFA < 80% on the Road-to-Health chart (stunted)
- G. Children any age referred from an OTP (non-MAM)
- H. PLW with MUAC <23.0cm (MAM)
- I. Others: PLW with MUAC ≥23.0cm (non-MAM)
- J. Others: chronically ill (not malnourished)
- K. Others: twins/triplets (not malnourished)
- L. Others: interested carers with no children <60 months (not malnourished)
- M. Others: children <60 months with interested carers (not malnourished)

Table 1 Demographic of female circle's admissions (combined available data for all countries to date)

Infants (0-6m) with MN Admission category A&B	Children (6-59m) with MN Admission category C, D, E, F, G	Children (0-59m) non-MN admission category J (<5yrs), K, M	Pregnant and lactating women (PLW) with MN Admission category H	PLWs (non-MN) Admission category I	Others with high risk of malnutrition (chronic illness, interested carer, etc.) Admission category J (>5yrs) & L	Total
N	N	N	N	N	N	N
51	2,719	3,838	806	628	1,810	9,852

MN: Malnutrition; PLW: Pregnant and lactating women

Table 2 Summary of global nutrition outcomes of NIPP beneficiaries admitted with MAM graduating non-MAM from the NIPP circles (2013-2015)

No. and % of children 2-6m admitted with MAM* reaching graduation non-MAM	No. and % of children 6-59m admitted with MAM reaching graduation non-MAM	No. and % of PLWs admitted with MAM reaching graduation non-MAM
33 (64%)	2191 (80.5%)	424 (52%)

* GOAL currently uses <11cm in infants 2-6m in our community-based NIPP project based on research by the KEMRI/Wellcome Trust Research Group, Kilifi, Kenya. A 2012 study found using a MUAC cut-off of less than 105mm to be highly specific in selecting infants at a very high risk of death (hazard risk 23 (4.2-122), and using a MUAC cut-off of less than 110mm associated with a 9.5 times risk of death (hazard risk 9.5 (2.6-35) (Mwangoome et al, 2012). As such, and in the absence of current guidelines, GOAL has chosen to use MUAC <11cm with appetite in children two to six months as an indicator of malnutrition. Note: rationale for this age range (from two months) is based on the rapid increase in MUAC from birth to two months.

Table 3 Summary of knowledge and practice changes among NIPP female beneficiaries on circle graduation and two and six months post-graduation

	Admission	Discharge	2 months post-graduation	6 months post-graduation
	n (%)	n (%)	n (%)	n (%)
Carers who are able to identify two or more causes of malnutrition	5036 (51%)	6958 (92%)	538 (70.3%)	267 (72%)
Carers who are able to identify two or more ways of preventing malnutrition	4711 (47%)	6911 (92%)	540 (70.5%)	266 (72%)
Carers who are able to explain how to make four high-energy porridge recipes	4361 (44%)	7042 (93%)	538 (70.3%)	266 (72%)
Children 6-23m with adequate diet diversity	612 (24%)	1372 (69.7%)	*	*
Children 6-23m with minimum acceptable diet	444 (20.4%)	1246 (63%)	*	*
Households with established micro-gardens	5173 (52%)	6449 (85%)	435 (56%)	145 (39%)
Carers who can give examples of two types of food preservation	3836 (38%)	6314 (84%)	482 (63%)	257 (70%)
Households with functional latrines	5130 (52%)	5401 (71%)	349 (45%)	160 (43%)
Households with hand-washing facilities	2299 (23%)	6527 (86%)	504 (65%)	178 (48.3%)
Carers able to list two or more ways of preventing HIV	3821 (38%)	6367 (84%)	**	**

* There is no follow up data here because of participants reaching their 24th month. We have recently amended our method of collecting and analysing the IYCF indicators using a cohort group which will generate data on this in 2016.

** This data were not collected in a number of the field sites, so the sample available is not representative and consequently not presented.

from a health facility or with WA <80% or growth faltering on their 'road to health' chart;

- All children recently discharged cured from OTP (may include children >59m);
- Infants two to six months with MUAC <11cm with appetite;
- Infants under two months visibly thin but with appetite;
- Malnourished PLW (MUAC <23cm – cut-offs may vary by country as per national guidelines).

Discharge criteria are: MUAC ≥12.5 cm for children 6-59 months; MUAC ≥11 cm for infants two to six months; improved nutritional status for infants under two months on 'road to health' charts (verified at health facility) at the end of the NIPP Circle cycle; MUAC ≥23 cm for PLWs. For all discharges and for families with chronic illness, etc., carers/PLW must pass the post-test assessment (includes theory and practical elements).

As a result, we have noted that NIPP is successful in treating mild and moderate malnutrition. We believe this is due to improved care practices in the home, coupled with the extra meal available through the cooking-demonstration activity at every NIPP circle meeting to children who attend the circle with their carer. The nutrition outcomes of beneficiaries registered with MAM can be seen in Table 2; 80% of children between six and 59 months admitted to NIPP with MAM were discharged cured at the end of the three-month intervention. If they do not 'recover', households are eligible and invited to participate in another cycle if appropriate, or indeed referred for more specialist support to government support programmes/structures as appropriate. During the six months after discharge, the numbers of MAM cases in the follow-up group continued to decline from 29 cases at graduation to 13 cases at two months follow-up and four cases at six months follow-up. As very few among those discharged with MAM post-graduation were lost to follow-up, this continued decrease in MAM numbers could be attributable to continued practice of positive behaviours in the household.

The cure rate of PLW with MAM admitted to the circles is 52%. PLWs with MAM have the highest rate of default in the programme (28%) in comparison with other female admission categories; over the past six months, this has been investigated through qualitative research in Zimbabwe and Malawi. The findings have identified stigma and time constraints as main causes of default in this admission group. GOAL will begin to trial new ways of supporting this group to try and improve these default rates in 2016.

During this scale-up of NIPP over the past 18 months, we have continued to see a positive impact on nutrition, WASH and health practices. Table 3 provides a summary of the key changes in nutrition, WASH and health knowledge and practices of female beneficiaries and their households assessed before and after completing the

12-week NIPP circle. Table 3 also shows the extent of maintenance of behaviour adoption of some positive behaviour at two and six months post-graduation of a representative sample of NIPP beneficiaries.

The monitoring and evaluation data we have collected for NIPP to date are showing a good uptake of nutrition, WASH, livelihoods and health knowledge, and a strong adoption of positive behaviours over the three months from admission to graduation. During the two and six month follow-up periods, while the knowledge of nutrition, health and hygiene behaviours is being maintained, there is a decline in the continued adoption of some positive behaviours, particularly from the WASH and livelihoods side. The observed fall in households with established micro-gardens is likely a result of seasonal fluctuations. The fall-off in sample size between the two-month and six-month data may be affecting representation of this and other data for the whole NIPP data population. We expect to have a representative sample for 12 months' follow-up by mid-2016 and further longitudinal data from country programmes in the coming six months.

Adoption of positive behaviour remains around the 40% mark at six-month follow-up for WASH and livelihood activities (the presence of hand-washing facilities is taken as an indirect measure of hand-washing practice). In order to gain a better understanding of the regression in positive behaviours, GOAL has started to design a mixed-methods study which is expected to take place in 2016. In mid-2016, we expect to have a representative sample of 12-month follow-up data which will further inform understanding of behaviours at 12 months.

NIPP lessons learned in 2015

Over the past 12 months of scaling up the NIPP approach and expanding the approach into new countries, a number of lessons have been learned.

Firstly, male engagement has been a challenging element of the NIPP programme. As household health and nutrition are not always seen as issues for men to consider in the majority of the NIPP implementing contexts, 'hooks' and incentives to garner improved interest are needed to attract men to participate. Country programme review workshops and some recent qualitative research are informing the NIPP strategy for

male engagement. The results have been positive; for example, following a lessons-learned review in Zimbabwe on male engagement in December 2014, male engagement has increased from 10% of female engagement in 2014 to 36% of female engagement in 2015. In 2016 we plan to do further research and learning on male engagement in the NIPP programme.

In 2015, the NIPP approach was adapted for implementation as a nested activity within a livelihoods programme in Zimbabwe which focused on agriculture and biofortification. The adapted version of NIPP is called the Extended Nutrition Impact and Positive Practices Approach (eNIPPA). This approach uses the same implementation framework as NIPP, i.e. volunteers, macro circles and the inclusion of non-negotiable activities. eNIPPA differs in that it is held over a longer period of time (24 weeks vs. 12 weeks), with contact points reduced to once per week instead of two to three times per week. The eNIPPA approach ties in with the agricultural calendar, providing participants with information on seasonally-available foods for cooking demonstrations, food processing techniques and post-harvest management. It also provides information and education on the nutritional impact of bio-fortified crops being grown in the programme. eNIPPA includes a strong monitoring and evaluation framework. It is expected that the first evidence on the outcomes of the approach will be available in early 2016.

Over the past year, there has been extension of the NIPP circles post-graduation into other community groupings, such as Village Savings and Loan Association and income-generation activities. There have been a number of IGA examples from different countries as a result of the cohesion of groups and skills women learn from the NIPP circles, including building fuel-efficient stoves for other village households in Zimbabwe and selling preserved foods in Sudan.

Finally, in 2015, a number of new NIPP implementation methods were piloted. Lessons learned include measuring the rate and progression of chronic malnutrition (stunting) in children aged six-59 months of NIPP beneficiary households; bringing NIPP to scale in Sudan; NIPP in the urban setting in Zimbabwe; using the Habinaye System (a sustainable small livestock-breeding programme based on the initial

injection of a quota of livestock to target households who pass on offspring to subsequent target homesteads) to improve diet diversity in Niger; implementing Community Led Total Sanitation through the NIPP WASH component in Zimbabwe; and implementing NIPP alongside a cash-transfer response to the floods in Malawi. More detailed information from each of these interventions is available from GOAL.

NIPP achievements over the last 12 months

Aside from implementation scale-up, there have been a number of achievements using the NIPP approach over the past 12 months, due to the hard work of the teams implementing the approach in the field. NIPP is now incorporated into the Government of Sudan National Guideline for the Management of MAM as a preventative nutrition approach and GOAL is working with the Federal Ministry of Health to bring NIPP to scale across Sudan. NIPP also featured in the technical resource guide Enhancing Nutrition and Food Security during the First 1,000 Days through Gender-sensitive Social and Behaviour Change as a strong gendered approach for health and nutrition programming. GOAL has engaged with a number of universities to scale up the research element of NIPP to continue the proof-of-concept phase of this preventative nutrition approach. An abstract on the approach was presented at the Development Studies Association of Ireland Annual Conference in 2015 and has been selected for presentation at the International Social and Behaviour Change Communication Summit in Addis Ababa and the Innovation in Global Health conference at Yale University, USA.

NIPP Next Steps, 2016

In 2016, GOAL plans to continue to scale up the NIPP approach in country programmes where curative health and nutrition programmes are being implemented. GOAL will also continue building the evidence base around NIPP as both a curative and preventative nutrition approach. A number of studies are planned for 2016, the largest of which is an Impact and Cost Effectiveness Study to Measure NIPP as a Preventative Nutrition Approach for Acute and Chronic Malnutrition. Finally, the NIPP toolkit is currently under review and will be made widely available for implementation by other actors in 2016.

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A double fuel efficient stove in Zimbabwe



Integrating nutrition products into health system supply chains: making the case

By Thomas Sorensen, Patrick Codjia, Patricia Hoorelbeke, Ed Vreeke and Ingeborg Jille-Traas



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UNICEF, he worked in the vaccine industry and with DANIDA health programmes. He holds a Masters in Economics and Planning and a Masters in Public Health.



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The authors extend special thanks to UNICEF country office colleagues who initiated the country reviews which formed the basis for the consolidated review and this article. Thanks also to everyone met or interviewed by phone and Skype for their time and readiness to share their knowledge and ideas.

UNICEF, Chad, 2013



RUTF supplies management at a health centre in Chad

Location: Global

What we know: Integration of acute malnutrition treatment services into health systems is a common aim; typical considerations include health worker capacity, management systems, governance and funding. In contrast, nutrition product supply chains typically run parallel.

What this article adds: UNICEF conducted eight country studies on nutrition product supply chains in sub-Saharan Africa. By consolidating these and supplementing them with primary and secondary data from other studies and semi-structured interviews with global and national level stakeholders, a number of findings have been revealed. Parallel supply chains are typically managed by development partners, often via UNICEF, especially in emergencies, and may be donor-driven in the interest of efficient delivery. As a result, government may be less accountable for reaching public health results and supply chain resources may be stretched. Dependence on short-term emergency funding for supplies hampers longer-term planning. Integration of product supply into national medicine supply chains is desirable, and most likely achievable in non-emergency settings. Such integration is an important step to scale up and sustain the treatment of severe acute malnutrition and is a critical dimension of health systems strengthening that requires investment to manage the transition.

Background

The attention to combatting undernutrition continues to grow, with an increasing number of organisations and alliances involved in nutrition and food security programmes in health, education, water and sanitation, and agricultural sectors. The long-term effects of under-nutrition on economic development are, increasingly, better documented and understood. The introduction of Community-based Management of Severe Acute Malnutrition (CMAM) early in this century was made possible by the introduction of Ready to Use Therapeutic Food (RUTF) and Mid-Upper Arm Circumference (MUAC), and facilitated the scaling-up of treatment of severe acute malnutrition (SAM) at the health facility

and household levels. From a programmatic point of view, the scale-up of CMAM has been successful in that it has been accepted as an integral part of the primary healthcare basic services package by most, if not all, governments. Full integration of the corresponding supply chain system is, however, pending in most countries.

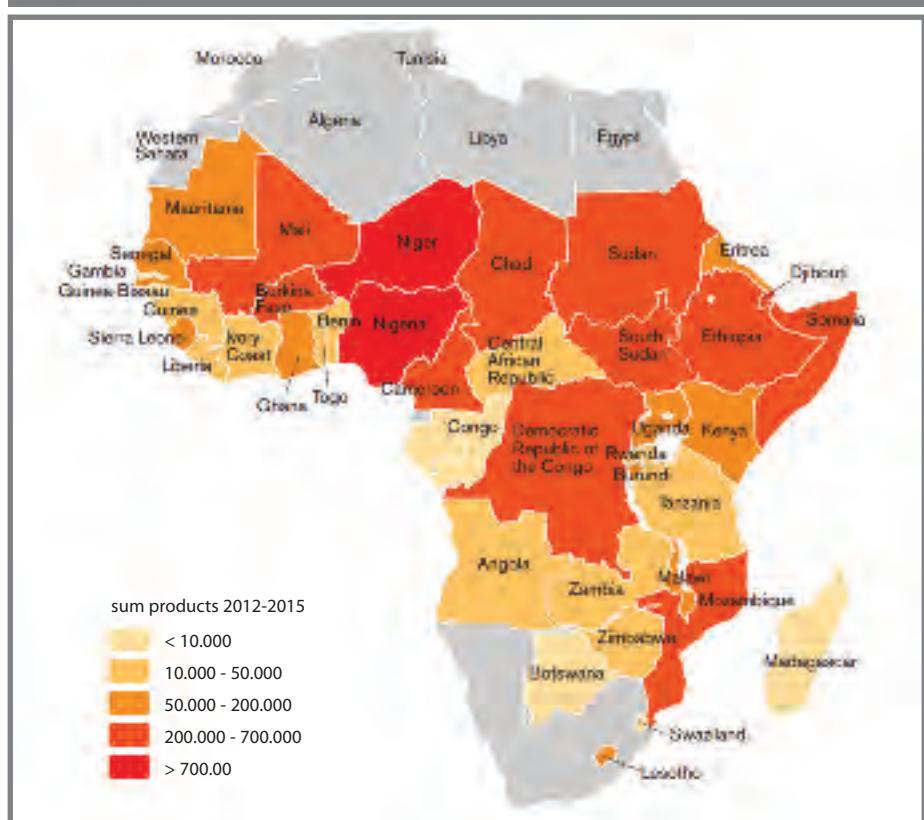
In most sub-Saharan African countries, UNICEF is instrumental in ensuring the supply of nutrition products (see Table 1). In the years 2011-2012 to June 2015, UNICEF procured more than 5.8 million cartons of RUTF, 18,155 cartons of ReSoMal, almost 154,000 cartons of F75 and 140,000 cartons of F100, corresponding to up to six million treatments for SAM. Once procured, these products

Table 1 Nutrition products supplied by UNICEF

Product description	Pack size	Gross weight (kg)	Volume (cubic decimetre)	Shelf life (months)	Storage conditions
RUTF, sachet 92g	Box of 150 sachets	13.80	23	24	Dry, < 30°C
F75 Therapeutic milk, sachet 102.5g	Box of 120 sachets	13.76	36	24	Dry, < 30°C
F100 Therapeutic milk, sachet 114g	Box of 90 sachets	11.58	29	24	Dry, < 30°C
ReSoMal, sachet 42g	Box of 100 sachets	6.28	29	36	Dry, < 30°C

Table 2 Scope of UNICEF country studies

Country	Burundi	Cameroon	Ethiopia	Kenya	Malawi	Mozambique	Niger	Nigeria
Terms of reference (ToR) include integration	X	X	X	X	X	X		X
ToR include optimisation	X		X				X	X
SCM element:								
Product selection (including technical specifications)	X				X	X		
Forecasting	X	X	X	X	X	X		X
Quality assurance	X	X			X	X		
Procurement	X	X	X		X	X	X	X
Inventory management	X	X	X	X	X	X	X	X
Distribution	X	X	X	X	X	X	X	X
Other WHO Building blocks:								
Funding	X	X	X		X	X		
Management information systems	X	X	X	X	X	X	X	
Health workforce	X	X		X	X	X		X
Leadership and governance	X	X	X	X	X	X	X	

Figure 1 Distribution of RUTF procured by UNICEF by country, 2012-2015

moved from national level to the health facilities through supply chains that were often largely organised and managed by UNICEF Country Offices and their implementing partners.

In the last 10 to 15 years, UNICEF's engagement has been rooted in emergency responses at country level and market-influencing strategies focusing on building local RUTF production capacity (Komrska et al, 2013). From 2013 onwards, a number of UNICEF Country Offices have initiated reviews, independent of one another, to inform how they can either optimise existing supply chains or integrate them into the national supply chain systems.

This article provides an empirical contribution to the understanding of how supply chains for nutrition products function in large parts of sub-Saharan Africa. The primary source of data arrives from the results and analysis of eight UNICEF country studies. Supplemented with primary and secondary data from other studies and semi-structured interviews with global and national level stakeholders, it provides insight into and guidance on what it takes to move parallel emergency-driven supply chains into the national supply chain for medicines and health products.

Conceptually, the core analysis is based on the WHO building blocks for health systems strengthening (Figure 2). As such, the underlying assumption is that any sustainable integration of nutrition supply chain management (SCM) systems requires carefully thought-through interaction with the other interrelated health system components. Tables 2 and 3 reflect the scope of the country studies and which SCM elements and other WHO health systems-building blocks were included as part of the study.

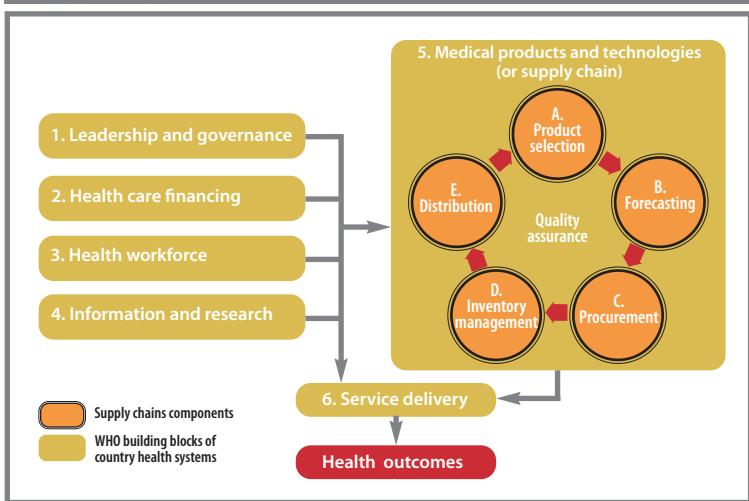
Findings

For various historical stop-gap reasons, development partners have taken the lead in delivering life-saving commodities in the different countries. In many cases, development partners (mainly UNICEF) are responsible for all or parts of the supply chain for nutrition products. Nutrition products are therefore often seen by government health staff at all levels as 'external' products. Integration of the nutrition products supply chain in the regular supply chain is an important contribution toward normalisation of these products. A key element for 'normalisation' of nutrition products is inclusion on the National Essential Medicine List, which is seen as an important driver for inclusion in other SCM elements.

Whether focusing on optimisation or integration, predictability and availability of funds necessary for correct execution of the different SCM elements continues to be a major obstacle in all assessed countries.

De facto integration has often taken place downstream in the supply chain (district and facility level). Where integration is taking place, it is done incrementally, element by element.

For full integration to take place, the need for health systems strengthening efforts becomes in-

Figure 2 Conceptual framework

evitable. However, funds for system strengthening interventions are not easily available, especially within nutrition programmes. Most nutrition-related funding is focused on procurement and programme issues. It is mobilised via donors and is often linked to emergency response or preparedness. This makes general supply chain planning and long-term integration efforts difficult.

We found that integration is often limited to integrating the storage and distribution elements, while other SCM elements (see Table 2) are overlooked. Thorough knowledge and awareness about the full supply system and its linkages to the broader health system contributes to better prospects for sustainable results.

Most major nutrition-funders indicated that they support integration initiatives and are willing to invest in the necessary health systems strengthening, even when these are not directly linked to the nutrition programme. At global and regional levels, a number of initiatives exist to facilitate integration. At country level, a large variety of integration processes are ongoing, often for parallel supply chains linked to the HIV/AIDS, malaria and tuberculosis programmes. Several opportunities for support to health system strengthening activities exist, often through global health initiatives such as The Global Fund (designed to accelerate the end of AIDS, tuberculosis and malaria as epidemics), The Global Alliance for Vaccines and Immunization, and The Power of Nutrition.

Discussion

Evidence on the efficiency and efficacy performance of regular and parallel supply chains remains limited. Parallel supply chains, however, have a tendency to compete for scarce supply chain resources for other medicines and health products, making the larger public health system less efficient. If managed by development partners, this will have a tendency to make the development partner accountable for reaching public health results, rather than the government system and its elected representatives. Parallel supply chains also tend to increase overall management costs.

Table 3 Supply chain management elements considered in the study

Technical elements (building block 5)		6 Quality assurance	
1	Product selection		
2	Forecasting		
3	Procurement		
4	Inventory management (storage and stock management at every level)		
5	Distribution		
Other building blocks			
7	Funding		
8	Management information systems (including monitoring and evaluation)		
9	Workforce		
10	Leadership and governance		

New strategies, such as rendering the Central Medical Stores (CMS) more independent from governments and outsourcing one or more SCM elements to the private sector, are changing the traditional national supply chains and offer additional opportunities for integration. But the CMS can be expected to continue to play a key role in the SCM of medicines and health products in the public sector for the foreseeable future. The exact configuration of a national supply chain will, however, be country and context-specific.

Analysing enablers and bottlenecks from the eight country studies on RUTF SCM, it is clear that actions to strengthen health systems, of which the supply chain is part and parcel, are time-consuming processes that require substantial funding and long-term commitment from all stakeholders involved. Health systems strengthening can best be achieved by taking small steps and by building on existing systems.

Further, when embarking on an integration process of a parallel supply chain for nutrition products, the following elements are crucial:

- A clear vision of the process shared by all stakeholders and endorsed by the government;
- The leadership of the government;
- A thorough situation analysis taking into account all SCM elements and linkages to the other health system building blocks; and
- Description of the implementation process, based on the situation analysis, accompanied by a plan of action with milestones, timelines, required resources, stakeholders' roles and responsibilities, implementation challenges and their mitigation measures.

The following elements are important for the success of the implementation process:

- A functional management organisation in charge of regular supply chain management that is able (with or without strengthening efforts) and willing to take over one or more elements of the parallel SCM;
- The Ministry of Health in a leadership role;

- A 'champion': ideally an organisation with sufficient resources, adequate experience in nutrition and/or SCM, a good track record and convening capability attracting all main stakeholders;
- A functional coordination mechanism in which all organisations involved in nutrition and/or SCM are represented;
- Close monitoring of the process by a joint stakeholder committee; and
- Access to dedicated technical assistance, if considered necessary.

Conclusion

This study found that RUTF SCM integration processes almost always lead to a need for health systems strengthening. This is confirmed by the limited results from the literature review. When considering an integration process, all SCM elements, as well as the other health system building blocks (funding, management information systems, workforce and leadership and governance) have to be considered. When embarking on an integration process, a step-wise approach is advisable, and actors involved should realise that an SCM change process is an iterative process, with the unavoidable 'fail and learn'. Integration should not be pursued at any cost; what is possible depends on the context. It can be full integration, partial integration or optimisation of the existing parallel supply chain. Strengthening of the regular supply chain should always be taken into account in the planning and budgeting of the integration process.

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General reference is made to the original and comprehensive UNICEF Nutritional Supply Chain Integration Study, which can be accessed at Supply Chain for Children, www.supplychainforchildren.org/

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Field Article

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This article is also available in French; visit: www.ennonline.net/fex under 'online only' content.



Sensitisation session on breastfeeding in Maradi

Child Survival Week as a platform for promoting vitamin A supplementation in Niger

D Maimouna, Niger



Location: Niger

What we know: In Africa, National Vaccination Days (NVDs) against polio have provided a valuable platform for achieving high coverage of preventive vitamin A supplementation (VAS).

What this article adds: In Niger, NVDs are being replaced with local days that have more limited coverage of target children; integration of VAS into routine health services is not widespread. To address this gap, in 2013, pilot Child Survival Weeks (CSWs) were implemented by the Ministry of Public Health across 17 health districts with the support of UNICEF, the Micronutrient Initiative (MI) and Helen Keller International (HKI). High-impact services, such as deworming and VAS, were provided with high investment in leadership, management-strengthening, logistics, community sensitisation, and monitoring and evaluation. The district VAS coverage (104%) exceeded the national target (80%). More than two-thirds of children received vitamin A in the course of the CSW campaign and at home. The post-campaign reported lower coverage (average 45.2%) but, due to recall bias, is difficult to interpret (it was conducted four months post-campaign rather than one month later). Leadership and management-strengthening activities have been crucial to effective implementation of CSWs in Niger. State funding was low (8%); this has implications for sustainability. The CSW proved a feasible platform for VAS; strengthening routine nutrition activities of health centres and of community activities and addressing obstacles (particularly state funding) are critical to the future of VAS in Niger.

Introduction

In order to extend child survival from 0 to 59 weeks, Niger's Ministry for Public Health (MPH) has put in place a range of policies relating to health and nutrition, and a national child survival strategy paper (MPH, Niger [1-3]). This strategy is based on VAS given that it results in a 23% reduction in child mortality (Fawzi, Chalmers, Herrera et al, 1993; Sall, Sylla, Ndiaye et al, 2001). In places where vitamin A deficiency constitutes a public health issue, VAS is recommended for infants and children aged six-59 months as a high-impact intervention to help reduce child morbidity

and mortality (strongly recommended by the World Health Organization) (WHO, 2013).

Two vitamin A strategies are currently in existence in Niger. VAS campaigns for children aged six-59 months run since 1999 have consistently been coupled with National Vaccination Days (NVDs) held every six months with a coverage rate of over 80%. However, some NVDs have now been replaced with Local Vaccination Days (LVDs), which does not enable effective targeting all children from 0-59 months. Stopping NVDs without putting in place an alternative large-scale system for VAS risks the high coverage rate within the country. With regard to routine,

peripheral-level VAS, health workers have not yet integrated vitamin A effectively in their daily activities due to insufficient training or a shortage of capsules. The VAS coverage rate remains very low and varies from region to region (14% in Tillabéri, 82% in Maradi) (MPH [4], 2013).

Given the likely discontinuation of NVDs and enhanced routine supplementation measures, since 2010 Niger has progressively launched pilot CSWs ('la semaine de survie de l'enfant' (SSE)) in 17 health districts across the country to offer a range of high-impact services aimed at improved child survival, including VAS. This article sets out to describe how CSWs are implemented in Niger, as well as the results obtained, the difficulties encountered and the main challenges that exist.

Organisation and implementation of CSW

Responsibility for the campaign to eliminate vitamin A deficiency and the provision of vitamin A supplements in Niger is a burden on the MPH's Nutrition Directorate. In 2013, the department within the Nutrition Directorate responsible for alleviating micronutrient deficiency was nominated as a task force for the coordination of pilot CSWs across 17 health districts with the support of partner organisations. CSWs involve a number of activities organised on a regular basis that offer an integrated package of preventive services directed at improving child survival and maternal health that are recognised for their excellent cost/efficiency (Aguayo, Garnier & Baker, 2007). CSWs are implemented according to the following steps:

Step 1: Drafting of a CSW planning guide aimed at health district managers

A number of partner organisations, including MI and HKI, provided the necessary documentation to draw up a planning guide. It was developed based on experiences of implementing training and orientation workshops as part of CSWs across a number of countries, namely Senegal and Ghana (Cisse, Diene, Baker et al, 2007; Amoaful, Agble & Nyaku, 2004). The necessary documentation called upon the assistance of other MPH directorates, in particular the maternal and child health directorate, the expanded programme on immunisation, the national malaria control programme and the national helminthiasis control programme. This committee was approved following a decision by the MPH in 2011 and met regularly over a three-month period to put together a draft proposal. This document, entitled Organisation of How to Plan, Implement and Monitor Vitamin A Supplementation as part of CSW, was adopted by a national workshop funded by MI and overseen by a consultant. A number of centralised and decentralised technical service agents and other partner organisations also took part.

The guide is broken down into ten parts which contain all of the necessary banners for successful planning: (1) orientation process, (2) review of previous CSWs, (3) planning of future

CSWs, (4) human resources, logistics and supplies, (5) social mobilisation, (6) training of service providers and administration of vitamin A capsules and de-worming tablets, (7) management, (8) monitoring and assessment, (9) reporting and feedback, (10) financial management/review of CSW action plan and funding. The final version of the guide has been widely distributed among health districts.

Stage 2: Training of instructors and members of the core teams of districts

Three series of three-day training courses were organised in 2012, initially for a pool of 16 instructors (two per region). The directorates/key programmes in charge of children, regional directorates of public health and the Association of Paediatricians were involved. The first in the series took the form of a workshop to select the essential package of preventive health services to be added to the CSW determined by local level needs: deworming; immunisation against measles, tetanus and poliomyelitis; and screening of malnutrition. Additional services are added to this minimum package by districts, such as promotion of exclusive and continued breastfeeding, and treatment of diarrhoea. The second and third series of training have been organised in the regions and districts, respectively.

Stage 3: Choosing the districts and budgeting of the activities of CSWs

In 2013, immunisation days took the form of LVDs and did not cover all of the country's districts. This information has guided the selection of 17 districts for CSWs. Each chosen district made a budget proposal for the organisation of CSWs (from planning to evaluation by referring to the guide made available to them).

Stage 4: Mobilisation of partners for the Global Alliance for Vitamin A (GAVA) surrounding CSWs

The three technical and financial partners, MI, HKI and UNICEF, set up a consultation framework and established a support plan for CSWs: MI, through UNICEF, funded the purchase of vitamin A capsules, the review of messages for raising awareness during CSW campaigns, a portion of the payments to the teams, and the monitoring and evaluation (M&E) process; HKI financially supported the purchase of accessories, such as reconditioning bags, scissors, the routing of inputs including vitamin A capsules for the regions and/or districts, and the debriefing of health workers and community liaison officers about the administering of vitamin A. UNICEF took care of the remaining team payments, coordination and supervision, vehicle rental and fuel. Strong advocacy from the Nutrition Directorate has mobilised approximately 8% of fuel needs from the Government.

Stage 5: Progress of the CSW campaigns, monitoring and evaluation

Mobile teams comprising health workers and community liaison officers travelled to the villages, door-to-door, to administer the outlined package of activities. Data was monitored daily and the end of the campaign was sanctioned as

an outcome of meetings on M&E results. A 30x30 cluster survey regarding VAS and mebendazole coverage during the CSWs in 17 pilot districts was carried out four months after the first visit in March 2013. The survey was conducted by the National Institute of Statistics in collaboration with the Nutrition Directorate.

Results

Strengthening of the leadership of the Nutrition Directorate and the districts

Leadership and management-strengthening activities have been crucial in the effective implementation of CSWs in Niger. At national level, the Ministry of Health has set up an integration plan for NVDs and SVAs in the survival weeks of the child. An advocacy plan has allowed resource mobilisation in the state's budget of approximately 8% in 2013, versus 1% in previous years. At decentralised level, the CSW guides have been made available to health districts. At least 90% of the core team's district members have been trained on this guide. Seventeen out of 42 districts have been included in the pilot phase and have a budgeted micro plan for CSWs. All 17 districts have used CSWs as a platform for VAS, the deworming of children and immunisation against poliomyelitis. The monitoring of activities in the survival weeks of the child is carried out at the end of each half year in the districts. No district has reported a stock-out of vitamin A, relating to at least 80% of their service delivery points. Communication, data collection and reporting tools for training of community health workers have been developed and distributed to the districts. At least 80% of women and childminders have been made aware through communication activities for behaviour change, so that they are able to bring their children to the service delivery points.

Strengthening of the consultation framework for GAVA partners

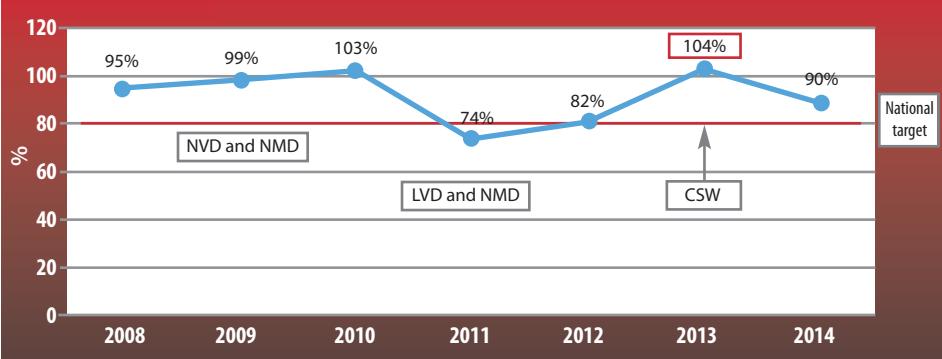
GAVA partners (MI, HKI and UNICEF) have set up a consultation framework in order to harmonise their interventions, which includes a joint work plan with a clear allocation of the tasks and responsibilities. They have supported the Ministry of Health from planning to evaluation of the results and played an important role in the coordination of activities.

VAS coverage

In 2013, the CSWs served as a platform for improving coverage of the main child survival services routinely offered. Distribution of mebendazole was coupled with the administration of vitamin A. Most children in the target group aged six-59 months received VAS in the first (98.5%) and second (103%) visits respectively in 2013 in the 17 pilot districts, including 99.0% and 102% for children aged 12-59 months and 95.6% and 101% for infants aged six-11 months. Thus a high level of coverage of VAS was maintained (Figure 1). The national coverage target set by the country was to achieve a coverage rate of at least 80%. The districts reported that over 80% of mothers or child-minders were informed of the CSW campaign.

Figure 1

Trend in coverage of vitamin A supplementation in the 17 pilot districts where CSWs were run, 2008 to 2014



NVD: National vaccination days; NMD: National micronutrient days; LVD: Local vaccination days; CSW: Child survival weeks.

Data source: Data is from the results of VAS campaigns shared centrally by decentralised sources (e.g. health districts, regional directorates, health administrators). From 2008 to 2012, coverage is the result of blanket VAS coupled with polio campaigns. In 2013, coverage is a result of VAS/experimentation with CSWs in 17 districts, and results show coverage of VAS coupled with polio campaigns in the remaining 25 districts.

Figure 2

Difference in VAS coverage between the first visits in the CSW campaign and the survey taken post-campaign in 16 districts



Figure 2 shows the coverage of the campaign in 2013 in 17 districts compared to the results of a survey conducted four months after the campaign. It is recommended (WHO, HKI) that post-campaign surveys should take place within one month. In Niger, this deadline was not met due to logistical constraints, with the possibility of bias as a result (such as recall bias on the part of mothers). Bearing in mind these limitations, the post-campaign survey results revealed overall coverage of 45.2% of children. Coverage varied by health district, ranging from 10.8% in Say in the Tillabéry region to 71.6% in the Agadez Commune health district. These results also reflect the challenges of achieving good coverage in some areas, despite strong campaign organisation.

Figure 2: This is the cover of the first results of SSE campaign in 2013 in 17 districts compared to the results of a survey that was conducted four months after that first campaign. Normally as recommended (WHO, HKI), post-campaign surveys must take place within one month. In Niger this deadline was not met with the possibility of bias (such as recall bias on the part of mothers). According to the team of the Nutrition Directorate, despite advance planning, logistical constraints did not facilitate the achievement of the post-campaign survey in the period. This

was a problem of appreciation on the VAS coverage (low and very low for some districts).

The 80% target is relative to the results of campaigns and VAS that were achieved during the campaigns in Niger. Good covers are those from the countryside.

We wanted the presentation of the results of the post-campaign survey to take into account the difficulties encountered, despite the good organisation of the campaign.

The survey revealed that for mothers or child minders, the main reasons the children had not received VAS was that the teams had not visited the households (36.1%) or villages (31.1%) or the child was absent from the household (11.9%). One fifth (21%) of mothers said they did not know about the campaign. Of the children who received VAS, 97.8% of mothers said the child received their capsule during the CSW campaign and 2.2% during routine activities. Most (90.4%) said the child received their capsule at home and 9.6% at the health centre or public locations (market, water standpipe, etc.).

According to the same survey, 41.2% of respondents were informed of the distribution of VAS during the CSW campaign, whereas, as

detailed above, it was reported as over 80% by the districts. This proportion varied from one district to another; e.g. from 16.0% in Arlit to 78.5% in Ouallam. The respondents channels of information were mainly members of the community (town criers, community liaison representatives, family/neighbours and leaders) 75.2%; the media (radio and TV) 50.6%; and health organisations (health officers and mobile teams) 30.6%.

In addition to VAS and deworming with mebendazole, the main additional themes, which were virtually common to all districts, were the promotion of breastfeeding and washing hands with soap and water. Messages about breastfeeding that were enlarged upon by the teams in the CSW campaign and cited by the mothers were: putting the baby to the breast immediately after birth and giving it colostrum (50.2%); not giving anything other than breastmilk for the first six months (32.8%); and breastfeeding the baby frequently, day and night (14.0%). Messages cited about washing hands with soap and water at appropriate moments were: washing hands before preparing to eat (37.5%); washing hands before feeding child (32.2%); washing hands before and after eating (28.4%); and washing hands after using the toilet (25.0%).

Discussion

In Africa, NVDs against polio have acted as a sufficiently financed platform for preventive VAS programmes and have undoubtedly improved visibility for large-scale, regular VAS for children. In light of the gradual abolition of NVDs in most African countries, it is proving necessary to attract decision-makers' attention to national child survival strategies, including VAS. Some countries have succeeded in establishing CSWs as opportunities to carry out essential child survival activities – including VAS – with a greater reach and in addition to the routine services provided at health facilities (Aguayo et al, 2007). In Ghana, CSWs have offered a package of services, including VAS, vaccination, reimpregnation of mosquito nets, the provision of child health record books and the registering of births (Amoafua et al, 2004).

MPH

On an organisational level, the leadership of the MPH, collaboration between the various departments of the MPH and between the partners, the micro-planning of activities on the decentralised level, and the involvement of the various entities (political, administrative, traditional and religious leaders) in the preparation and implementation of the CSWs has greatly contributed to the success of the SSEs. The principal organisational difficulties related to delays in providing the input materials, reagents, and management tools in some enclaved districts; underestimation of the targets, making it difficult to accurately estimate material needs; the need to increase human resources due to the volume of activities; and the lack of security noted in some locations. A sufficient number of communication media is lacking in several districts.

From a funding point of view, meeting the deadline for the requests formulated by the MPH and making the partners' funds available in time, and the transparency of the information on rates of indemnities, are noteworthy. The delay in setting up funds at the level of some districts for sub-funding some items like social mobilisation was an issue. The state's contribution was low (8%). Local organisations in some districts in the Tillabéry region made cash contributions or contributed by strengthening the teams' means of transportation (carts, fuel, etc.). Increasing the state's budget constitutes a major challenge to carrying out the CSWs. In Ghana, the VAS programme became a national activity; the government takes responsibility for 73% of the costs and the partners take care of the remaining 27% (Amoafu et al, 2007). This made it possible to institutionalise the Child Survival/Health Days.

With regard to evaluation/follow-up, key factors were improvement of management tools, regularity of supervisions, daily validation of the data by team in each district, and holding workshops to evaluate the CSWs with all the stakeholders by district, region, and at the central

level. The data were broken down by age and geographic area.

The CSWs have already proven their usefulness, especially in improving national coverages of interventions such as VAS, deworming, and measles vaccination in some countries like Ghana (Amoafu et al, 2007), Senegal (Begin, Aguayo & Mulder-Sibanda, 2004) and the Congo (Bandenga & Mouyokani, 2007). The VAS coverages obtained at the district level exceeded the threshold of the objective set at the national level (the coverage was 104% in 2013 relative to the national target of 80%). More than two thirds of children received vitamin A in the course of the CSW campaign and at home. This confirms once again the relevance of mass campaigns in VAS in children and the door-to-door strategy used.

According to the literature (Institut National de la Statistique; Thwing, Perry, Ndiaye et al, 2009), in order to assess the equity of the VAS campaigns the survey of beneficiaries is the method most used to evaluate coverage. That survey should be conducted in the month following the campaign in order to catch the

children who did not receive the supplement, to detect organisational problems, and to better prepare the next campaign. The survey conducted in Niger was done four months afterwards, which undoubtedly allowed the introduction of bias and made it difficult to interpret the results of VAS coverage. The post-survey campaign helps identify the areas to strengthen before the second round.

The districts that displayed high proportions of mothers informed about the campaign were also those that had relatively better post-campaign VAS coverage. These districts were Téra and Ouallam in the Tillabéry Region; Dosso, Boboye, and Loga in the Dosso Region; and Agadez commune.

For the other interventions (such as breast-feeding promotion and hand-washing), the effectiveness is not strong, but the value added of their incorporation into the CSWs is not negligible with respect to the results of the routine statistical data.

Conclusion

The CSW approach is a multi-disciplinary intervention that was set up in Niger in order to offer Nigerian children a package of free, high-impact services in a door-to-door strategy at the level of districts that were not involved in LVDs. The objectives were achieved with regard to VAS and deworming in children under five. Maintaining the CSWs and the effectiveness and relevance of the interventions will depend on resolving the obstacles encountered; in particular the financial contribution of the state. Nevertheless, given that the CSWs constitute an alternative solution to the abrupt halt of the NVDs, their cessation requires strengthening the routine activities of health centres and of community activities with regard to nutritional monitoring, as well as VAS by community agents.

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ACF, Kenya, 2015

Location: *West Pokot County, Kenya*

What we know: Chronic malnutrition (stunting) is a persistent problem in the arid and semi-arid lands of Kenya, despite a number of initiatives to reduce it.

What this article adds: As part of the Alleviating Chronic Malnutrition Initiative, an ACF-led Link Nutrition Causal Analysis (NCA) study was a key step in developing a risk-factor based, detailed, multi-sectoral response plan to collectively addressing stunting in West Pokot County. Identified stunting risk factors included high prevalence/recurrent childhood illnesses, inadequate dietary diversity, high maternal workload, low income, inadequate access to water and poor hygiene practices. The stunting prevalence of children under five was not influenced by seasonality. A multi-stakeholder workshop, themed around health and nutrition, food security and water, sanitation and hygiene (WASH) identified feasible interventions to deliver a community-based action plan. Engagement of technical and political leadership and influence on budget allocations to nutrition-sensitive and specific programming was necessary; follow up on commitments and implementation is critical.

Nutrition-sensitive multi-sectoral planning: experiences on Link Nutrition Causal Analysis (NCA) in Kenya

By Kevin Mutegi and Jacob Korir



Kevin Mutegi is currently working with Action Against Hunger (ACF-USA) Kenya mission as Food Security and Nutrition Surveillance Programme Manager. He has six years working experience in

nutrition, food security and public health programming in Kenya. He provides technical support on research, monitoring and evaluation at national and county levels. He has previously worked for Kenya Red Cross, Africa Medical and Research Foundation, local universities and colleges in various capacities.



Jacob Korir is current Head of the Nutrition Department in the ACF-USA Kenya Mission and has over five years experience in nutrition and health programming. He previously worked for Provide International, World Vision Somalia, Kenya Medical Research Institute and Christian Child Care International in various health and nutrition capacities.

Introduction

West Pokot County lies in the arid and semi-arid lands (ASAL) of Kenya with a population of 512,690 persons (2009 census). The County has three major livelihood zones: pastoral, agro-pastoral and mixed farming. It is characterised by high rates of both acute and chronic malnutrition. According to the 2014 Kenya Demographic Health Survey (KDHS), the chronic malnutrition (stunting) prevalence is 45.9%, above the World Health Organization (WHO) 'emergency' cut-off (40%). Despite a number of initiatives by the Government and other stakeholders, chronic nutrition vulnerability is still pervasive and persistent in the County. This warrants a focus on long-term and holistic approaches that address the causal factors of undernutrition by bringing an array of key stakeholders and expertise under one roof, with the County Government taking the lead role.

Alleviating Chronic Malnutrition Initiative

The need to urgently address chronic undernutrition was driven by the Alleviating Chronic Malnutrition Initiative, which brings together seven national and County Government ministries (health and nutrition, agriculture and livestock, water and sanitation, finance and planning, education, markets, and trade), three UN agencies (UNICEF, FAO and WFP) and two international, non-governmental organisations (INGOs) (ACF and Helen Keller International (HKI)). The Chronic Malnutrition Initiative came up with key steps to achieve its vision, outlined below:

- Preliminary engagement of like-minded stakeholders.

- Engagement of political leadership at county level.
- Enhancing buy-in at multi-sectorial County Steering Group (CSG) level.
- Formation of a national think-tank to provide technical support and guide the process.
- Understanding causality through an NCA process.
- Multi-stakeholder engagement and consensus workshop.
- Development of a multi-sectorial response plan to guide action.

Link NCA methodology

The Link NCA study was one of the pertinent activities outlined in the vision of the initiative. The Link NCA method is a structured, participatory and holistic study based on the UNICEF causal framework that aims to build evidence-based consensus around plausible causes of undernutrition within a local context and assign appropriate response plans to counteract effects of undernutrition.

The study took five months between March and July 2015. It involved the following stages: a preparatory phase (rating of hypothesis based on secondary data review), identifying hypothesised risk factors, field work using qualitative and quantitative approaches, multi-sector engagement and consensus-building on the result and development of response plans. Field work exercise took two and a half months for both qualitative and quantitative components. The qualitative inquiry was used to complement existing sources of information and develop an understanding of undernutrition. Four villages were purposively selected at random for qualitative

inquiry; a total of 48 focus group discussions and 30 semi-structured interviews were conducted. Four rating exercises on possible risk factors, through engagement with various community groups, took place. The community groups were also engaged in developing action plans based on community-rated risk factors. The quantitative inquiry involved risk factor and SMART surveys based on livelihood zoning and indicators under study.

A sample size of 640 randomly selected households was achieved with 37 villages chosen across the livelihood zones. Multi-stakeholders at national and county levels were engaged in July 2015 through consensus-building on findings, rating exercise of risk factors and development of response plans. Results from the NCA formed the basis of a detailed multi-sectoral response plan towards the vision of collectively addressing stunting in the County. Technical representatives from various sectors used sector-specific findings to develop interventions through the problem, solution/intervention and stakeholder trees analysis approach. Community-rated risk factors and action plans derived during the field work in June 2015 were also prioritised in the process of developing multi-sector response plans. In

addition to prioritising key interventions, the response outlined desired change, advocacy objectives and stakeholder responsibilities for the follow-up on implementation of interventions. Advocacy objectives were developed to guide planning and implementation of proposed interventions based on risk factors identified.

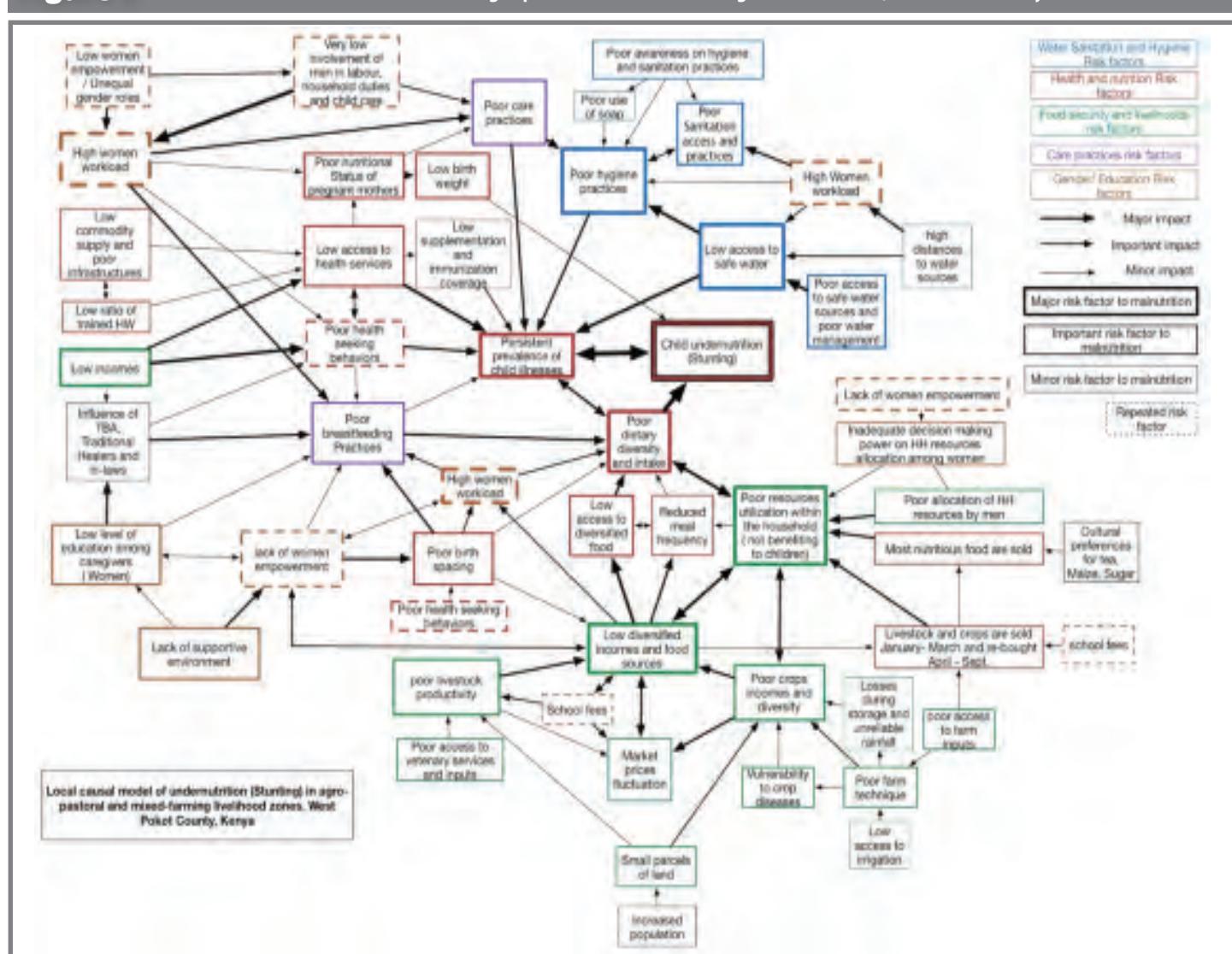
Summary findings of the Link NCA

A key component of the qualitative inquiry was the exploration of community perceptions and causal pathways to undernutrition. The findings revealed that the major risk factors linked to stunting include high prevalence and recurrent episodes of childhood illnesses (see Table 1). It was noted, however, that the prevalence of environmental enteropathy in the County is unknown and needs further investigation. Young children consume contaminated soil picked from the ground, while an unhealthy environment coupled with unhygienic practices are among major risk factors linked to undernutrition (stunting), (Campbell, Elia & Lunn, 2003). Prolonged seasonal (rainfall) failure coupled with a myriad of vulnerabilities over time rendered households chronically food insecure. Low sources of income, coupled with low engagement

of women in decision-making processes related to resource/assets utilisation at the household level, significantly contributes to poor dietary diversity and intake among children. Other major risk factors identified included high maternal workload, low access to safe water and poor care practices. The Link NCA findings also revealed important risk factors to include low access to health services, poor health-seeking practices, low women empowerment, low education levels among care givers (mothers), low crop and livestock productivity, low birth weight and poor child spacing. It was also noted that poor nutritional status among pregnant and lactating women contributed to low birth weight and stunted growth of babies. The minor risk factors identified included high food prices, insecurity and low micronutrient supplementation. It is important to note that stunting peaks do not follow a regular seasonal trend as is the case in wasting, but the various risk factors for stunting were related to persistent rainfall failure or mild droughts reported over the years.

A major output of the Link NCA survey is the design of a local causal model to explain the main causes and pathways to undernutrition in the target area. By triangulating the results from

Figure 2 Local causal model of undernutrition in agro-pastoral and mixed farming livelihood zones, West Pokot County



the preliminary research, the result of the risk factors survey and the findings of the qualitative survey, a local causal model was designed, as illustrated in Figure 2. Major, important, minor and repeated risk factors and their interplay were used in developing a multi-sector response plan.

Response planning

Brief overview of response analysis

Response analysis is a step towards linking a situation analysis phase with a programme design or programming phase (Levine & Chastre, 2011; Maxwell & Stobaugh, 2012) as highlighted in Figure 3. Situation analysis itself is understood as a discrete phase that follows assessment but precedes response analysis, or more commonly is included as an initial or precursor to response analysis. In the latter, the results of situation analysis are viewed through the lens of response, analytical ‘gaps’ are plugged where they exist (severity, magnitude, target groups, vulnerability analysis, gap and risk analysis, etc.), and forecasting and scenario-building is undertaken before potential response options are identified (FAO 2011). Across the board, response analysis is essentially focused on identification, examination and selection of a set of appropriate and feasible response options, based on certain predefined technical and operational criteria.

Link NCA multi-sectoral response plan

The multi-variate risk factors linked to undernutrition (stunting) in this population required a joint multi-sectoral approach in designing response plans to address the basic and underlying causes of chronic vulnerability. Multi-stakeholders at county and national level were involved in developing response plans, based on identified risk factors (Figures 2 and 3), during a three-day multi-stakeholder workshop. The process of developing a situational and response analysis was based on stakeholder understanding of the risk factors, their interplay on stunting and development of a community action plan. Other areas of focus to ensure all stakeholders present were ‘on the same page’ included a brief on ‘What is malnutrition?’, types of malnutrition, vulnerable groups and the Link NCA process. The community action plan was developed from qualitative inquiry and community-rating exercise of risk factors. The NCA analyst explored community viewpoints on amenable solutions and strategies to mitigate the risk factors identified (see Table 2).

The team discussed the differences between nutrition-specific and nutrition-sensitive interventions in detail. The process was led by representatives from government line ministries with facilitation from other participants, including Action Against Hunger (and its Nutrition Security policy principles), nutrition causal analyst/consultant, Food and Agricultural Organisation (FAO), National Drought Management Authority (NDMA), UN World Food Programme (WFP) and the Scaling Up Nutrition Civil Society Alliance (SUN CSA) represented by the Kenya Red Cross Society (KRCS) and UNICEF. The County political and technical leadership were also present during the multi-stakeholder engagement workshop.

In order to ensure multi-stakeholder engagement, three thematic areas were developed during the

Table 1 Summary of major risk factors for stunting

Risk factors +++-Major ++-Important +-Minor	Rating from initial workshop	Strength of association with literature/quantitative	Rating from technical experts	Participatory rating exercise with communities	Interpretation by NCA analyst
High prevalence of childhood illness: acute respiratory infection (ARI), clinical malaria, diarrhoea and environmental enteropathy	+++	+++	+++	++/ +	Major
Inadequate dietary diversity, intake and meal frequency	+++	+++	+++	+++	Major
High maternal workload	+++	++/ +	++	+++	Major
Low sources of income/ low levels of diversified income	+++	+++	+++	+++	Major
Inadequate intra-household asset utilisation*	+++	++	+++	+++	Major
Poor access to safe water	+++	++	+++	++	Major
Poor hygiene practices	+++	+++	+++	+	Major

*This also touches on low levels of female decision-making on household expenditure and the fact that the power to prioritise resources at household level is dictated by men.

Figure 3 Local causal model of undernutrition in agro-pastoral and mixed farming livelihood zones, West Pokot County

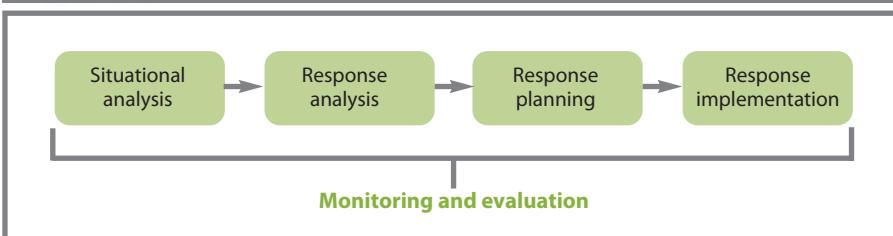


Table 2 An example of community action plan based on community-rated risk factor: high maternal workload

Risk factor	Objectives	Community strategies and solutions
High maternal workload	Reduce workload on women and allocate mothers time for optimal care practices	Supportive environment: men to support household duties (farm work) and care practices (accompany mother to clinics).
		Improve access to safe water sources –minimising distance to water sources.
		Awareness campaigns on importance of birth spacing and family planning methods. Use gatekeepers to advocate to men (elders) and traditional birth attendants as they are key influencers.
		Improve crop and livestock productivity; this will enhance food security at household level.

Table 3 An example of a multi-stakeholder action plan with proposed interventions and advocacy message for the major risk factor of inadequate dietary intake

Risk factor	Interventions	Key stakeholder	Desired change	Advocacy message	Resources required
Inadequate dietary diversity	<ul style="list-style-type: none"> Create awareness on food fortification. Implement Baby Friendly Community Initiative (BFBI). Advocate for utilisation of indigenous foods and development of recipes. Promote dairy goat farming. Scale up home fortification Promotion of diversified food crops/livestock 	MoALF, MoH, MoE, Private sector, NDMA, Community, Local Media, County leadership (MCAs, governor etc.).	<ul style="list-style-type: none"> Improved dietary diversity, increased crop\ livestock production and crop and livestock diversity, increased income sources, increased level of education and women empowerment. 	<ul style="list-style-type: none"> County government to prioritise resources required and budget to support nutrition sensitive interventions. Enhanced crop and livestock diversification for sustainable household food security. 	<ul style="list-style-type: none"> Diversified types of food crops: green grams, soya beans, indigenous vegetables, cassava, sweet potatoes (traditional high-value crops). Procurement of agricultural machinery. Technical capacity (agricultural extension workers).

Figure 4 Multi-stakeholders forum during the design phase of response plan

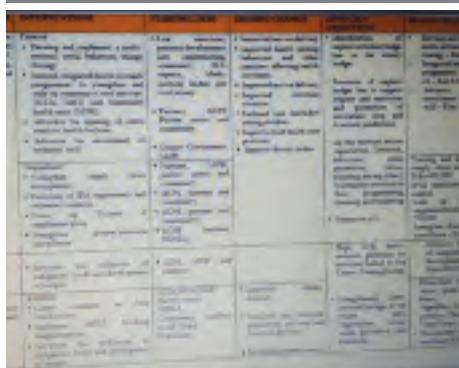


Group work session



ACF, Kenya, 2015

Figure 5 An example of multi-sectoral response plan developed during the engagement workshop in July 2015



final workshop: health and nutrition; food security; and WASH. Cross-cutting themes such as advocacy, gender, care practices, environment, markets and trade were incorporated into the three thematic areas. One technical expert representative for each thematic area was appointed to lead during plenary discussions and on technical consensus-building in developing the problem analysis tree. The stakeholders within the thematic groups were involved in developing amenable solutions through converting problems into solutions using a solution analysis pathway matrix (Figure 4). They were also involved in formulating feasible interventions in relation to proposed community action plans (see example in Figure 5). The engagement of the SUN Civil Society Alliance (CSA) Movement was key in packaging the NCA findings and multi-sectoral response plans into clear advocacy messages used to inform county leadership, donors and implementing partners on the need to allocate resources based on identified priorities (see Table 3 for an example). The leaders present at the workshop including chief executive officers for health committed to allocating more resources for scaling up programmes for 2015-2016.

Challenges, lessons learned and way forward

During the implementation of the NCA and response analysis process, a number of challenges were faced and ways forward identified, as highlighted in Table 4.

Table 4 Challenges and ways forward

Challenge	Way forward
1. Extreme weather and geographical conditions such as sporadic rains during data collection, mountainous/rough terrain and rivers/lagas.	<ul style="list-style-type: none"> The way forward was to consider adding an extra day of field data collection during planning to allow the extra time required by the Link NCA team to complete the field work process. The enumerators and NCA analyst should be physically fit and young so that they can endure the long walks when assessing households. It's important to wear protective gear during the field work process
2. Limited resource allocation for nutrition specific and sensitive programming in previous county budgets.	<ul style="list-style-type: none"> The county leadership, led by the Minister and Director of Health, committed to allocate budgets for both nutrition-specific and nutrition-sensitive activities. A taskforce selected during the multi-stakeholder engagement workshop was mandated to follow up with the finance and planning committee at county assembly to ensure they are sensitised to the findings and commit to allocating budgets for the proposed interventions.
3. The data collection tools were lengthy and required a long time to administrate.	<ul style="list-style-type: none"> The Link NCA training staff, enumerators, translators and team leaders must be involved in the pilot/field exercise so that they can help contextualise tools through translating and back-translating exercises before the actual field work process.
4. The Link NCA follow-up of the response plan and implementation process required additional engagement after the final workshop.	<ul style="list-style-type: none"> It was necessary to further engage the stakeholders after the workshop to ensure finalisation of the multi-sector response plan. This required extra commitment from the taskforce.

There is a need to engage all stakeholders in all stages of NCA to ensure they understand and buy into the process. The pace of implementation of recommendations is dictated by the clarity of response plans and engagement of technical and political leadership from the outset. The NCA approach encourages multi-sector participation; the mixed-method approach used benefits exploration and understanding of the causal links and interplay of various risk factors linked to undernutrition (in this instance, stunting).

Community inputs and feedback are required for rating of risk factors and development and follow-up on action plans. The county government representatives from various ministries committed to increase resources within the various sectors in the next county budgetary allocations, costing and planning. This is at least in part due to their full engagement from the start of the analysis and response-planning process. Continuous follow-up of proposed interventions and their implementation is key to ensure actualisation of the proposed response plan.

The causal pathway of risk factors linked to stunting indicated that stunting prevalence among under fives was not influenced by seasonality factors.

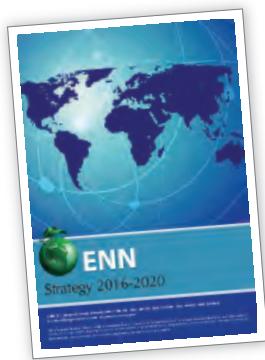
This was the first time the Link NCA was conducted based on livelihood zoning. Risk factors analysis and vulnerability context were similar for agro-pastoral and mixed-farming livelihood zones but distinct for pastoral livelihood zones; previously used assessment methods have not demonstrated this distinction. For this reason, a separate Link NCA study has been proposed for pastoral livelihood zones.

For more information, email Kevin Muteti at Fsns.ke@acf-international.org or Jacob Kipruto at Hodnut.ke@acf-international.org.

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ENN updates.....



ENN's new strategy 2016-2020

ENN has just finalised a new five year strategy, governing the period 2016-2020. Its development was informed by a recent comprehensive evaluation of ENN conducted by a group of independent consultants (Lister S et. al, 2015). The contents have also been informed through the development of a theory of change (TOC) which articulates how ENN expects its activities and interventions to impact on improved nutrition policy and programming (see Figure 1).

This strategy period sees a consolidation of recent changes in ENN's operations, including a broadening of its focus from populations suffering humanitarian crises to those at high risk of malnutrition (emergency-affected, living in fragile or conflict-affected states, and living in countries with a high burden of malnutrition) and its new role in embedded knowledge management (in

the Scaling Up Nutrition Movement and the Global Nutrition Cluster). The thematic areas that ENN works on are already evolving to reflect the changing global context and will continue to keep step with developments over the coming years.

During 2016 to 2020, ENN will implement activities according to three major workstreams:

Workstream 1: Experience sharing, knowledge management and learning.

This includes ENN's core products: Field Exchange, Nutrition Exchange and en-net, as well as embedded knowledge management within two key global nutrition fora (the Scaling Up Nutrition Movement (SUN) and the Global Nutrition Cluster (GNC)).

Workstream 2: Information and evidence on under-researched nutrition issues.

This comprises ENN's research and review work on filling gaps in the evidence base for improved nutrition policy and programming.

Workstream 3: Discussion, cooperation and agreement.

This will be made up of a range of activities for discussing and building agreement and consensus on key nutrition issues. It includes ENN's participation in and hosting of meetings, its activities as facilitator of the IFE Core Group and its participation in the development of training materials and guidance, including normative guidance.

Through its delivery of these workstreams, ENN expects to achieve: (i) an expansion in its network and an increase in their engagement; (ii) the identification of key priority themes and an understanding of their importance; (iii) the enhanced availability of knowledge and know-how in a range of formats accessible to all network members; and (iv) improved consensus on agreed actions and key ways forward to improve nutrition policy and programming.

By achieving these outcomes, ENN seeks to advance its core aim of more effective nutrition policy, programming and institutional architecture.

As such, this five-year strategy represents an evolution rather than revolution from ENN's current way of working. However, there are a number of innovations that include:

- A commitment to faster dissemination of information and experiences through online publication of articles, reports and briefs, as soon as they are ready;
- The development of SUN Movement specific thematic areas on en-net;
- Increased translation of Field Exchange and en-net;
- Work to further build and sustain the network that ENN both serves and draws upon by increasing outreach; in particular to countries at the national and sub-national level, to increase uptake of ENN products;
- An increased focus on identifying mechanisms to improve uptake of reviews and research in order to increase the use of evidence for policy-making and programming;
- The development of a results framework which goes beyond measuring interventions to assessing progress towards achieving outcomes and impact.

ENN Strategy 2016-2010. Available at www.ennonline.net/ennstrategy

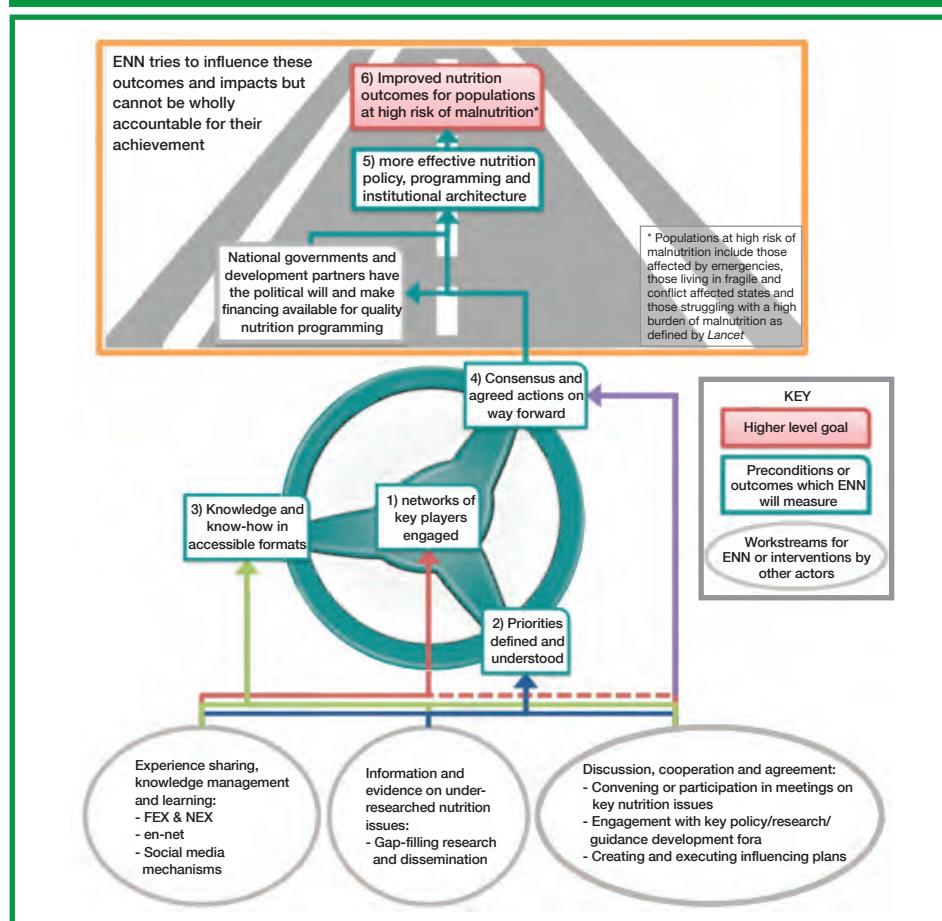
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Lister, S et. al, 2015. *Evaluation of the Emergency Nutrition Network*, Mokoro Ltd.
<http://www.ennonline.net/file/download/2398>

ENN is a UK registered charity, international in reach, focused on supporting populations at high risk of malnutrition. ENN aims to enhance the effectiveness of nutrition policy and programming by improving knowledge, stimulating learning, building evidence, and providing support and encouragement to practitioners and decision-makers involved in nutrition and related interventions.

ENN is both a core team of experienced and academically able nutritionists and a wider network of nutrition practitioners, academics and decision-makers who share their knowledge and experience and use ENN's products to inform policies, guidance and programmes in the contexts where they work.

Figure 1 ENN's theory of change





En-net update

By Tamsin Walters, en-net moderator

Over the past four months (1st October 2015 to 17th January 2016), 56 questions have been posted on en-net generating 206 responses. Thirty-seven vacancy announcements have been posted, which have accumulated over 7,000 views; and four upcoming trainings.

SUN en-net was launched in November 2015 with discussions, including:

- Use of information and evidence in policy-making for nutrition
- What is the experience of SUN Movement networks in advocacy to governments to create specific budget lines for nutrition programmes?
- How can multiple Government sectors become engaged in planning and costing national nutrition efforts?
- How can parliamentarians be mobilised to help achieve national nutrition objectives?

Follow and join the discussions here:
<http://www.en-net.org/sun>

Mark Myatt shared a recently published article on Mid Upper Arm Circumference (MUAC) and weight change during treatment for severe acute malnutrition (SAM) (Binns et al, 2005). The study found that changes in weight and MUAC observed during treatment for SAM in outpatient therapeutic programmes were closely correlated in data from three different country contexts.

The potential for replacing weight monitoring with MUAC monitoring would allow further decentralisation of CMAM services if it were to enable more community health workers (CHWs) to monitor children's progress and recovery. To this end, work is ongoing

by several agencies and individuals to develop a tool that could be safely used by CHWs with limited literacy and numeracy skills. The International Rescue Committee (IRC) acknowledged the work of Alfred Zerfas (Zerfas, 1975) on a longitudinal MUAC tape, as an inspiration to their current initiatives within the Integrated Community Case Management (iCCM) programme to develop a simplified tool to monitor children under treatment from admission to discharge that does not require literacy or numeracy. An early prototype is shown below.

Over the last year, IRC have gone through several iterations and are collaborating with the organisation Quicksand to field test several prototypes with end users. IRC will begin their next field test in January 2016 and hope to write up and share their experiences soon. Research plans are in progress between IRC, UNICEF and Johns Hopkins University on the effectiveness of use of this simplified toolkit by low-literate iCCM CHWs.

Other promising initiatives include work by ALIMA, entitled 'MUAC = Mothers Understand And Can do it' and work on a MUAC bangle/bracelet by Action Contre la Faim (ACF). Both of these are focused on mothers using MUAC classification devices. MSF is working with others to produce broad (2.5 cm) straps.

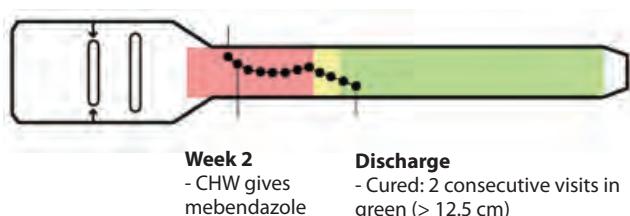
It was agreed that sharing ideas and draft versions of monitoring tapes would be a productive way forward. If others are working on similar initiatives please join the discussion at <http://www.en-net.org/question/2310.aspx> or get in touch directly with IRC to share ideas and experience.

To join any discussion on en-net, share your experience or post a question, visit www.en-net.org.uk. As a bonus in the coming months, watch out for an upcoming thematic discussion on nutrition and WASH (water, sanitation and hygiene) linkages, hosted by the Sustainable Sanitation Alliance (SuSanA) in March (see news item in this edition). A direct link to the discussion will be posted on en-net.

Finally, during this period, Mark Myatt stepped down as an en-net expert moderator, having invested huge energy in responding to field requests in record time. He joined the en-net moderator team when it launched in 2009 so is due a breather! On behalf of ENN and all the community that engaged in the forum, we extend warm thanks for his support to en-net.

Contributions

Mark Myatt, Alfred Zerfas, Casie Tesfai



NUTRITION EXCHANGE

Issue 6 of the ENN's publication, Nutrition Exchange, will be released in May 2016 in English and thereafter, in French, Arabic and Spanish. The editors have received eight original articles from national and sub-national programme implementers so far, and would be happy to hear from you if you wish to submit an idea for a short article between February and March 2016. The editors can support you with writing an article if this is needed. Preference is given to articles written by national staff. Please contact Carmel Dolan, Co-editor, email: carmel@ennonline.net

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Children fetch water in Ethiopia.©IFPRI/Milo Mitchell

About ENN

ENN is a UK registered charity, international in reach, focused on supporting populations at high risk of malnutrition. ENN aims to enhance the effectiveness of nutrition policy and programming by improving knowledge, stimulating learning, building evidence, and providing support and encouragement to practitioners and decision-makers involved in nutrition and related interventions.

ENN is both a core team of experienced and academically able nutritionists and a wider network of nutrition practitioners, academics and decision-makers who share their knowledge and experience and use ENN's products to inform policies, guidance and programmes in the contexts where they work.

ENN implements activities according to three major workstreams:

Workstream 1: Experience sharing, knowledge management and learning. This includes ENN's core products: Field Exchange, Nutrition Exchange and en-net, as well as embedded knowledge management within two key global nutrition fora (the Scaling Up Nutrition Movement (SUN) and the Global Nutrition Cluster (GNC)).

Workstream 2: Information and evidence on under-researched nutrition issues. This comprises ENN's research and review work on filling gaps in the evidence base for improved nutrition policy and programming.

Workstream 3: Discussion, cooperation and agreement. This includes a range of activities for discussing and building agreement and consensus on key nutrition issues. It includes ENN's participation in and hosting of meetings, its activities as facilitator of the IFE Core Group and its participation in the development of training materials and guidance, including normative guidance.

ENN's activities are governed by a five year strategy (2016-2020), visit www.ennonline.net

The Team


Jeremy Shoham and
 Marie McGrath are
 Field Exchange Co-
 Editors and
 Technical Directors.



Carmel Dolan and Emily
 Mates are Technical
 Directors.



Chloe Angood is a
 nutritionist working
 part-time with ENN
 on a number of
 projects and
 supporting Human Resources.



The ENN welcome
 Claire Reynolds who
 joins ENN as Senior
 Operations Manager
 based in Oxford.



Judith Fitzgerald is
 the Operations
 and Mailing
 Assistant at ENN,
 based in Oxford.



Clara Ramsay is
 the ENN's
 Finance
 Assistant, based
 in Oxford.



Peter Tervet is
 ENN's Senior
 Finance
 Manager, based
 in Oxford.



The ENN welcome Tui Swinnen,
 who has joined ENN as Global
 Knowledge Management
 Coordinator, to lead on ENN's
 support to knowledge
 management of the SUN Movement.



Orna O'Reilly designs
 and produces all of
 ENN's publications.



Phil Wilks
www.fruitysolutions.com
 manages ENN's website.



The ENN team extend best wishes to Thom Banks, ENN's Project Operations Manager, who recently left the ENN, to move to a new project management position at LSHTM. Thom joined the office team in 2010 and has supported all aspects of an ever-changing and challenging workload, always with a friendly 'can-do' attitude. We wish him every success in his career and look forward to updates at ENN Christmas parties.

Field Exchange supported by:


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The Emergency Nutrition Network (ENN) is a registered charity in the UK (charity registration no: 1115156) and a company limited by guarantee and not having a share capital in the UK (company registration no: 4889844). Registered address: 32, Leopold Street, Oxford, OX4 1TW, UK. ENN Directors/ Trustees: Marie McGrath, Jeremy Shoham, Bruce Laurence, Nigel Milway, Victoria Lack and Anna Taylor.