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The Evidence for Maternal and Child Nutrition Interventions

Gap Analysis



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Introduction

The Nutrition Embedding Evaluation Program (NEEP) is a four-year project led by PATH and funded by the UK Department for International Development (DFID). The programme aims to build the evidence base for what works in improving nutrition by conducting credible, robust evaluations of innovative interventions implemented by civil society organisations (CSOs) and designing impact evaluations of DFID nutrition programmes.

NEEP has four major objectives:

- Build DFID and partner organisations' abilities to identify and measure the results of their investments in nutrition-related interventions.
- Address knowledge gaps on the effectiveness and cost-efficiency of nutrition interventions and how they can be delivered at scale.
- Support CSOs to strengthen their ability to carry out effective evaluations of their nutrition-related interventions.
- Disseminate evidence of best practice for impact.

NEEP is designed to contribute to the global evidence base with respect to what works in improving maternal and child nutritional outcomes. The programme therefore prioritises providing funding and technical assistance for evaluation activities to partners that are implementing nutrition-specific or nutrition-sensitive interventions where the evidence is lacking.

An analysis of the gaps in evidence is a critical step to guide the setting of priorities for which types of evaluations to support.

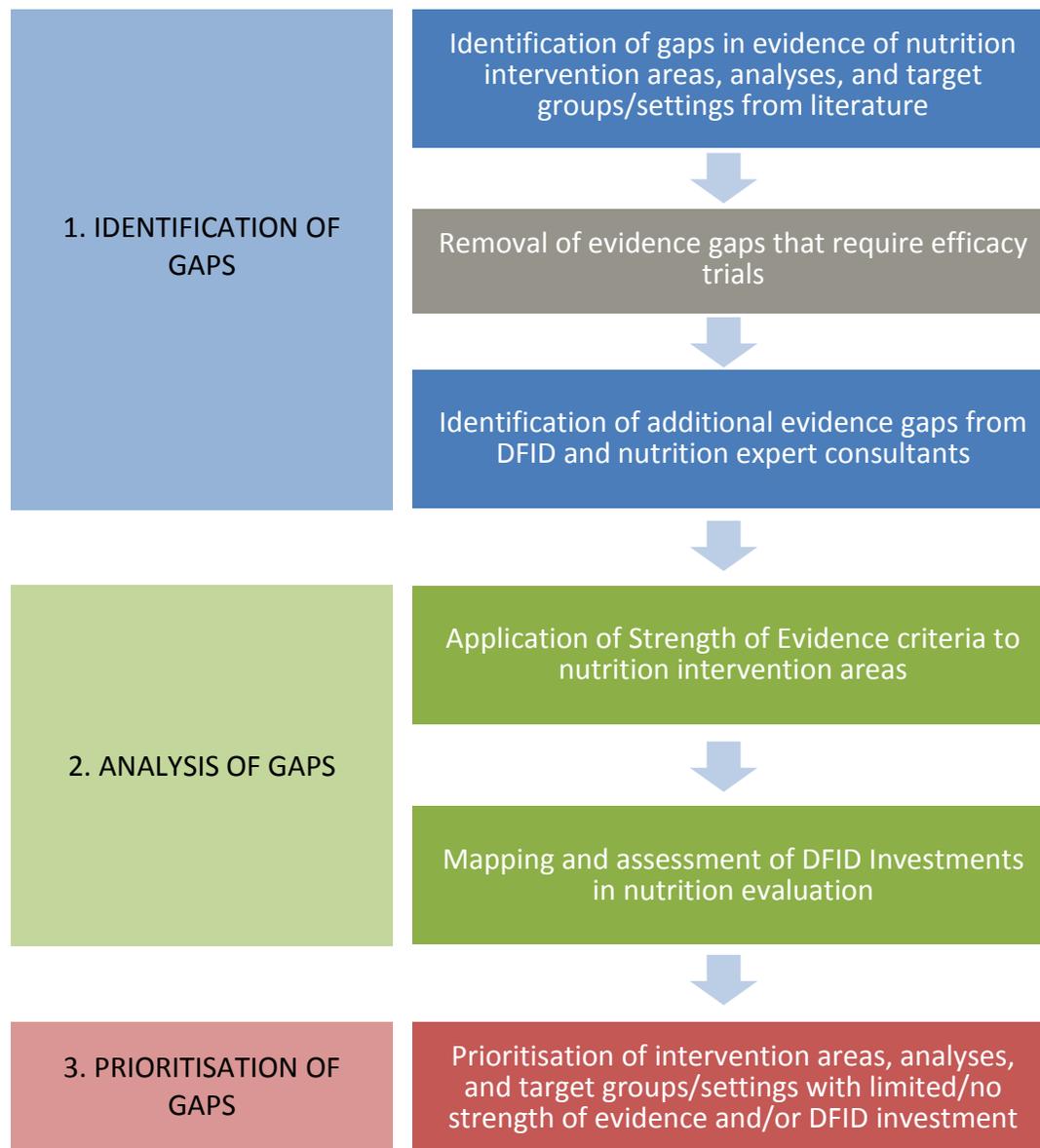
Methods

Work to identify high-priority areas for investment in evidence-building for nutrition occurred in three basic stages:

1. Identifying potential research gaps for nutrition-related approaches.
2. Assessing the extent of the gap in evidence and the level of existing investment to build evidence.
3. Determining specific evidence gaps to prioritise for evaluation support.

This process is illustrated in Figure 1 and described in detail in the following pages.

Figure 1. Process of nutrition gap identification, analysis and prioritisation.



Stage 1: Identification of gaps

The first step in this stage involved reviewing relevant literature to identify research gaps or areas for further research that have already been highlighted by the international nutrition community. The primary source of information was the 2013 *Lancet* series on maternal and child nutrition¹, which provides the most recent summary of the state of the evidence for nutrition. More recent reviews were also examined, including a Cochrane review on the nutritional outcomes of water, sanitation, and hygiene interventions, a

¹ Series on Maternal and Child Nutrition. *The Lancet*. 2013. Available at: <http://www.thelancet.com/series/maternal-and-child-nutrition>.

number of papers commissioned by DFID that have reviewed evidence relating to nutrition, and a review of the evidence for interventions in humanitarian contexts^{2,3,4,5,6}.

Gaps identified in the peer-reviewed literature were captured in an Excel spreadsheet and classified according to:

- Intervention type.
 - Nutrition-specific.
 - Nutrition-sensitive.
 - Enabling environment.
- Target population (for only nutrition-specific interventions).
- Type of research required to address evidence gap (for only nutrition-specific interventions).
 - Efficacy research demonstrating intervention success.
 - Effectiveness research demonstrating implementation success.
- Measurement level.
 - Impact: Benefits during the life-course from optimum foetal and child nutrition and development (e.g., mortality, cognitive development, and school performance).
 - Outcome: Optimum foetal and child nutrition and development (e.g., height-for-age Z-scores, weight-for-height Z-scores, weight-for-age Z-scores, micronutrient status, and birth weight).
 - Determinant: Determinants of optimum foetal and child nutrition (e.g., diet, behaviour, health, and policy environment).

Classification of measurement level was based on the conceptual framework included in the 2013 *Lancet* series (see Figure 2).

Interventions still at the stage of requiring efficacy trials were excluded at this stage because support for this type of study is outside the scope of NEEP.

The second step in this stage involved consultation with experts in relevant fields to identify additional research gaps that have not already been discussed in the published literature. This group included PATH nutrition experts, DFID advisers, and additional nutrition evaluation donors and implementers.

² Henttinen A. *Evaluation Thematic Brief: Nutrition*. London: UK Department for International Development, Evaluation Support Group; 2013.

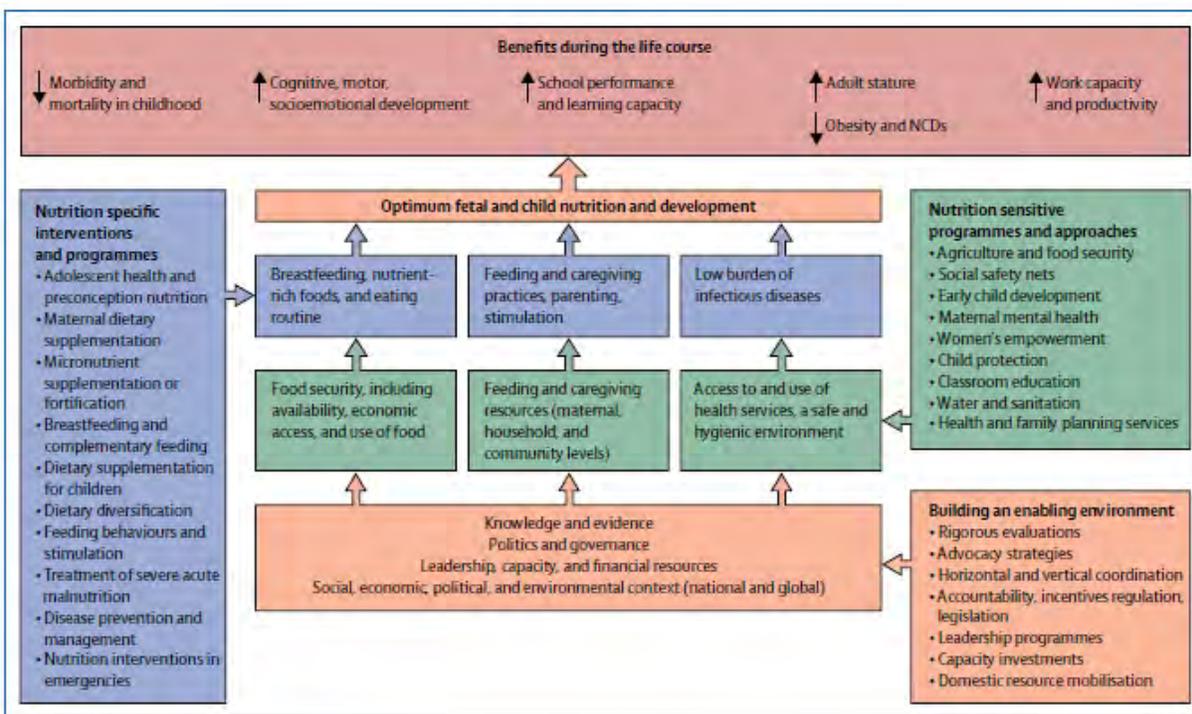
³ Hawkes C, Turner R, Waage J. *Current Planned Research on Agriculture for Improved Nutrition: A Mapping and a Gap Analysis. Report for DFID*. Aberdeen, Scotland: Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH) and Centre for Sustainable International Development, University of Aberdeen; 2012.

⁴ Van den Bold M, Quisumbing A, Gillespie S. *Women's Empowerment and Nutrition: An Evidence Review*. [IFPRI Discussion Paper 01294]. Washington, DC: International Food Policy Research Institute; 2013.

⁵ Dangour AD, Watson L, Cumming O, et al. Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children (Review). *The Cochrane Database of Systematic Reviews* 2013, Issue 8. Available at: <http://researchonline.lshtm.ac.uk/1119171/>.

⁶ Blanchet K. *An Evidence Review of Research on Health Interventions in Humanitarian Crises*. London: London School of Hygiene and Tropical Medicine; November 2013.

Figure 2. Framework for actions to achieve optimum foetal and child nutrition and development.



Source: *Lancet* series on maternal and child nutrition.¹

Stage 2: Analysis of gaps

After the project team identified evidence gaps from the recent literature, evidence review papers, and expert consultation, it applied a systematic method to assess the strength of the current evidence base in the intervention areas identified. The assessment methodology was largely derived from DFID guidance on how to assess the strength of evidence⁷.

A scoring system was developed to assess the evidence base for each nutrition intervention based on the quality, size, context, and consistency of the evidence, as shown in Table 1.

⁷ UK Department for International Development (DFID). *Assessing the Strength of Evidence: DFID Practice Paper*. London, UK: DFID; 2013.

Table 1. Scoring system to assess strength of evidence.

Criteria	Score				
	0		1	2	
Quality: Design of studies included in evidence base	Non-experimental		Experimental	Systematic reviews / meta-analyses	
Quality: Author assessment of quality	Low		Moderate	High	
Size	Low (<10)		Medium (10–34)	Large (>35)	
Context	Context-specific		Global, specific populations	Global	
Consistency	Inconsistent results			Consistent results	
Total	0	1–3	4–6	7–9	10
Strength of evidence	No evidence	Limited	Medium	Strong	Very strong

The project team also assessed current investments in nutrition evaluation for each identified gap area. Nutrition-related evaluations that are currently being supported directly by DFID and indirectly through multi-donor mechanisms (including the World Bank's Strategic Impact Evaluation Fund, Transform Nutrition, and CGIAR Fund) were mapped against the gaps identified in Stage 1. This information was derived from consultations with DFID and other stakeholders.

The level of investment in evidence-building for each of the gap areas was also assessed. A 'DFID evaluation investment score' was assigned for each gap area based on:

- Quality: The number of impact evaluations currently being done on that area.
- Size: The number of evaluations in the intervention area.
- Coverage: The number of regions and countries in which evaluations are being done.

Gap areas were scored as having a 'very strong', 'strong', 'medium', 'limited', 'weak', or no level of investment in evidence building based on the composite score of these three components.

Stage 3: Prioritisation of gaps

The gaps in nutrition evidence and the investment gaps in evaluation were then mapped to identify priority areas for nutrition evaluation.

Results

Identified gaps

Table 2 summarises the nutrition-related research gaps identified from the review of relevant literature and consultation with experts.

Table 2. Identified gaps from review of literature and expert consultation.

Category	Gap area	Specific intervention
Nutrition-specific intervention areas	Implementation research	Iodine supplementation for women of reproductive age
		Kangaroo Mother Care
		Delayed cord clamping
		Breastfeeding promotion among working women
		Complementary feeding
		Optimal community-based package to treat severe acute malnutrition
		Treatment of acute malnutrition in infants <6 months
		Treatment of moderate acute malnutrition
		Micronutrient powders
		Lipid-based nutrient supplementation
Nutrition-sensitive intervention areas	Agriculture	Homestead food production
		Bio-fortification
		Livestock production/aquaculture
	Social protection	Conditional cash transfers plus other safety nets
		Microfinance
	Early childhood development	Responsive feeding
Water, sanitation, and hygiene (WASH)		
Women's empowerment		
Enabling-environment intervention areas		Social accountability mechanisms
		Intersectoral action
		Agricultural policy interventions
	Delivery platforms for scale-up of nutrition interventions	Community-based platforms
		Fortification
	Child Health Days	
Private-sector engagement	Media approaches (TV, radio, mobile phones)	
Analyses		Cost-effectiveness
		Nutritional outcomes of nutrition-sensitive programs
		Neurodevelopmental outcomes of nutrition programs
		Impact of packages of nutrition interventions
		Agriculture research chain
Target group/settings	Nutrition in crisis settings	Alternatives to blanket supplementary feeding programmes
		Management of infant and young child feeding in emergencies
		Adolescent girls
		Interventions to change behaviour of men
		Consumers of agricultural products (non-rural, rural workers)

Nutrition-specific interventions

Evidence on the efficacy of nutrition-specific interventions is relatively well developed, although there are several emerging interventions that require further trials to demonstrate nutritional and developmental impact. For the purposes of this gap analysis, these interventions have been excluded because support for efficacy research is not feasible within the scope of NEEP.

Several nutrition-specific interventions that have been demonstrated to be efficacious still require rigorous effectiveness research, particularly within certain target groups or contexts. These are:

- Alternative strategies for maternal iodine supplementation in different settings.
- Kangaroo Mother Care in community settings.
- Feasibility of implementing delayed cord clamping at scale through health systems.
- Promotion of exclusive breastfeeding amongst working women.
- Complementary feeding in food-insecure settings.
- Optimal community-based treatment for severe acute malnutrition (SAM; including role of additional components such as provision of antibiotics).
- Treatment of acute malnutrition in infants <6 months.
- Treatment of moderate acute malnutrition.
- Micronutrient powders.
- Lipid-based nutrient supplements.

Nutrition-sensitive interventions

The major nutrition-sensitive intervention gap areas that have been identified in the literature and through consultation with stakeholders are:

- Agricultural interventions in general and the following in particular:
 - Biofortification, which has been limited mainly to efficacy research. Delivery research has focused on orange-fleshed sweet potato.
 - Homestead food production. Few studies have measured nutritional outcomes well. Measurement of women's empowerment as a pathway to improved nutrition is also a large evidence gap.
 - Livestock production and aquaculture.
- Social protection interventions, specifically, microfinance and conditional cash transfers.
- Early childhood development interventions, especially responsive feeding.
- Water, sanitation, and hygiene. Few studies have reported on process indicators such as adherence to programmes; evidence on nutritional outcomes is also lacking.
- Women's empowerment as a pathway to



improved nutrition, via agriculture and social protection programmes, especially income-generation interventions such as microfinance.

Experts consulted for this review confirmed findings from the literature that generating evidence on the effectiveness of nutrition-sensitive interventions for improving nutritional status is a high priority.

Enabling-environment interventions

Evidence is needed on the effectiveness of interventions designed to create and sustain an enabling environment for improving nutrition. The following areas have been identified as evidence gaps:

- Social accountability mechanisms (e.g., social audits and community monitoring).
- Private-sector engagement (especially the use of private-sector delivery platforms) to scale up interventions such as mass media and market-based approaches.
- Delivery platforms for scale-up, including community-based platforms, large-scale fortification in developing countries, and Child Health Days.
- Intersectoral action, especially evidence on processes to achieve multisectoral integration at subnational levels.
- Agricultural policy interventions.

Cross-cutting gaps

In addition to the nutrition-specific, nutrition-sensitive, and enabling environment approaches, several cross-cutting issues were identified as requiring further evidence. These were categorised by type of analysis and target group/setting.

Analysis

- Cost-effectiveness of nutrition interventions (multiple examples of where this is needed).
- Measurement of the impact of nutrition-sensitive interventions on nutritional status.
- Measurement of the impact of nutrition-specific and nutrition-sensitive interventions on neurodevelopmental outcomes.
- Measurement of the joint impact of packages of nutrition interventions.
- Measurement along the entire agricultural research chain, from agricultural inputs to nutritional status.

Target groups and settings

- Nutrition interventions in crisis settings (specific examples were identified from the recent review of the evidence for humanitarian interventions).
- Effectiveness of interventions designed to change the behaviour of men.
- Effectiveness of interventions targeted towards adolescent girls.
- Evidence on consumers of agricultural products, specifically those in urban contexts, and on rural workers.

Analysis of gaps

Assessment of strength of evidence

The strength-of-evidence assessment confirmed that the existing evidence base for the gaps identified in stage 1 is not particularly strong. There is good evidence of efficacy for many of the nutrition-specific interventions, and for some there is also reasonable evidence for effectiveness. However, there are clear gaps for some intervention types. For example, although the strength of evidence for breastfeeding promotion is strong, there is very limited evidence for interventions to support breastfeeding among working women.

None of the nutrition-sensitive intervention areas were assessed as having ‘very strong’ or ‘strong’ strength of evidence. Water, sanitation, and hygiene; responsive feeding; and conditional cash transfers were scored as having a ‘medium’ strength of evidence. All of the agricultural interventions—including homestead food production, livestock, aquaculture, and bio-fortification—were scored as a ‘limited’ strength of evidence, as was microfinance.

Most of the enabling environment intervention areas assessed were determined to have a ‘limited’ strength of evidence. There is no evidence on intersectoral strategies. The strength of evidence on delivery platforms to scale up nutrition interventions is varied. Fortification has a ‘strong’ evidence base, community-based platforms have a ‘medium’ evidence base, and Child Health Days were scored as having a ‘limited’ evidence base.

Investments in nutrition-related evaluation

Table 3 (see page 11) shows the level of investment by DFID in evaluations for each gap area where nutrition evaluation is under way or planned.

Nutrition-specific interventions

As shown in Table 3, DFID is currently not heavily investing or planning to invest in nutrition evaluation for nutrition-specific interventions. There is only one evaluation in the nutrition-specific space that DFID is supporting, which is for a complementary feeding programme.

Nutrition-sensitive interventions

There are substantial current and planned nutrition-sensitive evaluation investments by DFID but also some significant gaps. The strongest area of investment is in the broad category of social protection. Most social protection evaluations are examining the nutrition-related outcomes associated with cash transfer programmes. There is a lower level of investment in evaluation of conditional cash transfer (this area was scored as ‘medium’).



PATH/Seema Kapoor

Table 3. Level of investment by DFID in evaluation of identified gap areas.

Category	Specific intervention	DFID evaluation investment score
Nutrition-specific intervention areas	Iodine supplementation for women of reproductive age	None
	Kangaroo Mother Care	None
	Delayed cord clamping	None
	Breastfeeding promotion among working women	None
	Complementary feeding	Limited
	Optimal community-based package to treat severe acute malnutrition	None
	Treatment of acute malnutrition in infants <6 months	None
	Treatment of moderate acute malnutrition	None
	Micronutrient powders	None
	Lipid-based nutrient supplementation	None
Nutrition-sensitive intervention areas	Agriculture	---
	Homestead food production	None
	Bio-fortification	Medium
	Livestock production/aquaculture	Weak
	Social protection	Very strong
	Conditional cash transfers plus other safety nets	Medium
	Microfinance	None
	Early childhood development	Strong
	Responsive feeding	None
	Water, sanitation, and hygiene (WASH)	Medium
Women's empowerment	Weak	
Enabling-environment intervention areas	Social accountability mechanisms	Limited
	Intersectoral action	None
	Agricultural policy interventions	None
	Delivery platforms for scale-up	Strong
	Community-based platforms	Limited
	Fortification	Limited
	Child Health Days	None
	Private-sector engagement	Medium
Media approaches (TV, radio, mobile phones)	Medium	
Analyses	Cost-effectiveness	Strong
	Nutritional outcomes of nutrition-sensitive programs	Strong
	Neurodevelopmental outcomes of nutrition programs	Strong
	Impact of packages of nutrition interventions	Very Strong
	Agriculture research chain	None
Target group/setting	Nutrition in crisis settings	Limited
	Alternatives to blanket supplementary feeding programmes	None
	Management of infant and young child feeding in emergencies	None
	Adolescent girls	Limited
	Interventions to change behaviour of men	Limited
Consumers of agricultural products (nonrural, rural workers)	None	

Early childhood development evaluation from a nutrition perspective was scored as ‘strong’, mainly due to a number of evaluations supported through the SIEF initiative. Responsive feeding as a specific intervention is not currently being examined. Biofortification was assessed as having a ‘medium’ level of existing investment for nutrition evaluation (mainly through HarvestPlus), as was water, sanitation, and hygiene. Livestock production/aquaculture as a subcategory within agriculture was assessed as having a weak of evaluation investment.

Finally, evaluation related to women’s empowerment as a pathway to improved nutrition in social protection and agriculture programming is also ‘weak’. Only one evaluation is currently looking at this dimension.

Enabling-environment interventions

DFID’s investment in generating evidence on the effectiveness of interventions that create an enabling environment varies. Although there is a strong level of investment in evaluating delivery platforms for scale-up of nutrition interventions, investment in evaluation of community-based delivery platforms and large-scale fortification is limited.

Investment in evaluation of private-sector engagement in improvement of nutrition outcomes was scored as ‘medium’, and social accountability mechanisms evaluation is ‘weak’.

Cross-cutting gaps

Analysis: Results from the DFID investment analysis of cross-cutting gaps should be interpreted cautiously because the current and planned analyses may not be proportionally distributed amongst the interventions that require such analyses.

Evaluation by DFID of the joint impact of nutrition interventions is scored as ‘very strong’ and is distributed among combinations of nutrition-specific interventions and combinations of nutrition-specific interventions with nutrition-sensitive interventions, including safety net programmes, agricultural interventions, and early childhood development (ECD) programs. Measurement of nutritional outcomes of nutrition-sensitive interventions is scored as ‘strong’; half of the evaluations examining nutrition outcomes are conducted for social protection programmes, and the remaining are in biofortification, WASH, and ECD. Nutritional outcomes are not being measured in agricultural interventions other than biofortification, nor in women’s empowerment programming.

Cost-effectiveness is also scored as ‘strong’, with evaluations in integrated nutrition intervention packages, mobile health, unconditional cash transfers, biofortification, and ECD. DFID is not conducting cost-effectiveness analyses of nutrition-specific programming or nutrition interventions in crisis settings.

Neurodevelopmental outcomes are mainly limited to ECD programmes in DFID’s portfolio, with no evaluations for nutrition-specific interventions.

Target groups and settings: DFID and DFID-supported evaluations do not currently adequately address the target groups and settings for which evidence gaps have been identified. Nutrition evaluations for interventions that are targeted towards adolescent girls and men are both limited. Evaluations of interventions that include men are in social protection and ECD and limited to South Asia. Evaluations of interventions that target adolescent girls’ nutrition only include a package of nutrition interventions, and a social protection program. There are no evaluations that address consumers of agricultural products in urban contexts. Evaluation of nutrition programming in crisis settings is ‘limited’, and includes programmes in the Middle East and South Asia regions only. Intervention areas include safety nets and an integrated WASH, nutrition promotion, and basic health package.

Conclusions: Determination of priorities

Table 4 maps the strength of nutrition evidence against the DFID investment assessment.

Table 4. Nutrition evaluation high-priority intervention areas, analyses, and target groups/settings.

Nutrition-specific intervention areas	Behaviour change interventions	Kangaroo Mother Care in community settings
		Breastfeeding promotion among working women
	Micronutrient interventions	Iodine supplementation for women of reproductive age
	Complementary/ therapeutic feeding interventions	Community-based management of severe acute malnutrition
		Treatment of acute malnutrition in infants <6 months
		Treatment of moderate acute malnutrition
Nutrition-sensitive intervention areas	Women's empowerment	
	Agriculture	Homestead food production
		Livestock production/aquaculture
Social protection	Microfinance	
Enabling-environment intervention areas		Social accountability mechanisms
		Private-sector engagement
	Delivery platforms for scale-up of nutrition interventions	Community-based platforms
		Child Health Days
	Agricultural policy interventions	
Analyses		Cost-effectiveness
		Agriculture research chain
		Nutritional outcomes of nutrition-sensitive programs
		Neurodevelopmental outcomes of nutrition programs
Target group/setting	Nutrition in crisis settings	Alternatives to blanket supplementary feeding programmes
		Management of infant and young child feeding in emergencies
		Adolescent girls
		Interventions to change behaviour of men
		Consumers of agricultural products (nonrural, rural workers)

Nutrition-specific interventions

Although there are several evidence gaps in nutrition-specific evaluation, DFID is currently not investing heavily in nutrition-specific evaluation research outside of packages of nutrition interventions. Therefore, NEEP should consider funding evaluations where technical gaps still exist in nutrition-specific evaluation. The largest gaps with respect to both evidence and investments are:

- Kangaroo Mother Care in community settings.

- Breastfeeding amongst working women in developing countries.
- Maternal iodine supplementation strategies.
- Community-based management of severe acute malnutrition.
- Treatment of acute malnutrition in infants < 6 months.
- Treatment of moderate acute malnutrition.

Nutrition-sensitive interventions

Further investment in nutrition-sensitive evaluation broadly has been determined as a priority by all stakeholders consulted, and DFID is investing in several areas of nutrition-sensitive evaluation. However, because many of these evaluations are not yet complete, the consistency of results is not yet known. There remain several areas where NEEP can contribute to building evidence. The areas where investment and evidence gaps are the greatest are:

- Women's empowerment as a pathway to improved nutrition.
- Homestead food production.
- Livestock production/aquaculture.
- Microfinance.

Enabling-environment interventions

The impact of enabling-environment interventions is an area where many gaps remain, both in the evidence base and DFID-led initiatives. The areas with the largest gaps include:

- Social accountability mechanisms.
- Private-sector engagement.
- Delivery platforms for scale-up.
- Agricultural policy interventions.

Cross-cutting areas

In addition to intervention areas, specific types of analyses should be encouraged when appropriate. Although DFID is including many of these analyses in its current evaluations, these do not span all nutrition-specific, nutrition-sensitive, and enabling-environment interventions.

Nutrition evaluation amongst specific target groups and in certain settings should also be prioritised. These include:

- Nutrition in crisis settings.
- Men.
- Adolescent girls.
- Consumers of agricultural products, especially urban populations.

Recommendations for future analysis

This analysis presents an objective assessment of nutrition evidence gaps. Recommended next steps include a formal ranking of the identified gaps to prioritise evaluation based on the value of evidence and potential impact of evidence-based program implementation. The recommended process of prioritisation necessitates inputs from a global expert group representing the diverse nutrition community, including researchers, implementers, governments, and donors.

To access the full results and supporting annexes, please visit the [NEEP webpage](#).