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Acronyms

BFCI	Baby-Friendly Community Initiative
BFHI	Baby-Friendly Hospital Initiative
CARD	Council for Agricultural and Rural Development
CCWC	Commune Committee for Women and Children
CDHS	Cambodia Demographic and Health Survey
FTRM	Fast Track Road Map for Improving Nutrition 2014–2020
HEF	Health Equity Fund
HMIS	Health Management Information System
MNP	Multiple micronutrient powder
MPA	Minimum Package of Activities
MOH	Ministry of Health
MOP	Ministry of Planning
MUAC	Mid-upper-arm circumference
OD	Operational district
ORT	Oral rehydration therapy
SAM	severe acute malnutrition
ToT	training of trainers
USAID	United States Agency for International Development
USI	Universal salt iodization
VHSG	Village Health Support Group
RACHA	Reproductive and Child Health Alliance
HKI	Helen Keller International

Preface

For 5 million Cambodians, malnutrition drives a vicious cycle of increased mortality and poor health, retarded cognitive and physical growth, diminished learning capacity and ultimately lower work performance, productivity and earnings. Cambodia's expanding economy, along with rising incomes and easier access to food will eventually reduce this unacceptable status quo. However, despite positive economic trends, the current prevalence of malnutrition stubbornly continues to present a significant public health threat according to indicators established by the World Health Organization.

The Ministry of Health (MOH) along with a range of partners has developed a comprehensive national nutrition strategy to guide delivery of a range of low-cost effective interventions to reduce this national human, social and economic burden. To support this strategy, the National Nutrition Programme in close consultation with relevant MOH departments and other national agencies and development partners developed the 'Fast Track Road Map for Improving Nutrition 2014–2020' (FTRM). The road map supports the National Nutrition Strategy by identifying key interventions that can be implemented at a significant scale within the next six years to reduce the national burden of malnutrition.

The FTRM sets objectives and general strategies to expand a core package of nutrition-specific interventions that dramatically increase services to protect women and children during the 1,000-day window of increased risk and vulnerability from pregnancy to age 24 months.

Ensuring this ambitious package is truly 'fast tracked' requires an assessment of financing requirements. What might it cost to implement each FTRM component? What are the major cost drivers? How will financing be distributed among domestic sources and development partners? To provide some preliminary answers to these questions, this paper, supported by the Council for Agricultural and Rural Development (CARD), aims to identify the key interventions, outline costs for the six-year FTRM, and suggest an approach to shared financing among appropriate domestic agencies and international donors as well as private companies and individuals. This provides partners with a framework to assess the feasibility and affordability of the various FTRM interventions and expeditiously move forward to reduce the burden of malnutrition in Cambodia.

This FTRM has prepared technical support and active contribute by CARD, MoP, UNICEF, RACHA, and HKI. UNICEF has provided financial support for development and printing of this document.

Phnom Penh, 11 May 2015

Executive Summary

The FTRM is designed to support Cambodia's National Nutrition Strategy by identifying key interventions that can be implemented at a significant scale within the next six years to reduce the national burden of malnutrition. Eight distinct FTRM components offer feasible strategies to: address immediate nutrition needs of high-risk groups; offer preventative education, micronutrient supplements and therapies; reach wide segments of national consumers via fortification; and tackle institutional, information and financial barriers.

Ensuring this ambitious package is truly 'fast-tracked' requires a clear picture of costs. As a step towards full operational planning and budgeting, this paper offers a conceptual budget, which includes component-by-component implementation scenarios and associated line-item budget to define the scale of FTRM programmes and implied magnitude of costs. These include:

- Components 1 and 2: Addressing nutritional issues in pregnancy are a crucial component of quality prenatal care. Aim is to reach 95 per cent of pregnant and lactating women with a package of nutrition education and micronutrient supplementation. This requires building health staff ability to offer effective nutrition counselling and supplements as well as strategies to promote access to health services and products. *Six-year cost: US$15.3 million; recurring cost at scale in 2020: US$2.7 million*

- Component 3: Severe acute malnutrition (SAM) remains a serious public health issue in Cambodia. The objective is a ten-fold increase in children receiving appropriate treatment, involving annual screening for 80 per cent of children aged 6 to 59 months and treating up to 25,000 cases. *Six-year cost: US$9.3 million; recurring cost at scale: US$2 million*

- Component 4: Vitamin and mineral deficiencies threaten optimal growth and development of children. National vitamin A supplementation and deworming programmes are well established and cover less than 80 per cent of children aged 6 to 59 months. The FTRM objective is to increase coverage to 90 to 99 per cent. *Six-year cost: US$2.7 million; recurring cost at scale: US$466,000*

- Component 5: Objectives specify "full implementation" of sub-decree 133 and include: ensure compliance of health facilities and private market; implement Baby-Friendly Hospital Initiative (BFHI); and scale-up the Baby-Friendly Community Initiative (BFCI). *Six-year cost: US$4.8 million; recurring cost at scale: US$850,000*

- Component 6: Commune councils represent an opportunity to target nutrition programmes as well as mobilize local financing and human resources. Aim is to raise awareness of commune councils and present opportunities to co-finance and monitor community nutrition programmes, including support to village health support group. *Six-year cost: US$2.2 million; recurring cost at scale: US$67,000*

- Component 7: Food fortification can reach wide segments of the population with crucial

vitamins and minerals. Objective is to develop strategies to sustain mandatory universal salt iodization (USI) aiming to reach 90 per cent of the population and expand fish sauce fortification with iron to reach 70 per cent of consumers by 2020. *Six-year cost: US$3.2 million*

- Component 8: Component 8 works to clarify, inform and monitor the FTRM package of interventions with a portfolio of key operational research and development activities. *Six-year cost: US$3.1 million*

Total six-year costs are estimated at US$41.5 million, including an estimated US$5.7 million in-kind contribution from government staff, leaving a cash financing requirement of US$35.7 million.[1]

Summary Total for Six-Year Conceptual Budget for FTRM Components 1-8 (in US$000,000)								
TOTAL BUDGET	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**	
Component 1, 2	$2.7	$2.2	$2.4	$2.6	$2.8	$2.7	$15.3	38%
Component 3	$1.0	$1.0	$1.6	$1.8	$1.9	$2.0	$9.3	23%
Component 4	$0.4	$0.4	$0.4	$0.5	$0.5	$0.5	$2.7	7%
Component 5	$0.9	$0.4	$0.8	$0.8	$1.1	$0.9	$4.8	12%
Component 6	$0.6	$0.3	$0.8	$0.1	$0.1	$0.1	$2.2	5%
Component 7	$0.4	$0.5	$0.6	$0.8	$0.8	$0.0	$3.2	8%
Component 8	$1.1	$1.1	$0.5	$0.0	$0.4	$0.0	$3.1	8%
Total	$7.1	$6.1	$7.3	$6.5	$7.6	$6.2	$40.7	

Total current government commitments towards the FTRM budget are estimated at approximately US$11.8 million, about 29 per cent of the projected FTRM financing requirement. As indicated in the table on the next page, this represents value of time and effort by government health personnel; estimates of current MOH budget commitments (presumed to be extended six years); and current benefits package offered by the Health Equity Fund (HEF). Another US$1.6 million is projected from private sources, including user fees for health services and consumer payment for fortified products.

A key aim of this budgeting exercise is to define pathways towards full financing from domestic sources by 2020. While in fact this may be difficult to achieve, this paper ventures proposals for roughly US$10 million in new domestic financial commitments over six years via graduated annual increases in financing for specific FTRM components and activities. The proposed six-year increases include: US$6.2 million from MOH; US$1.4 million in targeted expansion of HEF benefits; and US$2.3 million from national and local government to fund community-level activities, including support to village health support group.

1 In economics and finance, **in kind** refers to goods, services, and transactions not involving money or not measured in monetary terms. Conversely to cash contributions, in-kind contributions represent the provision of goods or services valued in monetary terms according to rules agreed upon beforehand by the members of the organization and accounted for as part of the member's contribution to the budget. (http://www.copori.eu/1369.php)

After proposed increases in domestic financing noted above, a gap of US$17.8 million remains of the estimated US$40.7 million FTRM budget. Requests to donors to address this funding gap will predominantly target two specific areas of activity: start-up and capacity-building activities; and cost-sharing arrangements to enable a graduated phase-in of domestic financing for procurement of pharmaceuticals and supplements, community activities and incentives for village health volunteers and others. The funding shortfall also includes US$3.1 million donor support proposed for key operational research outlined in Component 8 and US$2 million for an initiative to mobilize local government financial and human resources outlined in Component 6. The proposed contribution of development partners represents 43 per cent of overall FTRM costs. The conceptual budget envisions donors shouldering US$5.4 million in the initial start-up year, with donor share falling each year as capacity is built and as the timetable for cost-sharing arrangements with government agencies is implemented. Full financing by domestic sources is targeted by 2020. Key financial findings are presented in the table below.

Anticipated Domestic Contributions: In Kind, Currently Committed and Proposed (in US$000,000)								
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**	**Six-Year %**
Government in kind	$0.81	$0.89	$0.94	$1.07	$1.11	$1.02	$5.83	14%
Current government budget[2]	$0.70	$0.71	$0.71	$0.71	$0.72	$0.72	$4.27	11%
Government proposed	$0.02	$0.08	$0.48	$1.29	$1.84	$2.47	$6.17	15%
HEF committed	$0.19	$0.24	$0.27	$0.31	$0.32	$0.34	$1.67	4%
HEF proposed	$0.00	$0.00	$0.06	$0.25	$0.43	$0.64	$1.38	3%
Gov't/Community proposed	$0.00	$0.00	$0.08	$0.41	$0.74	$1.10	$2.34	6%
Total government	$1.73	$1.91	$2.54	$4.04	$5.16	$6.29	$21.67	53%
Other: User fees, consumers	$0.04	$0.10	$0.22	$0.47	$0.58	$0.00	$1.41	3.5%
Total Domestic Contribution	**$1.77**	**$2.01**	**$2.76**	**$4.51**	**$5.74**	**$6.29**	**$23.1**	**57%**
Total FTRM	$7.13	$6.08	$7.25	$6.53	$7.56	$6.16	$40.71	
Financing Gap/Proposed Donor Share	**$5.36**	**$4.07**	**$4.49**	**$2.01**	**$1.82**	**$0.08**	**$17.8**	**43%**

Evidence suggests this investment will generate high social and economic returns. In 2013, research supported by CARD, UNICEF and the World Food programme found malnutrition in Cambodia is associated with US$419 million in annual economic losses from depressed productivity and health care costs. Based on a recent meta-analysis in medical journal *The Lancet* estimating that a comprehensive package of nutrition interventions like FTRM can reduce key indicators of malnutrition by 32 per cent, this suggests a six-year return of about US$370 million on financing for FTRM – an exceedingly attractive benefit-cost ratio.

[2] No budgets were provided. Value of budgets based on reports of procurement scope and international market prices.

I. Introduction:

Fast Track Road Map for Improving Nutrition

While improving the nutrition status of Cambodians remains a broad multi-sectoral effort, the FTRM defines a portfolio of nutrition-specific interventions, mainly implemented via MOH. The intervention portfolio is organized into eight components:

- Components 1, 2, 4 and 5 define a preventative package of interventions to lower rates of malnutrition among pregnant and lactating women and young children, focusing on the first critical 1,000 days of acute risk to survival, growth and development stretching from pregnancy through 5 years of age.
- This life-cycle approach, targeting the 1,000-day window of opportunity, is complemented by Component 7, which includes food fortification. Fortification addresses population-wide micronutrient deficiencies and increases likelihood that women enter pregnancy with good nutrition status, while also working to protect schoolchildren and other vulnerable groups.
- Recognizing that SAM remains a serious public health problem in Cambodia, FTRM Component 3 outlines a comprehensive approach to identifying and treating thousands of children at high risk of mortality and life-long disability.
- Two additional components address institutional constraints to full scale and sustainable implementation of nutrition programmes in Cambodia. Component 6 explores approaches to removing human resource and financial barriers by engaging local governments in programming and funding. Component 8 works to clarify, inform and monitor the FTRM package of interventions with a portfolio of key operational research and development activities.

The scope of FTRM is comprehensive, strategic and national. Components address the immediate needs of high-risk groups such as children at risk of SAM; offer preventative education, micronutrient supplements and therapies to pregnant women and children in the high-risk first 1,000 days; reach wide segments of national consumers who need additional iron and iodine nutrition protection via fortification; and tackle institutional, information and financial barriers. The scale of the target groups, touching virtually all Cambodia's citizens, is summarized in the table below.

FTRM: Mix of Targeted Risk Groups and National Target Groups		
	Target Group	**Objective % Target Covered**
Component 1, 2	Pregnant and lactating women	95%
Component 3	Children with SAM	80%
Component 4	Children 6-59 months	95-99%
Component 5	Mothers/health care system/business	National
Component 6	Commune councils	All councils
Component 7	Fish sauce consumers	70%
Component 8	Research and development (no target group)	n/a

Methodology for FTRM six-year costs

The conceptual budget offered in this paper is based on the proposal and costing of concrete implementation strategies.[3] Since there are no operational documents for the FTRM, this study envisions a series of implementation scenarios and proposes an associated conceptual budget. The conceptual process is based on building reasonable and realistic programme scenarios that address the following implementation-oriented questions:

- What is the product, service or transaction between the health system and the client?
- How many contacts between health system and target groups?
- What is the value and cost of those contacts?
- How many inputs and ingredients need to be procured to cover target populations?
- What special investment in needed to raise demand and lower barriers to access?
- What are the capacity-building needs and customary training approaches?

These questions and potential answers were reviewed with a number of key partners, including UNICEF, Helen Keller International, the Reproductive and Child Health Alliance, MOH and Ministry of Planning (MOP). While these are specific questions, the estimates for annual and six-year costs are only conceptual. It is hoped that this document will be sufficient for further programme planning and resource mobilization and provide a framework for more detailed operational and budget planning. The costing methodology is based the following steps:

- **Identify** and further refine intervention approaches suggested by FTRM and roughly define strategies for capacity building, procurement, programme delivery, demand creation and other necessary activities to achieve the FTRM objectives for each component
- **Gather** appropriate unit costs for products and services acceptable to stakeholders. This includes hard cost of procurement and cash expenditures as well as the in-kind value of time and effort devoted by MOH personnel
- **Construct** an itemized conceptual budget that reflects the level of financing necessary to achieve the objectives defined by the FTRM with the target number of women or children reached with particular products or services defining the necessary inputs and activities
- **Consider** current and potential future domestic financial commitments to supporting FTRM nutrition programmes, including the value of MOH personnel and infrastructure or regulatory support to fortified foods; procurement of nutritional supplements, media and materials; and HEF benefits covering hospitalization or Minimum Package of Activities (MPA 10)
- **Propose** appropriate expansion of national financial commitments to support expanding programme coverage mandated by the National Nutrition Strategy and the FTRM. The theoretical objective is to achieve full domestic financing by the end of the six-year initiative and includes proposing graduated annual targets for transition to domestic financing over 2015–2020

3 While the implementation strategies proposed may not ultimately be the final approach agreed on by national stakeholders, the scale of implementation and the associated costs will be similar to that described in this conceptual budget.

- **Define** gap in national financing requiring commitment of international donors for start-up, research and development, capacity building and initial operations of FTRM programmes

This logic model requires making a number of judgments and data assumptions. These have been reviewed with a number of stakeholders both individually as well as in a workshop consultation held in Phnom Penh in October 2014. Key assumptions are described below and in annexes to this report.

- Size of target groups was taken from MOH Health Management Information System (HMIS). Based on Cambodia Demographic and Health Survey (CDHS) 2010, assume only 91 per cent of target groups access public health services relevant to FTRM (see Annex 1).
- Value of nurse and midwife time and effort is estimated at US$246.63 monthly average salary plus a management and monitoring overhead of 33 per cent for a total of US$367.05. This was converted to day and hourly rates based on 18.8 days per month and eight hours per day (see Annex 2).
- Incentives or per diems for village health support group are assumed at US$2.50 per day based on inputs from the literature as well as several stakeholders, though they vary modestly from programme to programme and place to place.[4]
- Mission incentives and per diems used in generating estimates for participation in capacity building and training activities are based on sub-decree 216 (2014), which defines US$34/day as appropriate for central-level meetings. Provincial-level participation is assumed at half this level, while operational district (OD) training and meetings are assumed at 25 per cent of national costs (see Annex 3).
- Cost of SAM commodities, pharmaceuticals and vitamin supplements was taken from UNICEF Central Procurement in Copenhagen. Prices can vary according to a range of specifications; however, this provides an international and up-to-date point of reference.[5] Estimates include 10 per cent addition for wastage and another 10 per cent for domestic transport.

The key conclusions developed via this conceptual methodology were 'reality checked' in several ways. First, can the added workload to hospitals and health centres be integrated into current MOH staffing and infrastructure by building capacity and optimizing the current workforce? For each component, the incremental workload is projected at scale across the system, summarized as incremental person years and compared to capacity of the overall workforce. These calculations indicate that added personnel time and effort is minimal, usually less than 0.05 per cent to 1 per cent of current capacity. We conclude FTRM interventions can be integrated into the current workload of MOH personnel and that no significant personnel or infrastructure expansion is required.

4 Collins, David, Zina Jarrah and Prateek Gupta, *Comparisons for a Sample of Contracted and Non-contracted Health Centres, Ministry of Health, Royal Government of Cambodia,* Arlington, Va., USA, Basic Support for Institutionalizing Child Survival (BASICS) for the United States Agency for International Development (USAID), 2009.

5 https://supply.unicef.org/

Second, results of financial analysis were compared with conclusions of several in-depth financial analyses of Cambodia's health care system, including *Scaling Up Child Survival Interventions in Cambodia: The Cost of National Programme Resource Needs* (WHO, 2007); *Cost and Funding Projections for the Minimum Package of Activities for Health Centres: Ministry of Health, Royal Government of Cambodia* (USAID, 2009); *Cost and Revenue Comparisons for Contracted and Non-Contracted Health Centres* (MOH, 2009); and *Cost Analysis of Essential Health Services in Cambodia*, (WHO/USAID/PopTech, 2013). For example, the most recent financial analysis from PopTech 2013 finds a cost of US$1.19 associated with each "cost per contact" with the health system, with preventative services about one third that cost, or about US$0.40. The methodology used in this paper values nurse contact at US$0.44 for nutrition services to pregnant women associated with MPA 10, generally in line with these previous costing analyses.

Based on the methodology described above, the sections that follow analyze required financing for each individual component. Each analysis includes the following steps:

- Costs are broken down into functional categories: In-kind time and effort, ingredients and inputs, special payments and incentives, transport, hospitalization, etc.
- Start-up and capacity costs including cascade and refresher training are assessed for number participants, venue and communication needs and materials.
- Recurring costs are calculated over six years based on proportion of FTRM objective presumed achieved on a year-by-year basis.
- Budget summary for start-up and recurring cost is summarized for each line item over six-year FTRM programme. The summary budget is further analyzed by:
    - Assessing current government commitments to various line items
    - Proposing expanded government commitments and timetable to finance various line items, and to achieve total domestic financing in six years
    - Identifing gap between current and proposed domestic commitment requiring investment by international donors and partners

Financial descriptions of each individual component is followed in Section 9 by a master budget summary and synthesis that includes:

- Composite six-year budgets, including requirements for total, start-up and recurring financing
- Projected and proposed contributions from government and other domestic sectors
- Projected financial gap and proposed cost sharing with development partners

An Excel spreadsheet detailing all estimates and calculation is available separately.

II. Components 1 and 2:

Antenatal Nutrition Counselling and Micronutrient Supplementation

Background

With increasing metabolic demands to meet fetal requirements for growth and development, pregnant women are particularly vulnerable to nutritional deficits. CDHS 2010 found 19 per cent of Cambodian women of reproductive age had low body mass index and 53 per cent of pregnant women with anaemia, in large part accounting for high rates of maternal mortality and 32,000 annual cases of low birth weight.[6]

Addressing nutritional issues in pregnancy is a crucial component of quality prenatal care. The objective of FTRM components 1 and 2 is to reach 95 per cent of pregnant women with a package of nutrition education and micronutrient supplementation as part of overall MPA 10 services. A key objective is that pregnant women access antenatal care at least four times during pregnancy, beginning early in the first trimester. In addition, FTRM targets lactating women with iron/folic acid supplements and deworming tablets. Achieving these two targets will require building health centre capacity to include additional products and services within MPA 10 as well as community education to promote accessing antenatal and postnatal care. Strategies include:

- Procure and distribute iron/folic acid and deworming tablets
- Include nutrition activities into full MPA cascade training
- Integrate six tasks and associated products and services into ongoing health centre nurse/midwife contacts with pregnant women (see list in paragraph below)
- Integrate distribution of iron/folic acid and deworming into postnatal contact with lactating women (see list in paragraph below)
- Promote and support additional demand and access in communities

The six-year budget for components 1 and 2 is estimated at US$15.3 million, including US$793,000 in start-up costs.

Start-up costs

Building capacity of nurses and midwifes to deliver six additional products and services during MPA 10 antenatal and postnatal consultations is critical to the feasibility of components 1 and 2. The additional time required for the six individual tasks was estimated and reviewed with MOH stakeholders and includes:

- Three minutes to weigh and measure women to assess overall nutrition status
- Four minutes to communicate nutrition education messages, including promoting an extra meal or snack daily to add 350 to 450 additional kcal to daily intake
- Three minutes to provide iron/folic acid supplements and promote full compliance
- Three minutes to provide deworming and discuss side effects
- One minute to negotiate and encourage return for additional visit
- One minute to fill out the additional nutrition indicators on the Mother Card[7]

6 National Institute of Statistics, Directorate General for Health, ICF Macro, *Cambodia Demographic and Health Survey 2010*, 2011.
7 Estimated time allocated to each task reviewed with MOH National Maternal and Child Health Centre management.

As shown in the table below, the added time for pregnant women over four antenatal consultations totals 44 minutes – an average of 11 minutes per contact. Over the course of four consultations with up to 357,000 pregnant women, the total added workload represents about 143 person-years of work – only about 1 per cent of the nurse-midwife workforce of 13,985.[8] This suggests integrating the nutrition component into MPA 10 contact is a feasible addition to the current nurse-midwife workload. The more modest additional six minutes to integrate iron/folic acid and deworming tablets distribution into postnatal contact with lactating women also will not require additions to the current workforce.

Time Estimate for Delivering Six Additional Products and Services During Antenatal Consultation			
Task or Activity	**# Consults/Task**	**Minutes/Task**	**Minutes/4 Consults**
Additional Services for Pregnant Women			
1. Weight monitoring	4	3	12
2. Nutrition education	3	4	12
3. Iron/folic acid supplement	3	3	9
4. Deworming	1	3	3
5. Negotiate return	4	1	4
6. Adding nutrition indicator to Mother Card	4	1	4
Total Minutes per 4 Antenatal Contacts			44
Additional Services for Lactating Women			
1. Iron/folic acid supplement	1	3	3
2. Deworming	1	3	3
Average Minutes per Postnatal Contact			6

Integrating nutrition into the products and services above during ongoing contacts with pregnant and lactating women requires modest investment capacity building, training and motivation. A line-itemized budget for training shown in the table below includes the overall five-day MPA 10 training for the nurse-midwife workforce engaged in antenatal and postnatal care. National cascade training begins with a training-of-trainers (ToT), including 420 provincial health department and operational district personnel. The ToT is followed by 25 provincial five-day MPA trainings including three participants from each health centre and three per operational district, for a total of 3,378. Based on accepted parameters for mission costs, venue and facilitation as well as participant take-home communications packages, the start-up training budget is projected at US$528,000. Refresher training, planned every two years, raises training costs over the six-year period to US$793,000.

8 http://www.hiscambodia.org/public/fileupload/MOH_Leaflet_eng_2013_final.pdf

Start-Up Capacity Building for FTRM Components 1 and 2 (in US$)						
MPA Training Costs	**Unit**	**Unit #**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Total**
National ToT: 5 Days						
Participant mission	4/Prov., 4/OD	420	Days	6	$34[9]	$85,680
Participant travel	Participants	420	Trips	1	$20	$8,400
Venue, facilitation and other costs	Venue	1	Days	5	$2,500	$12,500
Materials	Participant Package	420	Cost/Pack		$10	$4,200
						$110,780
Provincial Training: 5 Days						
Participant mission	3/health centre, 3/OD	3,378	Days	6	$17.00[10]	$344,556
Participant travel	Participants	3,378	Trips	1	$10.00	$33,780
Venue, facilitation and other costs	Venue	25	Days	5	$250	$31,250
Materials	Participant package	3,378			$2.50	$8,445
						$418,031
Refresher Training Every 2 Years	% start-up costs	25%				**$132,202**
TOTAL						**$793,216**

Recurring costs at scale

As component coverage expands to scale over six years, cumulative FTRM recurring costs total US$14.5 million. At scale, defined as reaching 95 per cent of pregnant and 90 per cent of lactating women with the outlined products and services, costs reach US$2.7 million per year, shown in the table below. This recurring cost includes three distinct activities:

- Procurement and distribution costs for iron/folic acid supplements and deworming tablets for pregnant and lactating women reach US$683,000 at programme scale.
- The value of time and effort devoted by nurses and midwives, 44 minutes per pregnant woman and six minutes per lactating woman, is estimated at US$727,000.
- Community promotion and support to motivate women to access antenatal care at least four times, including one visit in the first trimester, is a significant cost factor, estimated at US$1.3 million, nearly half of total recurring costs for this component. This includes two activities designed to motivate pregnant women to seek antenatal care:
    - Incentives to midwives have proven to be a successful and effective tool to encourage pregnant women to access the health system. To drive the targeted increase in clinic attendance during pregnancy to 95 per cent, we propose a cash incentive for midwives, modelled on the very successful midwife incentive to

9 See Annex 3.
10 See Annex 3.

encourage pregnant women to give birth in a health facility. The proposed FTRM budget proposes an additional US$2 per pregnancy as an incentive to midwives to encourage attendance at antenatal clinics.[11] At scale, the estimated cost of this incentive totals US$713,000 per year.

- Cost of transport to health centres has been established as a significant barrier to accessing antenatal services.[12] FTRM includes a proposal to extend current HEF transport benefits for birthing services to also include antenatal services for the eligible low-income population. Budgeted at US$2.08 per trip, the average transport cost to health facility found in CDHS 2010, this proposed new benefit would require HEF payments of US$564,000 annually at scale. Transport costs for non-HEF beneficiaries are not included in this budget.

Recurring Costs at Scale for FTRM Components 1 and 2 (in US$)						
	Unit 1	**# Unit 1**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Total**
Health Centre Staff In Kind						
Antenatal contact time	# contacts	356,639	Min/4/contact	44	$0.048	$639,970
Postnatal contact time						$87,269
Subtotal In Kind						**$727,239**
Supplements						
Iron/folic acid supplement	$0.0077	180	Distribution	10%		$671,561
Deworming tablets	$0.01433	1	Distribution	10%		$11,220
Subtotal Supplements						**$682,781**
Community Promotion						
Proposed midwife incentive	Payments	336,042		1	$2.00	$713,278
Proposed transport benefit	Vouchers	4	19% eligible	63,848	$2.08	$563,775
Subtotal Community Promotion						**$1,277,053**
Recurring Costs at Scale						**$2,687,072**

Component 1 and 2 budget summary

MOH HMIS found antenatal services covering 75 per cent of pregnant women and 70 per cent of lactating women in 2013. Based on projections for annually increasing coverage from the 2013 baseline until the component target of 95 per cent pregnant women and 90 per cent of lactating women is reached at close of FTRM, estimated costs over six years total US$15.3 million.[13] The cost of procurement for iron/folic acid supplements and deworming tablets is less than one quarter the component cost. As is the case in many community-based programmes, the cost of delivery and providing access is several times more than the cost of procurement.

11 Recommend one of four visits in first trimester. While this is parallel to the current midwife incentive, new policies may require developing options to increasing antenatal care-seeking behaviours.

12 National Institute of Statistics, Directorate General for Health, ICF Macro, 2011. Cambodia Demographic and Health Survey 2010.

13 MOH Health Management Information System 2013.

Components 1 and 2: Six-Year FTRM Budget Summary (in US$000,000)							
Summary Budget	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Start-up training	$0.53	$0.00	$0.13	$0.00	$0.13	$0.00	$0.79
% Objective Achieved	79%/74%[14]	83%	85%	95%	98%	100%	
Staff costs (In kind)	$0.57	$0.60	$0.62	$0.69	$0.71	$0.73	$3.93
Input ingredients	$0.54	$0.57	$0.58	$0.65	$0.67	$0.68	$3.69
Transport costs (HEF)	$0.45	$0.47	$0.48	$0.54	$0.55	$0.56	$3.04
Midwife incentives	$0.56	$0.59	$0.61	$0.68	$0.70	$0.71	$3.85
Total Recurring Costs	$2.12	$2.23	$2.28	$2.55	$2.63	$2.69	$14.51
Total Component Costs	**$2.65**	**$2.23**	**$2.42**	**$2.55**	**$2.77**	**$2.69**	**$15.30**

Proposed cost sharing

Current government budget commitments may already represent a significant share of projected US$15.3 million component costs, including the value of nurse and midwife time, current levels MOH procurement of pharmaceuticals and current HEF support of MPA 10 consultations for low-income groups. Presuming these commitments are sustained, the following formulas are proposed as targets to expand domestic commitments and transfer full financing to government sources:

- The MOH is reported to procure supplies of iron/folic acid supplements and deworming tablets sufficient to cover the needs of 75 per cent pregnant women and 70 per cent of lactating women. This suggests an expenditure of US$540,000 on procurement of pharmaceuticals based on international prices plus 10 per cent for distribution.[15] However, costs will rise as coverage of pregnant and lactating women expands to FTRM targets of 90 to 95 per cent over the course of the six-year FTRM. We propose that the small incremental costs of procurement are phased-in gradually, with MOH paying 25 per cent of the added costs in 2016 rising to 100 per cent in 2020, as shown in the table below where cumulative six-year government costs are projected to be US$3.6 million.
- HEF provides benefits ranging from 2,000 to 4,000 Cambodian riels (US$.50–$1) per MPA consultation. Presuming an average of 3,000 riels (US$.75) per payment and current MOH coverage of an estimated 75 per cent pregnant women, this suggests 2015 HEF payments possibly up to US$140,000 covering MPA 10 consultations. Sustaining current MPA services for the poor commitments with expanding FTRM coverage suggests a need to expand HEF financing to US$200,000 annually as MPA 10 coverage grows to 95 per cent of pregnant women. Cumulative costs for FTRM are estimated at US$1.1 million.

14 75 per cent current coverage/95 per cent FTRM objective=79 per cent.

15 While generally informed about MOH purchases, total or unit costs for this procurement were not made available. Costs are from UNICEF Central Procurement in Copenhagen procurement with the addition of 10 per cent for domestic distribution.

- The proposed midwife incentive to encourage attendance at antenatal consultations is parallel, but much lower, than the very successful US$10-15 incentive for every client birth in a medical facility. We propose donor support through testing of this option and the first three years. The table below shows proposed transition to domestic funding at 33 per cent in 2018, 66 per cent in 2019 and 100 per cent in 2020, suggesting domestic financing totalling US$1.4 million over six years. The proposed US$2 per pregnant women attending four antenatal consults requires further discussion to review cost and feasibility.
- Low-income pregnant women may forego added clinic visits due to the high cost of transport. Therefore, this paper suggests expanding current HEF benefits for transport to birth facility to also include transport for pregnant women in MPA 10 consultations. Given the cost of transport averaging more than US$2 per trip, as well as the large number of consultations expected if the component achieves its 95 per cent coverage objectives, this benefit expansion would be financially substantial. As policy and budget issues are discussed, we propose donor support for this expanded HEF benefit, with transition to domestic financing in the last three years of the Fast Track programme as shown in the table below. With a cost-sharing arrangement as proposed for the midwife incentive above, domestic financing may reach US$1.1 million over six years and US$560,000 annually at scale in 2020.

Proposed Timetable and Annual Targets (%) for Domestic Financing (in US$000,000)							
Procurement of Pharmaceuticals	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Transition added budget to domestic %	**Baseline**	**25%**	**50%**	**75%**	**90%**	**100%**	
Transition added budget to domestic $	$0.54	$0.55	$0.56	$0.62	$0.66	$0.68	$3.60
Proposed Midwife Incentive							
Transition budget to domestic %	**0%**	**0%**	**0%**	**33%**	**66%**	**100%**	
Transition budget to domestic $	**$0.00**	**$0.00**	**$0.00**	**$0.22**	**$0.46**	**$0.71**	**$1.40**
HEF Commitments							
Eligible MPA contacts @ 19%	193,120	203,284	230,389	257,493	265,625	271,046	
MPA reimbursements at 3,000 riels	**$0.14**	**$0.15**	**$0.17**	**$0.19**	**$0.20**	**$0.20**	**$1.07**
Proposed Added HEF Transport Benefits							
Transition budget to HEF %	0	0%	0%	33%	66%	100%	
Transition budget to HEF $	**$0.00**	**$0.00**	**$0.00**	**$0.18**	**$0.36**	**$0.56**	**$1.11**
Potential Total HEF Contribution	**$0.14**	**$0.15**	**$0.17**	**$0.37**	**$0.56**	**$0.77**	**$2.17**

Based on the proposed cost-sharing formulas in the table above, the six-year domestic commitment totals US$11.3 million, including: US$3.9 million in the value of nurse and midwife services; US$3.6 million in sustained and expanded procurement of pharmaceuticals; US$1.4 million towards the proposed incentive for midwives; and US$2.2 million in current and proposed HEF payments. This leaves a financial gap of about US$4.27 million for start-up and initial recurring costs to be secured from development partners.

Proposed Cost Sharing for Components 1 and 2: MoH, HEF and Development Partners (in US$000,000)							
Potential Share Government Costs	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Total Component Costs	**$2.65**	**$2.23**	**$2.42**	**$2.55**	**$2.77**	**$2.69**	**$15.30**
Staff and system costs (In kind)	$0.57	$0.60	$0.62	$0.69	$0.71	$0.73	$3.93
Ingredients supplements	$0.54	$0.55	$0.56	$0.62	$0.66	$0.68	$3.60
HEF MPA reimbursement @ $0.75	$0.16	$0.17	$0.17	$0.19	$0.20	$0.20	$1.10
HEF proposed transport assistance	$0.00	$0.00	$0.00	$0.18	$0.36	$0.56	$1.11
Proposed cost: Midwife incentive	$0.00	$0.00	$0.00	$0.22	$0.46	$0.71	$1.40
Proposed Government Cash/In Kind[16]	**$1.27**	**$1.32**	**$1.35**	**$1.91**	**$2.39**	**$2.89**	**$11.03**
Indicated Gap: Proposed Donor Share	**$1.38**	**$0.91**	**$1.07**	**$0.65**	**$0.37**	**$0.00**	**$4.27**

III. Component 3:

Screening and Treatment for Severe Acute Malnutrition

Background

The 2010 CDHS found 2.5 per cent of children aged 6 to 59 months – more than 35,000 Cambodian children – suffered from SAM. The evidence suggests these children are 10 to 12 times more likely to die from diarrhoea or respiratory and other infections; the indicated death toll in Cambodia is more than 500 annually.[17] The survivors are likely to suffer life-long physical and intellectual disability.

Simple and effective treatments within communities and at hospitals can lower this humanitarian, health and social burden. But records suggest that only about 2,500 SAM cases access treatment, roughly 7 per cent of cases suggested by CDHS 2010. Therefore, FTRM Component 3 seeks nationwide expansion of preventative and therapeutic services for children with SAM by 2020, including annual screening for 80 per cent of children aged 6 to 59 months and treating up to 25,000 cases. Strategies to achieve these objectives include:

- Provide training and materials for SAM treatment at 40 hospitals
- Provide cascade training for OD and health centre staff
- Build community-screening capacity via village health support groups (VHSGs)
- Conduct community pre-screening and referral reaching 80 per cent of children aged 6 to 59 months
- Provide appropriate level of care at health centres, ODs and hospitals
- Procure comprehensive package of therapeutic nutritional products

The proposed FTRM strategy for community screening is based on recommendations from a recent study, reviewing sensitivity and specificity of mid-upper-arm circumference

measurements (MUAC) to identify SAM, defined as greater than 3 standard deviation weight-for-height Z-scores.[18] Based on data from 11,000 Cambodian children, the study recommends a two-step approach beginning with MUAC screening in communities, followed by more thorough diagnostics at a health centre. While the MUAC screening offers high specificity to SAM, broad sensitivity of using MUAC without other diagnostic measurements often results in 35 per cent false-positive cases, which are easily addressed after referral to health centres.[19] This two-step approach enables mass screening, which can be implemented by village health volunteers with a minimal level of training and scaled up quickly to reach 80 per cent Component 3 objectives.

The projections below describe the workload at community, health centre and clinical levels emerging from community screening.

16 In calculating costs borne by government, there is a discrepancy of about US$200,000 because the rate of HEF payment for MPA is higher than actual costs assumed in this analysis.
17 Bagriansky, Jack, *Economic Consequences of Malnutrition in Cambodia*, CARD/UNICEF/World Food Programme, 2013.
18 Laillou, Arnaud, et al., *Optimal Screening of Children with Acute Malnutrition Requires a Change in Current WHO Guidelines as MUAC and WHZ Identify Different Patient Groups*, PLoS ONE 9(7), 2014.
19 Ibid.

- Community screening covering 80 per cent of 6 to 59 month olds suggests more than a million MUAC measurements annually conducted by VHSGs. Presuming improved SAM prevalence of 2 per cent, these screenings will identify more than 32,000 children potentially at high risk of SAM and referred to health centre for full diagnosis.[20]

- Full diagnosis at the health centre will likely identify approximately 35 per cent or about 11,000 false positives. These cases will be provided with simple nutrition education and sent home, indicating about 10 minutes of nurse consultation time.

- At 2 per cent prevalence, full diagnosis by a nurse at the health centre will identify about 21,000 SAM cases. Based on national experience, about 90 per cent of SAM cases will not have complications.[21] These 18,000 to 19,000 children will receive nutrition education and a therapeutic protocol of nutritional supplements. The study assumes 20 minutes of nurse consultation time.

- About 10 per cent, or 2,000 children, will be diagnosed SAM with complications, an urgent condition requiring clinical care. These children will be referred to one of 40 hospitals for seven days of treatment and observation according to the recognized protocol.

The six-year budget for Component 3 is estimated at US$9.3 million, including US$506,000 in start-up costs and US$8.5 million in total recurring costs.

Start-up costs

There are several distinct types of start-up costs involved for FTRM Component 3. First, finalizing training for five of 40 hospitals not yet designated as referral facilities for SAM treatment. This involves a five-day training for approximately 30 people, six per hospital. Each hospital will receive a communication and education package for use at the facility. Costs for finalizing this activity are estimated at US$19,600.[22] Second, building health centre and community capacity to screen, refer, diagnose and treat involves a cascade training beginning with a national ToT followed by 25 provincial trainings for health centre staff. The plan calls for:

- A five-day national ToT for 424 MOH personnel, including four per province and four per OD. Cost estimated at US$112,000.
- A five-day provincial training including two professionals from each health centre for a total of 2,252 health centre staff at an estimated cost of US$345,000.

Finally, a third tier of training occurs at the health centre to build VHSG capacity for initial MUAC screening. This conceptual budget calls for provincial-level training of two VHSG per village, or 2,252 volunteers, as well as an additional two-day training for another five VHSGs at health centres (for up to seven VHSGs per health centre). Health centre staff will be provided with background for this training during the overall cascade training.

20 The calculation presumes that SAM in Cambodia has declined 25 per cent since the 2010 CDHS, from 2.5 per cent to 2.0 per cent.

21 Laillou, Arnaud, et al., *Optimal Screening of Children with Acute Malnutrition Requires a Change in Current WHO Guidelines as MUAC and WHZ Identify Different Patient Groups*, PLoS ONE 9(7), 2014.

22 This training for five hospitals, with a projected cost of ~US$20,000, is the final step in building capacity for clinical SAM treatment at 40 national facilities to treat SAM.

Start-Up Capacity Building for FTRM Component 3 Training (in US$)						
	Unit 1	**# Unit 1**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Total**
Training 5 Hospitals: 5 Days						
Participant mission	6/Hospital	30	Day	6	$34	$6,120
Participant travel	Participants	30	Trips	1	$20	$600
Venue, facilitation and other costs	Venue	1	Days	5	$2,500	$12,500
Materials	Hospital package	5	Hospitals	3	$25	$375
						$19,595
Health Centre Cascade Training						
National TOT: 5 Days						
Participant mission	4/Prov., 4/OD	424	Days	6	$34	$86,496
Participant travel	Participants	424	Trip	1	$20	$8,480
Venue, facilitation and other costs	Venue	1	Days	5	$2,500	$12,500
Materials	Participant pack	424	Cost/ Pack	1	$10	$4,240
						$111,716
Provincial Training for Health Centres: 5 Days						
Participant mission	2/Health centre	2,252	Days	5	$17	$191,420
Participant travel	Participants	2,252	Trip	1	$10	$22,520
Venue, facilitation and other costs	Venue	25	Days	5	$1,000	$125,000
Materials	Participant pack	2,252	Cost/Pack		$2.50	$5,630
						$344,570
Community-Level Training						
Outreach team trains VHSG	5/Health centre	5,630	Days	2	$2.5	$28,150
Misc. costs per health centre	Health centres	1,126		1	$2	$2,252
						$30,402
Start-Up Total						**$506,283**
Refresher Training Every 2 Years	**% Start-up Costs**	**25%**				**$126,571**

Recurring costs at scale

At scale, with 80 per cent of children screened, annual cost of the two-tier screening and treatment described above totals US$2.04 million, including: US$121,000 for community screening, referral and transport to health centre; US$4,600 for diagnosis of false positives; US$1.5 million for community-level treatment of SAM with no complications; and US$364,000 for clinical care of SAM cases with complications. Relative to treatment cost, the expense of community screening including VHSG incentives and for weeding out the false positives at the health centre is negligible. The key cost driver for this component, about 84 per cent of the recurring costs, or US$1.7 million, is for procurement of special milks and nutrition treatments.

Component 3: Indicated Recurring Costs at Community, Health Centre and Hospital Level (in US$)						
	Unit 1	**# Unit 1**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Total**
Community screening	80% children 6-59 months	1,043,689	Minutes	10	$0.01	$54,359
	Referrals and transport to health centres	32,114	Trips	1	$2.08	$66,796
Non-SAM cases	Nurse consult 10 minutes	11,240	Minutes	10	$0.041	$4,584
SAM: No complications	Nurse consult 20 minutes	18,786	Minutes	20	$0.041	$15,323
	BP100: 31 boxes/child	18,786	Boxes	31	$2.37	$1,518,260[23]
Health centre and hospital: SAM complications	Nurse consult	2,087	Minutes	20	$0.041	$1,703
	F-75: 9 boxes/child	2,087	Boxes	9	$0.62	$12,750
	F-100: 6 boxes/child	2,087	Boxes	6	$.079	$10,884
	BP100: 31 boxes/child	2,087	Boxes	31	$2.37	$168,696
	Hospital bed (80%) [24]	2,087	Days	7	$9.00	$105,204
	Food/caretaker allowance 80%[25]	2,087	Days	7	$2.50	$29,233
	3 follow-up nurse consults	6,262	Minutes	20	$0.041	$5,108
	Follow-up transport	6,262	Trips	1	$2.08	$13,025
Total Annual Recurring Costs						$2,005,950

Component 3 budget summary

Based on the analysis above, a six-year programme gradually expanding from 20 per cent of children screened in the first year to 80 per cent in 2020, costs for Component 3 total US$9.3 million with projected annual recurring costs of US$2 million in 2020 when screening and treatment reaches full scale. Over six years, financing for the package of required therapeutic nutritional products is estimated at US$7.3 million, or 77 per cent of component costs, mainly for BP100 (a ready-to-use therapeutic food), which is supplied to all 21,000 SAM cases (with or without complications) at community and clinic level. FTRM recommends development of an acceptable and effective locally produced ready-to-use supplementary food, a less expensive

23 Boxes of F-75, F-100 and BP100 include additional 10 per cent for distribution costs.
24 Fabricant, S Cost Analysis of Essential Health Services in Cambodia, MOH/WHO Health Sector Reform Phase III Project WHO/USAID/PopTech December, 2013.
25 Standard Benefit Package and Provider Payment Mechanism for Health Equity Funds, Ministry of Health, June 2014.

product, which could potentially be used in community treatment or possibly clinical-level care and potentially save significant resources (see Component 8).

Component 3: Summary Six-Year Budget (in US$000,000)								
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**	
Start-up and refresher training	$0.506		$0.127		$0.127		$0.759	7%
Recurring Costs								
Objective for children screened	20%	40%	60%	70%	70%	80%		
Staff and system costs (In kind)	$0.01	$0.01	$0.02	$0.02	$0.02	$0.03	$0.11	1%
Input ingredients	$0.43	$0.86	$1.28	$1.50	$1.50	$1.71	$7.27	77%
Hospital/caretaker (80% cases)	$0.03	$0.07	$0.10	$0.12	$0.12	$0.13	$0.57	8%
Transport	$0.02	$0.04	$0.06	$0.07	$0.07	$0.08	$0.34	4%
VHSG incentive	$0.01	$0.03	$0.04	$0.05	$0.05	$0.05	$0.23	2%
Total Recurring Costs	$0.50	$1.00	$1.50	$1.76	$1.76	$2.01	$8.53	92%
Total Component Costs	$1.01	$1.00	$1.63	$1.76	$1.88	$2.01	$9.28	100%

Proposed cost sharing

Current government budget commitments cover a small proportion of these US$9.28 million costs. MOH staff six-year in-kind contributions are projected at US$113,000, representing a very small increment in MOH overall workload. Current HEF benefits covering hospital stay, food and caretaker for an estimated 80 per cent of SAM cases is minimal since only 7 per cent of these children are currently identified and treated.[26] However, as screening reaches scale, referrals increase and hospital admissions expand, these benefits are expected to rise considerably, from about US$33,000 in the first year of the FTRM to US$136,000 as screening and subsequent referral and treatment rise from 20 per cent to 80 per cent during the course of the FTRM. This budget presumes these HEF commitments will be continued as the caseload increases. User fees for those not covered by HEF are not included in this budget.

Since in-kind services and HEF hospitalization benefits cover less that 7 per cent of the proposed Component 3 budget, in order to achieve the objective of full and sustained domestic support by 2020 the following formulas are proposed as targets for transferring responsibility for specific line items to government sources.

- Propose HEF extend transport allowances to all children referred to health centre for high risk of SAM as well as the smaller number diagnosed with SAM complications and referred for clinical admission. This conceptual budget assumes this expansion of HEF benefits can be approved by 2016 and suggests an added HEF liability rising to almost US$80,000 annually and US$319,000 over the six-year FTRM.
- Propose government at some level – national or local – assumes costs for VHSG incentives to conduct annual MUAC screenings. We suggest donors cover the first three years and that domestic sources assume 50 per cent, 75 per cent and 100 per cent of the burden from 2018 to 2020, totalling US$114,000 over six years.

26 Personal communication, UNICEF. Based on current experience, 80 per cent of these cases are from low-income families likely to be eligible for HEF.

- Propose the appropriate domestic agency begin financing 25 per cent of life-saving therapeutic products by the third year of the programme, rising to 100 per cent by 2020 for a potential commitment of US$3.9 million over six years. Procurement of these products represents the lion's share of costs for this component. There is currently no funding from government sources to address the urgent need of children with SAM. The proposed scenario is based on sustained 2 per cent prevalence of SAM; as the rate falls, so will the cost of treatment.

The formulas proposed for annually graduated increased government cost sharing are shown in the table below.

Proposed Timetable and Annual Targets (%) for Domestic Financing (in US$000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Current HEF hospital/caretaker/food allowance	$33.6	$67.2	$100.8	$117.6	$117.6	$134.4	$571.3
Proposed HEF transport reimbursement	0%	100%	100%	100%	100%	100%	
	$0.0	$39.9	$59.9	$69.8	$69.8	$79.8	$319.3
Proposed government share therapeutic products	0%	0%	25%	50%	75%	100%	
	$0.0	$0.0	$320.7	$748.4	$1,122	$1,710.6	$3,902.3
VSHG incentive	0%	0%	0%	50%	75%	100%	
	$0.0	$0.0	$0.0	$23.8	$35.7	$54.4	$113.8

Based on the cost-sharing arrangements proposed above, the financial requirements for Component 3 over six years are US$5 million from current and proposed contribution of national local and government agencies and a US$4.3 million donor contribution to address the financing gap. Projected donor funding is projected to diminish steadily from roughly US$1 million in the initial three years to US$510,000 in Year 5 and no commitment for Year 6.

Proposed Cost Sharing for Component 3 (in US$000,000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Total component costs	$1.01	$1.00	$1.63	$1.76	$1.88	$2.01	$9.28
Staff and system costs (In kind)	$0.01	$0.01	$0.02	$0.02	$0.02	$0.03	$0.11
MOH: Input ingredients	$0.00	$0.00	$0.32	$0.75	$1.12	$1.71	$3.90
HEF: Hospital/caretaker/food	$0.03	$0.07	$0.10	$0.12	$0.12	$0.13	$0.57
HEF: Transport	$0.00	$0.00	$0.06	$0.07	$0.07	$0.08	$0.28
VHSG incentive	$0.00	$0.00	$0.00	$0.02	$0.04	$0.05	$0.11
Proposed government share	$0.04	$0.08	$0.50	$0.98	$1.37	$2.01	$4.98
Gap: Donor share	$0.97	$0.92	$1.13	$0.77	$0.51	$0.00	$4.30

IV. Component 4:

Micronutrient Supplementation for Children

Background

Only 37 per cent of Cambodian children consume the minimum number of four food groups required for growth and development. This lack of dietary diversity is a major cause of widespread micronutrient deficiencies. A recent study suggested that anaemia, along with zinc, vitamin A and folic acid deficiencies are associated with nearly 1,400 deaths a year among children under 5 years of age. Based on a range of evidence, the study estimates that micronutrient deficiencies in children and adults burdens the national economy by more than US$200 million annually in depressed productivity and increased health care costs.

Supplementation with vitamins and minerals is a key intervention to address this burden. Vitamin A supplementation and deworming have achieved wide coverage in Cambodia. The current challenge is to sustain and optimize coverage while establishing full domestic financing for both procurement of pharmaceuticals and programme delivery at the village level. FTRM targets raising currently high coverage of 85 to 90 per cent to 90 to 99 per cent, as shown in the table below.

Component 4 Targets for Coverage of Vitamin A, Zinc and Deworming Tablets							
		2015	2016	2017	2018	2019	2020
Vitamin A capsule	6-59m	90%	91%	92%	93%	94%	95%
Deworming tablets	12-59m	88%	91%	93%	96%	99%	99%
Oral rehydration therapy/Zinc	6-59m	85%	86%	87%	88%	89%	90%

Estimated recurring costs for achieving these six-year FTRM objectives totals US$2.7 million and US$466,000 at full-targeted scale in 2020. About half these costs reflect the in-kind value of time and effort of nurses at health centres providing zinc along with oral rehydration therapy (ORT) at health centres and support to community-level distributions of vitamin A and deworming tablets. These long-standing and successful micronutrient programmes require only modest capacity building and start-up, which MOH will integrate into the overall MPA 10 cascade training, included in budget for components 1 and 2. Therefore, there are no start-up costs included in this section.

Recurring costs

Annual recurring costs rise modestly along with targets for expanding coverage, from an estimated US$437,000 in 2015 to US$468,000 in 2020. Parameters used in projecting these estimates used the following methodology and logic:

- Since procurement records for supplements purchased by MOH for these programmes were not identified, unit costs for vitamin A, deworming tablets and zinc supplements are taken from UNICEF Central Procurement in Copenhagen as a reflection of

international prices for quality assured products at a reasonable rate.[27] Unit costs for vitamin A, deworming tablets and zinc are expected to vary according quantity, delivery specifications and other local factors. Estimated costs include additional 10 per cent for waste and another 10 per cent for domestic distribution by MoH not included in the UNICEF estimates.

- Supply requirements for these three supplements and medicines vary. The protocol for vitamin A and deworming tablets specifies two doses annually across the target group. Requirements for zinc and ORT distribution are based on estimated incidence of diarrhoea, an average of 2.28 treatments annually based on survey of mothers who reported both incidence of diarrhoea in their child as well as whether they were taken to a heath facility for treatment.[28]

Parameters for Estimating Costs of Vitamin Supplements and Deworming Treatment (in US$)				
	Target Group[29]		Unit Cost	Units/Child/Yr
	Age	#		
Vitamin A 200k IU	12-59m	1,127,747	$0.022	2
Vitamin A 100k IU	6-11m	176,864	$0.017	1
Deworming tablets	12-59m	1,127,747	$0.026	2
Zinc	6-59m	1,304,611	$0.016	2.28

Based on the protocols, cost parameters and target coverage shown in the table above, annual procurement cost of pharmaceuticals needed to achieve FTRM objectives, including a 10 per cent overage for loss and waste, rise modestly from US$166,000 at current coverage to US$180,000 at projected scale in 2020. The six-year cost of pharmaceuticals totals US$946,000. Domestic logistics and distribution, embedded in overall MOH contracts for transport of materials and equipment to health centres, is estimated as an additional 10 per cent, increasing six-year procurement financing requirements to US$1 million.

Six-Year and Annual Projected Costs for Pharmaceutical and Supplement Procurement (in US$)							
Ingredients Costs	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Vitamin A 12-59 (200k IU)	$48,343	$48,880	$49,417	$49,954	$50,491	$51,029	$298,114
Vitamin A 6-11 (100k IU)	$3,053	$3,157	$3,226	$3,330	$3,434	$3,434	$19,633
Deworming tablets	$55,139	$57,019	$58,272	$60,152	$62,032	$62,032	$354,647
Zinc	$44,255	$44,776	$45,297	$45,817	$46,338	$46,858	$273,341
Landed Supplements	$150,790	$153,832	$156,212	$159,254	$162,295	$163,353	$945,735
W/10% Distribution	$165,869	$169,215	$171,833	$175,179	$178,525	$179,688	$1,040,309

27 https://supply.unicef.org/
28 National Institute of Statistics, Directorate General for Health, ICF Macro, 2011. *Cambodia Demographic and Health Survey 2010.*
29 Target group taken from HMIS adjusted.

It is more expensive to deliver micronutrient supplements than it is to procure them. The value of nurses' time in administering zinc along with ORT to children with diarrhoea and cost of incentives for VHSGs to implement annual community-based distributions of vitamin A and deworming tablets twice totals US$243,000. At scale in 2020, these activities represent a cost of US$313,000 based on the following assumptions:

- Two contacts per year totalling approximately six minutes per child are estimated for VHSG to mobilize the community to distribute vitamin A capsules and deworming tablets. The estimate is based on two days per year per VHSG devoted to the micronutrient campaigns, parallel to the currently used VHSG incentive scheme.[30]

- The value of nurse's time spending two additional minutes administering zinc to nearly 3 million children younger than 5 years of age with diarrhoea totals US$243,000. At two minutes per case, the estimated workload represents the equivalent of 55 person years–a very feasible incremental workload, less than 0.04 per cent of the nurse workforce.

The table below shows parameters and projections for annual value of nurse time and incentive payments to VHSG when the programme reaches targeted scale in 2020.

Annual Cost at Scale for Nurse Time and VHSG Incentive for Delivery of Vitamin A, Deworming Tablets and Zinc (in US$)							
Time at 100% coverage	**Unit 1**	**# Unit**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Coverage Target**	**Cost at Scale**
Vitamin A 6-59 community mobilization	VHSG minutes	3.5	Contacts: 2/yr	2,609,222	$0.0052	95%	$45,186
Deworming tablets community mobilization	VHSG minutes	2.0	Contacts: 1/yr	2,255,493	$0.0052	99%	$23,260
ORT/zinc	Nurse minute	2	Contacts: 2.28/yr	2,976,843	$0.041	90%	$218,528
Total VHSG and nurse time and effort							**$286,974**

Component 4 budget summary

Projected costs for FTRM expanding child micronutrient supplementation programmes are estimated at US$2.7 million over six years. About 38 per cent represents procurement and delivery of pharmaceuticals with the remaining 62 per cent representing the value of human resources in delivering the supplements to children. In many micronutrient programmes, delivery costs are much higher relative to micronutrient procurement. The modest delivery costs reflect the fact that micronutrient campaigns are well-established programmes in Cambodia.

30 Personal communication, RACHA.

Component 3: Summary 6 Year Budget (in US$000,000)							
Summary Budget	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Startup: Training in MPA	n/a	n/a	n/a	n/a	n/a	n/a	
Recurring Costs							
Supplements	$0.167	$0.170	$0.173	$0.176	$0.180	$0.181	$1.046
In-kind health centre time	$0.206	$0.209	$0.211	$0.214	$0.216	$0.219	$1.275
VHSG time	$0.063	$0.065	$0.066	$0.067	$0.068	$0.068	$0.397
Recurring total	$0.437	$0.444	$0.450	$0.457	$0.464	$0.468	$2.718
Grand Total	$0.437	$0.444	$0.450	$0.457	$0.464	$0.468	$2.718

Proposed cost sharing

Currently, most costs from Component 4 are reportedly being borne by MOH, including procurement of pharmaceuticals, logistics and transport to point of distribution and the in-kind value of nurses' time and effort. Within the context of this conceptual budget, we presume MOH will sustain and modestly expand annual procurement, an increase of US$12,000 to US$13,000 per year at scale, to cover costs of expanding coverage. The remaining budget line with no sustainable source of domestic financing is VHSG incentives – a six-year projected cost of US$397,000 – rising along with expanded coverage from US$63,500 in 2015 to US$68,500 in 2020. We propose domestic sources assume an increasing share of this costs, beginning in 2017 and reaching full financing in 2020. The proposed cost sharing, including an estimated US$228,000 in donor financing over six years, is shown in the table below.

Cost Sharing for Component 4: Proposed Donor Share of Line Items (in US$)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Total budget	$435.54	$442.49	$448.48	$455.42	$462.37	$466.44	$2,710.74
Ingredients	$165.87	$169.21	$171.83	$175.18	$178.52	$179.69	$1,040.31
MOH staff time	$206.39	$208.82	$211.24	$213.67	$216.10	$218.53	$1,274.74
VHSG incentives	$0.00	$0.00	$16.35	$33.29	$50.81	$68.22	$168.67
Total domestic finance	$372.26	$378.03	$399.43	$422.14	$445.43	$466.44	$2,483.72
Gap: Proposed Donor Share	$63.28	$64.46	$49.05	$33.29	$16.94	$0.00	$227.01

Multiple micronutrient powders

Multiple micronutrient powders (MNPs) hold great promise in reducing micronutrient deficiencies among children aged 6 to 23 months and will possibly also contribute to national objectives for reducing stunting in Cambodia. With donor supported programmes currently reaching an estimated 20 per cent of this age group with MNPs, FTRM originally established ambitious objectives of expanding to 55 per cent of children by 2020. However, initial procurement estimates sufficient to reach more than 500,000 children with MNPs annually totalled US$1.425 million annually, with six-year FTRM costs estimated at US$6.6 million. Procurement to cover the needs of one child with 120 sachets for one year is nearly US$5 as

opposed to an average US$0.16-0.20 per child for vitamin A, zinc and deworming tablets. Optional approaches should be explored.

As opposed to inexpensive vitamin supplementation, which can aim at virtually universal coverage, the relatively high cost of MNPs suggests the need for carefully designed distribution and targeting strategies. Streamlined approaches to optimize impact and minimize cost will be critical to designing affordable and sustainable MNP programmes. Options include targeting MNPs by nutritional status, age, income, geography or other risk parameter. Given the high costs of population-wide MNP strategies, social marketing to establish some level of cost recovery via user payments might also be considered.

Therefore, we recommend designing, testing and building consensus on appropriate and affordable MNP strategies for Cambodia. The conceptual budget recommends a three-year package of large-scale trials along with careful evaluation and an associated policy and programme dialogue. Budget of US$1.61 million for this initiative is included in Component 8 for:

- Procurement of MNPs sufficient to supply 2,000 villages and cover an estimated 46,000 children for three years (US$1.16 million)
- Design and implementation of alternatives for programme targeting and distribution options systems across the 2,000 target villages. Criteria for monitoring and evaluation would focus on parameters of cost effectiveness of delivery systems (US$400,000)
- A policy communication and partner dialogue process to compare outcomes of MNP trials; consider lessons learned; and define optimal, affordable and largely domestically financed strategies to include MNP in the next National Nutrition Strategy (US$50,000)

Budget for Three-Year Trial Testing Options for MNP Delivery: 2,000 Villages, 46,000 Children and 4,000 VHSG (in US$)	
Ingredients Cost	
Sachet cost @ $0.0407 (10% waste) with 120 per child/yr	$224,664
Transport cost across 30 OD @ $600	$18,000
Annual MNP Procurement	**$242,664**
Village Health Support Group Costs	
VHSG incentive payments: 2,000 volunteers, 12 days/yr @ $2.5/day	$120,000
Training and $5/VHSG/2 yr	$10,000
Management @ 12%	$14,400
Total VHSG Costs	**$142,000**
Total Annual Procurement and Delivery Costs	**$387,064**
3-Year Proposed MNP Programme Development	
3 years MNP and delivery	$1,162,192
Design monitoring and evaluation of up to 4 programme strategies	$400,000
Policy dialogue process	$50,000
Total	**$1,611,192**

V. Component 5:

Supporting Exclusive Breastfeeding and Complementary Feeding

Background

Suboptimal breastfeeding and young child feeding and care behaviours represent a significant share of Cambodia's burden of malnutrition. A recent study found that current rates of suboptimal breastfeeding might be associated with more than 1,600 deaths annually among children younger than 23 months.[31] Suboptimal complementary feeding is considered a key determinant of stunting, effecting nearly 40 per cent of Cambodian children. Consequently, FTRM sets important and ambitious targets for improvement in child feeding and care behaviours:

FTRM Objectives for Improvement in Breastfeeding and Child Care Behaviours		
	2014	**2020**
% Infants < 6 months exclusively breastfed	77%	85%
% Children 6-23 months who are breastfed	85%	87%
% Children 6-23 months who receive minimum of infant and young child feeding standards	32%/10%[32]	50%/33%
% Health facilities in compliance with infant and young child feeding legislation	70%	89%

Objectives of FTRM Component 5 specify "full implementation" of sub-decree 133 and include ensuring compliance of hospitals and health facilities as well as in the private marketplace; implementing BFHI at public and private hospitals; and scaling up the BFCI, which includes a full package of infant and young child feeding components.

Achievement of these objectives requires continued policy advocacy; strengthened capacity and monitoring activities of both public facilities and private companies; and broad communication and behaviour change strategies targeting mothers, caretakers and the general public. Strategies outlined in FTRM Component 5 are therefore multiple, varied and multi-sectoral:

- MoH training to build capacity for compliance and monitoring of sub-decree 133 in provinces health department and operational districts and at health centres
- BFHI hospital training, accreditation and recognition programme
- Advocacy and training of Camcontrol[33], the relevant food control and enforcement agency in the Ministry of Commerce, to monitor imports and marketplace for breast milk substitutes and commercial complementary foods
- Trainings, incentives and materials for community mother support groups (five per health centre) to deliver behaviour change messages to mothers at village level
- Twice annual mass media campaign focusing on breastfeeding and child feeding and care themes

31 Bagriansky, Jack, *Economic Consequences of Malnutrition in Cambodia*, CARD/UNICEF/World Food Programme, 2013.
32 Depending on whether breastfed or not.
33 Cambodia Import-Export Inspection and Fraud Repression Directorate General

The six-year budget for Component 5 is estimated at US$4.78 million including US$1.29 million in start-up costs and US$3.48 million in total recurring costs.

Start-up costs: Training for hospitals, Camcontrol and community mobilization

Implementing the proposed strategies will require investment in a range of capacity-building activities targeting the public health system, food regulatory system and village support group.

Costs for these activities are estimated at US$866,000 with an additional 25 per cent budgeted every two years for refresher trainings. Line item budgets for these trainings are detailed below.

Ensuring health facilities and staff comply with BFHI requirements will require cascade training to support compliance among all appropriate staff at hospitals and health facilities. Compliance with BFHI mandates will be verified and recognized by regular inspection and recognition processes outlined in the recurring cost section that follows. The cost of the BFHI capacity-building process is projected at US$270,950, including:

- Four-day national BFHI ToT including five participants per province, or 125 participants
- Four-day provincial trainings reaching all 96 public hospitals. The process targets training for 20 personnel at each hospital, or 1,920 participants across 25 trainings. Each hospital will receive a package of educational materials for display within the appropriate hospital departments

Estimated Costs for BFHI Training for 96 Hospitals (in US$)						
	Unit	**# Units**	**Unit 2**	**# Unit 2**	**Cost Unit**	**Total**
Cascade BFHI Trainings						
Training of Trainers: 4 Days						
Participant mission	5/Province	125	Days	5	$34	$21,250
Participant travel	Participants	125	Trips	1	$20	$2,500
Venue, facilitation and other costs	National venue	1	Days	4	$2,500	$10,000
						$33,750
25 Provincial Trainings: 4 days						
Participant mission	20/Hospital	1,920	Days	5	$17.00	$163,200
Participant travel	Participants	1,920	Trips	1	$10	$19,200
Venue, facilitation and other costs	Venue	25	Days	4	$500	$50,000
Materials	Hospital package	96	Cost/Pack	1	$50	$4,800
						$237,200

While no meetings were held with Ministry of Industry and Handicrafts or Ministry of Commerce, full implementation of sub-decree 133 requires monitoring of imports and domestic trade in breast milk substitutes. Therefore, advocacy and training is budgeted for Camcontrol. This activity will mainly require careful inspection of labeling and promotional messages, certificates of analysis, invoices and other relevant documents. Therefore, although a full consultation with Min-

istry of Commerce was not held during mission, this conceptual budget notionally recommends a national training with 100 participants for a four-day event to raise awareness as well as build capacity in following simple paper inspection protocols.

Notional Budget for National 4-Day Training and Advocacy to Camcontrol (in US$)						
	Unit	**# Units**	**Unit 2**	**# Unit 2**	**Cost Unit**	**Total**
Participant mission	Participants	100	Days	5	$34	$17,000
Participant travel	Participants	100	Trips	1	$20	$2,000
Venue, facilitation and other costs	National venue	1	Days	4	$2,500	$10,000
Materials	Participant package	100	Cost/ Pack	1	$10	$1,000
						$30,000

Contacts with the health system and VHSG offer critical windows of opportunity to communicate messages supporting exclusive breastfeeding and optimal complementary feeding. Routine contacts include antenatal, birthing and postnatal period; immunization; sick childcare; and other child health activities. In addition to hospital trainings outlined earlier, operational district and health centre staff and village health support group will be key links in providing positive messages and encourage optimal maternal care and feeding behaviours. A series of capacity-building activities are proposed for district and health centre staff as well as village health support group network of mother support groups. The estimated cost of US$565,253 includes:

- National ToT including one provincial representative and two per operational district, or 187 participants. Provincial-level training materials will be supplied.
- Provincial-level training for health centres, including participation of three people per health centre, or 3,378 over 25 provincial trainings. Training materials for use at health centre will be supplied.
- Health centre-level training for six village health support group per health centre catchment area, or 6,756 volunteers. Education and promotional materials for distribution to mothers will be supplied.

The table below shows line item calculations projecting US$47,400 for national ToT, US$379,000 for provincial training and US$138,500 for mother support group volunteers.

Cascade Training for BFCI (in US$)						
	Unit	**# Units**	**Unit 2**	**# Unit 2**	**Cost Unit**	**Total**
Training of Trainers: 5 Days						
Participant mission	1/Prov., 2/OD	187	Days	6	$34	$31,790
Participant travel	Participants	187	Trips	1	$20	$3,740
Venue, facilitation and other costs	National venue	1	Days	5	$2,500	$10,000
Materials	Participant package	187	Cost/Pack	1	$10	$1,870

						$47,400
Provincial Training: 5 Days						
Participant costs	3/Health centre	3378	Days	6	$17	$287,130
Participant travel	Participants	3378	Trips	1	$10	$33,780
Facilitation and other costs	Province venue	25	Days	5	$500	$50,000
Materials	Participant package	3,378		1	$2.50	$8,445
						$379,355
Community Training						
Mother support group	6/Health centre villages	6,756	Days	3	$2.50	$50,670
Misc. meeting costs	Lump	6,756	Days	3	$1.00	$20,268
Materials	Mother education pack	6,756	Cost/Pack	1	$10.00	$67,560
						$138,498

Recurring costs

Six-year recurring costs total US$3.48 million, about 90 per cent for extensive communication and behaviour change activities. These annual costs are segmented into two broad areas: first, BFHI activities for monitoring compliance of public agencies and private companies with sub-decree 133; second, national media and face-to-face communication to encourage optimal maternal childcare behaviour.

The conceptual budget assumes a three-person MOH team will be responsible for BFHI monitoring, accreditation and recognition activities targeting 96 hospitals. Projecting inspection of 25 hospitals a year, a bit more than one third of the total hospitals annually, the national established protocol of three days per facility by a team of three inspectors suggests 225 days per year or the equivalent of about one full-time job. This is roughly assumed to be an in-kind contribution to the programme of estimated at US$10,465 annually. Remaining cash costs include inspection expenses as well as an annual awards and recognition ceremony, and associated press conferences and general publicity. At scale, BFHI hospital activities are projected to cost US$61,865 per year. Also included in the table below is a notional budget for 300 annual inspections by Camcontrol at borders and in domestic warehouse and stores, which suggests another US$30,000 annually.

Estimated Budget for Annual Recurring Costs for BFHI Activities (in US$)						
	Unit 1	**# Unit 1**	**Unit 2**	**# Unit 2**	**Cost/Unit**	**Total**
Hospital Monitoring and Accreditation						
Per diem: 3-person team	Hospitals	25	3 people/3 days/ inspection	9	$34	$7,650
Transport	Trips	75	Average trip cost	1	$20	$1,500
3-person team level of effort	Person years	1.05	Average salary	1	$10,000	$10,465
Accreditation ceremony/ awards	Hospitals	22	Cost/Hospital	1	$1,000	$22,250

Accreditation BFHI publicity	Publicity		Lump sum			$20,000
						$61,865
Market Inspection (Notional)						
Monitoring retail market	Inspections	150		1	$100	$15,000
Monitoring imports	Inspections	150		1	$100	$15,000
						$30,000

Proposed budget for BFCI activities includes investments in both national and community activities. At scale, incentives and materials for mother support groups is projected at US$247,600. This includes two 15-minute contacts annually targeting 80 per cent of mothers of children younger than 2 years. A modest take-home material (pamphlet, trinket, reminder, etc.) is budgeted for distribution by VHSG once per year. In addition, a national media campaign focusing on the benefits of exclusive breastfeeding and optimal complementary feeding is proposed in two 'bursts' annually at an overall budget of US$250,000 each. Each burst includes line items for message research and testing as well as creative and material production enabling a regular change of both theme and material.

Estimated Budget for BFCI Activities at Scale (in US$)						
	Unit 1	**# Unit 1**	**Unit 2**	**# Unit 2**	**Cost/Unit**	**Total**
Community Behaviour Change						
Mother support group incentives	2 contacts	1,131,932	Min/ Contact	15	$0.0052	$88,432
Education materials for mothers	1/yr	636,712	Cost/ Trinket		$0.25	$159,178
						$247,610
Media Campaign (2 Bursts/Yr)						
Research and message development	Lump sum					$25,000
Creative and materials production	Lump sum					$25,000
Purchase time or space	Lump sum					$150,000
Creative/Media buying agency	% Expenditure	25%				$50,000
Total/Campaign						$250,000
Total/Year						**$500,000**

Component 5 budget summary

Total six-year costs for Component 5 are estimated at US$4.85 million, including start-up costs of US$1.3 million including both initial cascade and follow-up "refresher" capacity-building initiatives and annual recurring costs rising to US$835,000 at scale in 2020. Given varying levels of capacity and scale of training activities involved, progress towards FTRM objectives may vary as proposed below:

- Capacity building for BFHI inspection and recognition programme could be completed in less than year. Therefore, we project inspection activities reaching scale by 2015.

- Community-level training and implementation for BFCI is more complex and expansion is projected relatively slowly, achieving 40 per cent coverage in 2016, 90 per cent of scale by 2018 and 100 per cent scale by 2020 (with FTRM objective of 80 per cent of coverage, this suggests 72 per cent of target mothers are reached in 2020).

- Mass media is timed to support the implementation of BFHI and BFCI. Mass media activities are not recommended until BFHI activities reach scale in Year 2. The full two bursts annually begin in 2018 when BFHI is at scale and BFCI reaches 90 per cent.

Summary Budget for Component 5 (in US$000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Start-up	$866	$0.0	$216.6	$0.0	$216.6	$0.0	$1,299
Recurring Costs							
BFHI Activities: % Scale Achieved	10%	100%	100%	100%	100%	100%	
BFHI in kind	$0.001	$0.010	$0.010	$0.010	$0.010	$0.010	$0.053
BFHI cash costs	$0.01	$0.08	$0.08	$0.08	$0.08	$0.08	$0.42
BFCI Activities: % Scale Achieved	5%	40%	80%	90%	95%	100%	
BFCI community activities	$0.01	$0.11	$0.21	$0.24	$0.25	$0.26	$1.08
Media campaigns	$0.00	$0.25	$0.25	$0.50	$0.50	$0.50	$2.00
Recurring Costs	**$0.02**	**$0.45**	**$0.55**	**$0.83**	**$0.84**	**$0.85**	**$3.55**
Total Costs	**$0.89**	**$0.45**	**$0.77**	**$0.83**	**$1.06**	**$0.85**	**$4.85**

Proposed cost sharing

To achieve the objective of full and sustained domestic financing by 2020, the following formulas are proposed as targets for financing of specific line items to government sources.

- Hospital inspection and accreditation costs transferred to government rising from 20 per cent in 2016 to 85 per cent in 2018 and 100 per cent in 2020. Salaries of three-person teams presumed an in-kind contribution.

- Domestic share of community behaviour change activities beginning in 2017 and rising 25 per cent annually to full financing in 2020.

- Government initiate 50 per cent financing of media campaign in 2018 rising to 100 per cent in 2020.

The financial implications of this cost-sharing timetable are shown in the table below.

Proposed Government Cost Share Targets (in US$000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
BFHI Activities Transition to Domestic %	**0%**	**20%**	**65%**	**85%**	**95%**	**100%**	
BFHI activities transition to domestic $		$16.28	$52.91	$69.19	$77.33	$81.40	$297.11
BFCI Activities Transition to Domestic %	**0%**	**0%**	**25%**	**50%**	**75%**	**100%**	
BFCI activities transition to domestic $			$65.70	$131.39	$197.09	$262.79	$656.97
Media Campaign Transition to Domestic %	**0%**	**0%**	**0%**	**50%**	**75%**	**100%**	
Media campaign transition to domestic %	$0	$0	$0.0	$250.0	$375.0	$500.0	$1,125.0
Component: Cash Transition to Domestic Finance		**$16.28**	**$118.61**	**$450.58**	**$649.42**	**$844.19**	**$2,079.1**

The proposed increasing share of government financing over six years shown in the table above, together with in-kind MOH staff effort falls US$2.13 million short, leaving a significant gap relative to the US$4.85 million financing needs for this component. The conceptual budget recommends seeking donor support with the following cost-sharing proposal.

- Government share rising from US$27,000 in 2016 to full recurring cost at scale of US$855,000 in 2020.
- Donor financing of US$2.712 million for all start-up and the identified gaps in recurring costs.

Annual financing proposed for government and donor sources, with projection for full transition to domestic financing in 2020 is shown in the table below.

Proposed Annual and Total Cost Share Outline (in US$000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Total Component Cost	**$0.89**	**$0.45**	**$0.77**	**$0.83**	**$1.06**	**$0.85**	**$4.85**
MOH contribution: BFHI (w/ in kind)	$1	$27	$63	$80	$88	$92	**$350**
Local support for BFCI	$0	$0	$66	$131	$197	$263	$657
Media campaign	$0	$0	$0	$250	$375	$500	**$1,125**
Total Proposed Government Share	**$1.0**	**$26.7**	**$129.1**	**$461.0**	**$659.9**	**$854.7**	**$2,132.4**
Gap: Proposed Donor Share	**$887.5**	**$420.2**	**$639.6**	**$367.3**	**$398.2**	**$0.0**	**$2,712.8**

VI. Component 6:

Removing Financial Barriers

Mobilizing and sustaining sufficient financing represents a significant challenge to expanding effective nutrition programmes in Cambodia. Recognizing the importance of local government within the decentralizing governance environment, FTRM Component 6 recognizes a need to generate "budget allocation and planning for commune/*sangkat*". With close knowledge of local problems and resources, district and commune institutions and leaders provide an informed and flexible channel to define local needs, adopt targeted solutions, mobilize community resources, and ultimately manage commune-level programmes (local political leaders are uniquely well positioned to hold local managers and staff accountable). Commune councils represent a significant opportunity to identify and target nutrition programmes most appropriate to the needs of the community as well as mobilize local agencies, human resources and expertise. FTRM Component 6 proposes a set of activities to capitalize on these relative advantages, developing approaches to raise awareness of commune councils and present options and opportunities to support, co-finance and manage and monitor nutrition programmes.

In a decentralized environment, commune and district government have an expanding mandate and resources to address local issues. The allocation to local governments from central government increased to 13.8 per cent in 2014, reaching US$160 million.[34] As calculated in the table below, the allocation suggests the average commune budget incudes US$36,600 annually for local projects. The associated regulations mandate the development of local government investment plans to finance locally initiated projects.[35]

2014 Allocations from Government of Cambodia to Local Governments			
	Commune	**District**	**Provincial**
National allocation, Cambodian riels	237,200,000,000	69,000,000,000	334,600,000,000
National allocation, US$	$59,300,000	$17,250,000	$83,650,000
Per commune allocation, US$	$36,582	$212,963	$3,346,000

National guidelines from the Ministry of Interior include clauses specifying that some share of the planning and financing be devoted to social services.[36] All commune councils are mandated to appoint a commune committee for women and children (CCWC) but there is little record of active support of local initiatives or investment in health or nutrition programmes. To a large extent, this lack of investment in health and nutrition is simply because local leadership is generally unaware of the steep impact of malnutrition on their constituents and unacquainted with the accessible, affordable and effective solutions, including programmes, that may already be implemented in their jurisdictions via health centres and NGOs. Therefore, Component 6 works to develop and support communication links from commune councils and CCWCs to health centres,

34 http://www.ncdd.gov.kh/en/2012-12-24-04-04-50/news-event/623-budget-to-share-the-wealth-official-phnom-penh-pos
35 Awaiting official name for these plans.
36 Awaiting confirmation for Ministry of Interior and language of guidelines.

VHSGs and NGOs as well as MoH nutrition resources at district, provincial and national level. The general objective is to:

- Raise awareness among commune leadership of local maternal and child health and nutrition conditions as well as the nutrition programmes and benefit being delivered by local health centres, outreach teams, VHSGs and NGOs

- Introduce national nutrition policy and guidelines and advocate opportunities to capitalize on existing nutrition programmes as well as co-financing opportunities from central and provincial government or donors. This might include communications from Ministry of Interior clarifying the guidelines for allocation of central government disbursements devoted to social services

- Create a platform, including the support of local focal points, to identify effective local options for investing in community nutrition programmes including developing an ongoing annual process for:

    - Considering proposals for community activities from CCWCs, health centres, NGOs and others offering local options for community programmes
    - Approving and including specific community nutrition programmes in the local investment plan
    - Augmenting local financing by identifying and securing a mix of financing from local, district, provincial, national and international donors
    - Providing management, monitoring and communication support to nutrition programmes implemented in the commune

The substance of this process is developing local options and local consensus on support, financing and implementing nutrition programmes most appropriate to the commune. While the particulars will be left to the local process, we presume that major procurement of pharmaceuticals or media and materials will be left to central government and other partners, while the commune council would focus specifically on mobilizing and incentivizing community activities outlined in FTRM or other appropriate options. Each FTRM component provides options for commune council engagement and support including:

- Components 1 and 2: Midwife incentives for attendance at antenatal care sessions or support for transport to health clinic for those in need (even if HEF benefits expand, as proposed earlier, most of the population will not be covered)

- Component 3: VHSG incentives to enable community-level SAM screening as well as support for transport to health centre for second-level screening and hospital for those requiring acute care

- Component 4: VHSG incentives for micronutrient supplementation campaigns for vitamin A or proposed MNPs

- Component 5: Village-level mother support groups working to change breastfeeding and complementary feeding behaviours

The table below shows the FTRM menu of options that might be presented to commune councils. Within the context of commune council 2014 allocations, financing these community- and village-level activities is very affordable with the various programmes typically representing 1 per cent or less than the estimated average commune council allocation in 2014. Support for all seven activities totals 2.5 per cent of the average commune allocation for the local investment plan. However, we presume that these costs would be much lower if programmes, mainly incentives for community mobilization activities, were managed and supported by local political leaders as opposed to national government or development partners.

Cost Perspectives on Community Activities that Might be Supported by Commune Councils (in US$)			
	Projected National Cost	**Average Cost/ Commune**	**Proportion (%) Average Commune Allocation from Central Government ($36,500)**
Components 1, 2			
Midwife incentive @ $2.00 per pregnancy	$672,085	$414.61	1.14%
Mothers transport to health centre @ $2.08	$531,216	$327.71	0.90%
Component 3			
VHSG community-level SAM screening	$54,359	$33.53	0.09%
Transport to health centre for at-risk cases	$79,821	$49.24	0.13%
Component 4			
Estimated vitamin A capsule	$40,769	$25.15	0.07%
Estimated deworming tablets	$17,621	$10.87	0.03%
Component 5			
Mother support groups, including MNPs	$88,432	$54.55	0.15%
	$1,484,303	$915.67	2.51%

The strategies proposed in FTRM Component 6 include a series of activities to engage commune leadership in nutrition issues; demonstrate that nutrition programmes address real local problems and produce real benefits for their constituents; develop a local process for identifying promising activities and supporting those activities with local financing; and building district and commune government capacity to manage and monitor these commune nutrition activities. A five-year budget of US$2.2 million to build sustained local support and investment nutrition programmes includes local capacity-building activities but does not include the actual investment in nutrition programmes. Activities for this component include:

- Cascade advocacy and training to open channels through appropriate chain from Ministry of Interior and MOH in Phnom Penh to provincial, district and commune governments
- Part-time district and commune focal points to support CCWCs and intensify focus on assessing local nutrition programme options and opening channels of communication from commune and district councils to health centres, VHSGs and NGOs in their jurisdictions
- Annual review of performance of nutrition programmes and consideration of options for local financial and human resource support
- Ongoing or periodic monitoring and evaluation of local nutrition programmes to hold local actors accountable for performance and results

The aim is that after three years this nutrition-focused process will be integrated into the overall local government programme and funding cycle. Therefore, the budget below assumes sustained local support for the process, estimated at one fifth the estimated donor cost, which we assume will be 50 per cent the value of in-kind resources and effort rather than cash expenditure. The US$2.2 million budget presented below includes US$2 million in support from donors for start-up activities during the initial three years along with national monitoring and evaluation activities extending for the full FTRM period.

Component 6 estimates include capacity-building activities to develop a sustained local process that annually considers provincial-, district- and commune-level investment in nutrition programmes. The actual level of future local resources devoted to the various nutrition programmes is not known and a feasible target has not been discussed in depth with stakeholders. Assuming 1 per cent of projected 2020 national allocations to local government are ultimately invested to support local nutrition programmes, this suggests a potential sustained annual allocation of roughly US$2.5 million.

Start-up costs

Start-up costs to conduct cascade advocacy and training are projected at US$989,000 as shown in the table below. Meetings are specified in Year 1 to initiate the process and in Year 3 to provide encouragement, evaluate the local process and further advocate for local governments to sustain the process later on. The costing for two-day meetings that provide take-home communications materials for participants at each level includes:

- 131 participants at the national level, including two per province and one per OD
- 25 provincial-level meetings for an estimated 1,939 participants, including three per province, three per district and one per commune
- 81 district meetings focusing on commune communication hosting 6,833 participants, including one per province and three each per district and commune council

Component 6: Start-Up Costs: Years 1 and 3 (in US$)						
Start-up Costs	**Unit 1**	**Unit 1 #**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Total**
National Meeting: Year						
Participant mission	2/PR, 1/OD	131	Days	3	$34	$13,362
Participant travel	Participants	131	Trips	1	$20	$2,620
Venue, facilitation and other costs	Venue	1	Days	2	$2,500	$5,000
Materials	Participant package	131	Pack		$15	$1,965
						$22.947
Province Meetings: Year						
Participant mission	3/Prov, 3/OD, 1/commune council	1939	Days	2	$17	$98,889
Participant travel	Traveling participants	1864	Trips	1	$10	$18,640
Venue, facilitation and other costs	Province venue	25	Days	2	$1,000	$50,000
Materials	Participant package	1,939	Pack		$5.00	$9,695
						$177,224
District Meetings: Year						
Participant	1/Prov, 4/OD, 4/commune council	6833	Days	2	$11	$153,333
Participant travel	Traveling participants	6509	Trips	1	$5	$32,545
Venue, facilitation and other costs	Venue	81	Days	2	$500	$81,000
Materials	Part package (1 time)	6833	Pack	2	$2.00	$27,332
						$294,210
Start-up Costs Per Round						**$494,381**
Two Rounds						**$988,761**

Recurring costs

Recurring costs of US$768,000 are projected for each of the first three years for the following activities:

- Annual programme advocacy and review: Beginning in Year 2 at a cost of US$153,000, or about US$94 per commune, to conduct annual programme reviews – including one participant from district council, three participants from commune council, three from health centre and six VHSGs per health centre. After Year 3, as the process is integrated into the overall local government budgeting process, these costs are expected to continue at 25 per cent the level financed by donors.

- Local coordination: Beginning in Year 2, incentive payments for provincial, district and commune focal points budgeted at US$25, US$10 and US$5 monthly, respectively, totalling US$114,500 annually. After Year 3, as the process is integrated into the overall local government budgeting process, these costs are expected to continue at 25 per cent the level financed by donors.

- National management and monitoring, crucial for this 'developmental' programme, is envisioned at 15 per cent of the annualized budget, or US$77,800 annually or US$466,000 over the course of the project. We believe that extensive documentation and defining lessons learned from this 'developmental' programme to engage local leaders in nutrition and health issues will be valuable for Cambodia as well as other countries.

The sustainability objective proposed target for Component 6 is that after three years, the full cost of commune activities, including annual review meetings, incentivizing local personnel and management and monitoring, will be borne by the commune council. We assume that the support needed will be significantly less than the US$345,000 annually borne at start-up by donor sources. In fact, the aim is that consideration of nutrition programmes will be integrated into the overall commune council programme and budgeting process. For the purposes of this exercise, we project an average cash and in-kind cost of 25 per cent the start-up cost to donors, or about US$41 per commune or approximately US$66,900 nationally.

Component 6: Recurring Annual Costs (in US$)						
	Unit 1	**Unit 1 #**	**Unit 2**	**# Unit 2**	**Unit Cost**	**Total**
Commune council programme advocacy and annual review	1/OD, 3/commune council, 3/health centre, 6/VHSG/health centre	15,078	Days	2	$2.50	$75,390
Participant travel	Traveling participants	12,745	Trips	1	$1.00	$12,745
Meeting and facilitation costs	Venue	1,621	Meetings	2	$20	$64,840
						$152,975
Local coordination	Province coordinators	25	Months	12	$25	$7,500
	OD coordinator	81	Months	12	$10	$9,720
	CC coordinator	1,621	Months	12	$5	$97,260
						$114,480
National coordination	Mgt and M&E	% 3 yr Cost/yr	$515,018	15%	12%	$77,808
Recurring Costs Years 1-3						**$345,263**
Projected Recurring Years 4-6: Cash/In-Kind from commune councils			Local cost	25%		**$66,863**

Component 6 budget summary

The summary budget below shows financing requirements over six years totalling US$2.2 million, with US$2 million requested from donor sources. The budget assumes all operational costs after 2017 (excluding ongoing national monitoring) will be sustained by commune council in-kind and cash contributions. It does not include potential investments by commune councils in local nutrition programmes. As indicated earlier, assuming 1 per cent of projected 2020 national allocations to local government are invested in local nutrition programmes, this suggests a potential sustained annual allocation of roughly US$2.5 million.

FTRM Component 6: Six-Year Summary Budget (in US$)							
Summary Budget	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Start up	$494,381		$494,381				$988,761
Recurring local costs		$267,455	$267,455	$66,863.75	$66,864	$66,864	$735,501
National management, M&E	$77,808	$77,808	$77,808	$77,808	$77,808	$77,808	$466,848
Total	$572,189	$345,263	$839,644	$144,672	$144,672	$144,672	$2,191,110
Proposed Cost Sharing							
Estimated Commune Council Budget In Kind				$33,431.88	$33,431.88	$33,431.88	**$100,296**
Estimated Commune Council Budget In Cash				$33,431.88	$33,431.88	$33,431.88	**$100,296**
Donor							
	$572,189	$345,263	$839,644	$77,808	$77,808	$77,808	**$1,990,519**

VII. Component 7:

Food Fortification

Background

The FTRM recognizes food fortification as "one of the most cost-effective interventions" to address vitamin and mineral deficiencies. In Cambodia, salt iodization and fish or soy sauce fortification with iron have both reached commercial scale and are benefiting wide segments of the population. However, in both cases, threats to sustainability have the potential to undermine significant progress made over the past decade.

Fish sauce and soy sauce fortification

Over the past several years, the National Council for Nutrition/MOP, together with the Reproductive and Child Health Alliance and the private sector, have succeeded in building an enabling environment for fish sauce fortification with iron. Product standards have been established and the promulgation of a sub-decree is anticipated in the near future. The capacity of 45 producers to safely and effectively add iron to their fish sauce production process has been successively implemented. While these commercial scale producers represent growing market share, possibly 70 to 80 per cent of Cambodia's fish sauce consumption, they fortify only a small portion of production, mainly subsidized via a donor grant. With the end of donor support in 2015, there are significant threats to the sustainability of this programme.

Therefore, the National Council for Nutrition/MOP has recommended continued donor support for: finalizing regulations and developing an effective regulatory and enforcement process; continuing to build capacity and improve production quality; developing support systems for private companies, such as central procurement, distribution and payment for imported iron fortificant; and establishing appropriate marketing and public communications. While a final plan has yet to be elaborated, MOP, coordinating the National Subcommittee on Food Fortification, proposes to expand coverage of fortified fish sauce and soy sauce to 65 to 70 per cent of the population and establish sustainable market financing. Strategies include:

- Finalize a mandatory sub-decree based on the legislation currently being considered for iron fortification of fish sauce and soy sauce
- Build capacity of Ministry of Commerce (Camcontrol) for effective enforcement of mandatory fish sauce and soy sauce fortification at point of production and import
- Finalize capacity building among larger producers capable of cost-effective fortification to optimize their market share for fortified fish sauce
- Develop appropriate, low-cost and user-friendly centralized distribution for iron fortificant and possibly revolving fund

The budget developed by the National Council for Nutrition/MOP envisions a cost of US$3.23 million over five years, including US$720,000 from government (presumably 50 per cent in kind), US$1.41 million from the market place and US$1.1 million from donor sources. The programme budget is virtually self-financed by the private sector by Year 5. Donor contribution for the initial years is proposed for:

- Advocacy and technical inputs to finalize mandatory sub-decree
- Capacity building and capital investment for Camcontrol
- Final capital investments in the fish sauce industry
- A fortificant distribution mechanism and revolving fund
- Communications and marketing for product launches

The five-year budget developed by MOP is shown in the table below.

Budget Estimate for Fish Sauce Fortification (MOP) (in US$)						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	
Government	$40,000	$100,000	$160,000	$200,000	$220,000	**$720,000**
Private market	$40,000	$100,000	$220,000	$470,000	$580,000	**$1,410,000**
Donor	$366,000	$346,000	$226,000	$116,000	$46,000	**$1,100,000**
	$446,000	$546,000	$606,000	$786,000	$846,000	**$3,230,000**

Salt iodization

Sub-decree No. 69 on Management of Iodized Salt Exploitation has mandated iodization of salt in Cambodia since October 2004. This regulatory environment, along with formation of producer cooperatives and revolving fund for the purchase of potassium iodate premix, succeeded in raising coverage of iodized salt to 72 per cent in 2005 and 83 per cent in 2010.[37] However, recent spot checks indicate iodization rates have significantly deteriorated.[38]

The mandatory regulation notwithstanding, the environment to achieve USI, defined as less than 90 per cent of salt retaining less than 15 ppm iodine to the consumer level, is not favourable in Cambodia. A decentralized industry environment with numerous small producers offers few efficiencies of scale needed to integrate iodization technology, procure potassium iodate and improve quality processes. With low levels of mechanization, including hand-spraying and mixing, it is exceedingly difficult to produce a homogenous iodization that meets the mandatory standard. Moreover, moist, low-quality salt with numerous impurities raises retention of moisture and degrades added iodine.

Stakeholders recognize that achieving USI will involve developing new and sustainable business models that centralize and aggregate salt production activities for the many small salt producers along Cambodia's coastline. Experience in building cooperatives, 'salt banks' or other collectivization or aggregating approaches is limited – and success not guaranteed. Therefore, the FTRM proposes research and development work to better define and ultimately propose a sustainable public-private business model that brings small producers together to raise quality, efficiency and profitability. A lump sum of US$300,000 is recommended for development of an investment plan, pilot of technical and business approaches, and a consensus-building process among public and private sectors. This budget is included with other operational research and development activities in Component 8.

37 National Institute of Statistics, Directorate General for Health, ICF Macro, 2011. *Cambodia Demographic and Health Survey 2010.*
38 Personal communication, UNICEF.

VIII. Component 8:

Improved Nutrition Data and Information Systems

Sustainable achievement of many FTRM objectives outlined in components 1 to 7 will require additional research and development and health information data generation. A series of distinct activities, each supporting specific aspects of components 1 to 5 includes:

Components 1 and 2

- To better integrate messages given at antenatal counselling that pregnant women add 350-450 kcal per day to their energy intake, a better understanding is needed of: a) the accessible and affordable food options available and b) the impact of the additional energy on reduction of low birthweight and other relevant birth outcomes. A trial including 2,000 subjects is recommended at a cost of US$300,000.

- Supplementation of pregnant women with calcium and vitamin D has been widely discussed but evidence is lacking to definitively demonstrate links between calcium supplementation, prematurity and low birthweight. A study including 1,000 subjects is recommended at a cost of US$150,000.

Component 3

- The cost of procuring imported BP100 for the treatment of SAM has been estimated at US$1.5 million annually by 2020 when this component reaches scale. Developing an effective, affordable and domestically produced product that can be used at community and clinical treatment holds the promise to increase both client acceptance as well as lowering these high costs. Effectiveness and acceptability trials of a mung bean-based fortified therapeutic product are ongoing and nearing completion. Further research and development to define industrial feasibility and build capacity sufficient to supply the requirements for SAM treatment estimated in Component 3 is recommended at a cost of US$300,000.

- The recommended community SAM screening based on simple MUAC that can be administered by a village health support group is based on a large database of Cambodian children. However, final protocols are needed before applying this option at programme scale. Developing new and appropriate protocols and guidelines for applying MUAC on a community level is projected to cost US$50,000.

- Computer and Internet information system linking hospitals treating children with SAM can provide key coordination as well as build the basis for a larger HIS. Providing tablets to link 35 SAM treatments hospitals along with recurring cost of Internet connection fees over the next six years is estimated at US$32,500.

Component 4

- While campaigns for micronutrient supplementation of children are successfully reaching scale (and fortification programmes are expanding), there is little hard data

on micronutrient status children. A national micronutrient survey will both inform the content of current supplementation programmes as well as provide a baseline for future monitoring. A national survey is recommended at a cost of US$400,000 in conjunction with the 2019 CDHS.

- MNPs hold great promise and FTRM originally established ambitious objectives of 55 per cent of the 6-to-23-month population by 2020. However, high costs and related opportunity costs suggest a need to consider a range of programme delivery and targeting options. A three-year US$1.6 million activity to develop programme policy and options is described in Component 4.

Component 7

- Stakeholders recognize that achieving USI will involve developing new and sustainable business models that centralize and aggregate salt production activities for the many small salt producers along Cambodia's coastline. Experience in building cooperatives, 'salt banks' or other collectivization or aggregating approaches is limited – and success not guaranteed. Therefore, the FTRM proposes research and development work to better define and ultimately propose a sustainable public-private business model that brings small producers together to raise quality, efficiency and profitability. A lump sum of US$300,000 is recommended for development of an investment plan, pilot of technical and business approaches, and consensus building among public and private sectors.

Research and Development to Support FTRM Programmes (in US$000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
Component 1							
Energy and birthweight (2,000)	$150	$150					$300
Calcium, prematurity, low birthweight (1,000)	$75	$75					$150
Component 3							
Local ready-to-use supplementary/ therapeutic foods	$150	$150					$300
MUAC applications	$50						$50
SAM tracking (35 hospitals)	$16.73	$3.15	$3.15	$3.15	$3.15	$3.15	$32.5
Component 4							
Micronutrient survey					$400		$400
Develop MNPs at appropriate scale	$537.1	$537.1	$537.1				$1,611
Component 7							
USI: Test sustainable business model	$150	$150					$300
Total	$1,054	$990	$540	$3.15	$403	$3.15	$3,143,667
Donor Share[39]	$1,054	$987	$537	$0	$400	$0	$3,143,667

39 Government share is US$3,150 annually in Internet connection fees for hospitals.

IX. FTRM Budget Synthesis and Discussion

Six-year budget summaries

The conceptual budget for all FTRM programme components totals US$41 million over six years. Resource requirements range from US$6 million to US$7.6 million annually from projected 2015 start date to 2020.

This initial estimate budget uses an 'ingredients' methodology that focuses on delivery of products and services. While an increment was added as overhead for management and monitoring of staff (see Annex 2), it does not fully capture resources necessary at national level for advocacy, coordination, resource mobilization, technical assistance, central monitoring and management and other unforeseen challenges. The bulk of these tasks are assumed to be integrated into the responsibilities and work programmes of national government staff, managers and officials. Nevertheless, it may be necessary to budget an addition US$2 million to US$3 million as a contingency against these national programme advocacy and coordination tasks.

Summary Total for SIx-Year Conceptual Budget for FTRM Components 1-8 (in US$000,000)								
TOTAL BUDGET	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**	
Component 1, 2	$2.650	$2.230	$2.416	$2.553	$2.766	$2.687	$15.302	**38%**
Component 3	$1.008	$1.003	$1.631	$1.755	$1.882	$2.006	$9.285	**23%**
Component 4	$0.436	$0.442	$0.448	$0.455	$0.462	$0.466	$2.711	**7%**
Component 5	$0.889	$0.447	$0.769	$0.828	$1.058	$0.855	$4.845	**12%**
Component 6	$0.572	$0.345	$0.840	$0.145	$0.145	$0.145	$2.191	**5%**
Component 7	$0.446	$0.546	$0.606	$0.786	$0.846	$0.000	$3.230	**8%**
Component 8	$1.129	$1.065	$0.540	$0.003	$0.403	$0.003	$3.144	**8%**
Total	$7.129	$6.079	$7.250	$6.526	$7.562	$6.162	$40.707	

The summary total budget above includes an estimated US$5.83 million representing the estimated in-kind value of time and effort devoted by health care and other government personnel to FTRM programmes. As indicated earlier, these substantial in-kind contributions, mainly from MOH, represent a very feasible added workload, less than 1 per cent incremental work for nurses and midwives. After accounting for the value of in-kind effort, the remaining cash financing needs of the FTRM programme totals US$34.9 million over six years.

FTRM Cost Excluding In-Kind Contributions of MOH, MOP and Others (in US$)								
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**	
Total FTRM	$7.13	$6.08	$7.25	$6.53	$7.56	$6.16	$40.71	
MOP/MOP in kind	$0.81	$0.89	$0.94	$1.07	$1.11	$1.02	$5.83	14% total
Total cash financing	$6.32	$5.19	$6.31	$5.45	$6.46	$5.15	$34.88	86% total

Start-up and capacity-building activities across all components are estimated at US$6.98 million. This represents 17 per cent of FTRM total costs and 20 per cent of FTRM cash costs. The package of operational research and programme development activities in Component 8 represents 45 per cent of these costs.

6-Year Start-up, Capacity-Building and Research & Development Financing Requirements Across All Components (in US$000,000)							
	2015	2016	2017	2018	2019	2020	Six-Year Total
Component 1, 2	$0.529	$0.000	$0.132	$0.000	$0.132	$0.000	$0.793
Component 3	$0.506	$0.000	$0.127	$0.000	$0.127	$0.000	$0.759
Component 4							
Component 5	$0.866	$0.000	$0.217	$0.000	$0.217	$0.000	$1.299
Component 6	$0.494	$0.000	$0.494	$0.000	$0.000	$0.000	$0.989
Component 7							
Component 8	$1.129	$1.065	$0.540	$0.003	$0.403	$0.003	$3.144
	$3.524	$1.065	$1.510	$0.003	$0.878	$0.003	$6.981

Excluding start-up capacity building and research and programme development costs above, the remaining annual recurring cash costs for implementation of FTRM programmes are projected at US$27.9 million. These annual costs rise from US$2.8 to more than US$5.1 million annually when the programme reaches scale in 2020. More than two thirds of these costs emerge from components 1 to 3, antenatal care and treatment of children with SAM.

Recurring Cash Costs for FTRM All Components (in US$000,000)								
	2015	2016	2017	2018	2019	2020	Six-Year Total	
Component 1, 2	$1.547	$1.627	$1.666	$1.862	$1.921	$1.960	$10.582	36%
Component 3	$0.495	$0.990	$1.484	$1.732	$1.732	$1.979	$8.412	33%
Component 4	$0.229	$0.234	$0.237	$0.242	$0.246	$0.248	$1.436	5%
Component 5	$0.021	$0.437	$0.542	$0.818	$0.831	$0.844	$3.493	12%
Component 6	$0.078	$0.345	$0.345	$0.111	$0.111	$0.111	$1.102	4%
Component 7	$0.426	$0.496	$0.526	$0.686	$0.736	$0.000	$2.870	10%
Component 8	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	
Annual Total	$2.796	$4.128	$4.800	$5.451	$5.577	$5.142	$27.894	100%
Total FTRM	$7.129	$6.079	$7.250	$6.526	$7.562	$6.162	$40.707	

Based on recurring cash costs of US$5.1 million required to deliver interventions in the final year of FTRM programme in 2020, cost-per-beneficiary reached ranges from:

- US$5.12 per pregnant woman receiving four full MPA nutrition consultations, iron/folic acid supplements and deworming
- Spread across the population of children younger than 24 months, cost per mother and child reached is US$1.30. The cost also includes national activities such as BFHI accreditation of hospitals, monitoring of the market for enforcement of sub-decree 133, and broad national with media promotional campaigns. Cost per mother/child reached with BFCI only is significantly lower, about US$0.40

- US$0.19 per child covered with twice annual campaigns distributing vitamin A supplements and deworming along with integration of zinc supplementation for children presenting at health centres with diarrhoea

- As opposed to these relatively inexpensive preventative interventions above, cost of life-saving treatment for children with SAM is relatively higher at US$96.50 per child

The table below shows parameters used in calculation for cost per beneficiary for nutrition-specific interventions delivered via components 1 to 5.

Projected Cost per Beneficiary for Components 1 to 5: Based on Recurring Cash Cost at Scale in 2020 (in US$)			
	Cost At Scale $000,000	**Target Beneficiaries Reached at Scale**	**Cost/Beneficiary/Year**
Component 1, 2	$1.72	95% pregnant women[40]	$5.12
Component 3	$2.01	80% children with SAM	$96.50
Component 4	$0.25	95-99% children 6-59 months	$0.19
Component 5	$0.83	90% children < 24 months	$1.30

In the national context, US$40 million represents a relatively small investment, US$0.45 per person per year, less than one quarter of 1 per cent of GDP. More important than raw affordability, the evidence suggests this investment will generate high social and economic returns. In 2013, research supported by CARD, UNICEF and the World Food Programme found annual economic losses from depressed productivity and health care costs associated with the current prevalence of malnutrition in Cambodia totaled US$419 million annually. Unabated, this suggests national GDP would be depressed by about US$2.5 billion over the next six years.

A recent meta-analysis in *The Lancet* estimated that based on best available evidence, achieving 90 per cent coverage with a comprehensive package of nutrition interventions can decrease child mortality by approximately 22 per cent and stunting by about 32 per cent.[41] Presuming all indicators in the 2013 CARD study gradually improve to achieve a 32 per cent reduction in malnutrition by the programme's sixth year, this suggests investment of US$38 million in FTRM programming would generate US$360 million or more in economic benefits.[42] The six-year benefit cost ratio ranges from 10 to 12, suggesting that for each dollar invested in FTRM, US$10 to US$12 will be returned in higher productivity along with lower morbidity and mortality. When the programme reaches full scale in 2020, the benefit-cost ratios will reach 23-28. Parameters for this projection, together with assumptions for gradually improving nutrition indicators, are shown in the table below.

40 Does not include lactating women in this component.

41 The FTRM portfolio is substantially parallel to that included in this *Lancet* analysis. FTRM does not include hygiene and malaria prophylaxis but these two components account for less than 3 per cent of the improvement. On the other hand, FTRM includes micronutrient supplementation for children, comprehensive SAM treatment and other components not included in the *Lancet* package.

42 A conservative projection since *The Lancet* projects reduction in stunting, which is the most difficult indicator to address.

Rough Projected Economic Net Benefits and Benefit-Cost Ratio for Six-Year FTRM Programme (in US$)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
Assumed improvement	1%	2%	10%	20%	30%	32%	
Benefit in reduced losses	$4.19	$8.38	$41.90	$83.80	$125.70	$134.08	$398.05
FTRM Total Cost	7.1	5.8	6.8	5.9	7.1	5.7	$38.17
Benefit-cost ratio	1	1	6	14	18	23	10.4
Annual net benefits	-$2.87	$2.61	$35.13	$77.93	$118.63	$128.34	$359.88
FTRM Cash Cost Only	$6.46	$5.06	$5.97	$4.95	$6.11	$4.85	$33.26
Benefit-cost ratio	1	2	7	17	21	28	12.0
Annual net benefits	-$2.27	$3.32	$35.93	$78.85	$119.59	$129.23	$364.79

Projected and proposed domestic contributions

A key objective in FTRM budget planning is to achieve sustainable domestic financing of nutrition programmes by the end of the FTRM timetable in 2020. Therefore, the conceptual budget estimates currently committed domestic financing (based on best available information) and proposes specific pathways for expanding future government support. As shown in the table below, currently committed and proposed domestic contributions over six years are projected at US$23 million. This represents 57 per cent of total FTRM required financing and less than 2 per cent of the average MOH budget for 2013-2014.[43]

Anticipated Domestic Contributions: In-Kind, Currently Committed and Proposed (in US$000,000)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**
MOH/MOP in kind	$0.81	$0.89	$0.94	$1.07	$1.11	$1.02	$5.83
MOH/MOP cash committed	$0.70	$0.71	$0.71	$0.71	$0.72	$0.72	$4.27
Government proposed Increase	$0.02	$0.08	$0.48	$1.29	$1.84	$2.47	$6.17
HEF committed	$0.19	$0.24	$0.27	$0.31	0.32	$0.34	$1.67
HEF proposed Increase	$0.00	$0.00	$0.06	$0.25	$0.43	$0.64	$1.38
Other/Community proposed	$0.00	$0.00	$0.08	$0.41	$0.74	$1.10	$2.34
Total Government	$1.73	$1.91	$2.54	$4.04	$5.16	$6.29	$21.67
Other: User Fees, Private Sector	$0.04	$0.10	$0.22	$0.47	$0.58	$0.00	$1.41
Total Domestic	$1.77	$2.01	$2.76	$4.51	$5.74	$6.29	$23.08

Domestic financing towards FTRM is projected in several categories as itemized below:

- In-kind commitments of MOH and MOP staff such as nurses and midwives is presumed to expand along with increasing programme coverage. This represents US$5.7 million or 25 per cent of projected domestic financing over six years.
- While no primary procurement documents were identified, current government budget reportedly includes procurement and delivery of micronutrient supplements

43 Budget Law 2013 and 2014, supplied by UNICEF.

and deworming tablets sufficient for FTRM baseline coverage of pregnant women and children.[44] Based on international prices, these current commitments are estimated at approximately US$700,000 annually, or US$4.3 million over the six-year programme.

- The conceptual budget proposes MOH budget increases for expanded coverage as well as a larger portfolio of products and services reaching US$6.2 million over six years, or 27 per cent of projected domestic financing. Proposals for gradual phase-in of government support sufficient to reach full domestic financing by 2020 are specified in Sections II-VIII describing the individual component budgets. About 60 per cent of this increased government support is specifically to procure therapeutic products for SAM.
- HEF expenditures for currently eligible benefits such as hospitalization of low-income children with SAM and support for mothers accessing MPA services will rise from US$190,000 to US$340,000 as these programmes reach scale. With expanding coverage and utilization, the six-year cost for sustaining the current HEF benefit package is estimated at US$1.7 million.
- The conceptual budget proposes expansion of HEF benefits to support transport to health centres for low-income pregnant women seeking antenatal care or children requiring following-up diagnosis or hospitalization for SAM. Projected six-year cost is US$1.4 million.
- Regarding financing for community activities, US$2.2 million will require expanded MOH and local government financial commitments. Developing new channels for commune, district and provincial government financing will be a function of activities outlined for Component 6.
- Private contributions towards FTRM include a total of US$1.4 million from small retail price increases for fortified fish sauce as well as some user fees for HEF-ineligible populations accessing nutrition products and services.

The specific proposals made in this paper for expansion of MOH and HEF financing require further discussion. However, no matter the specific strategy for phase-in of government support ultimately adopted, the scale of additional resources required to achieve sustained domestic financing of FTRM programmes by 2020 remains the same.

Financial gap and proposed cost sharing with development partners

Based on the reported current commitments and proposed new commitments shown in the previous section and summarized in the table below, after accounting for domestic contributions of US$23 million, a six-year financing gap of US$17.8 million remains to reach the US$40 million required for financing FTRM programmes. The table below shows consistently falling annual deficits, estimated at US$5.5 million in FTRM Year 1, falling to US$1.8 million in Year 5 and theoretically achieving full domestic financing by 2020. The donor share of this proposed cost-sharing arrangement represents 44 per cent of total FTRM costs, with share diminishing steadily from 78 per cent in Year 1 to less than 1 per cent[45] by 2020.

44 Personal communications, MOH.
45 Remaining donor contribution for final year is for continuing M&E and dissemination of Component 6 results.

Financial Gap and Proposed Cost Sharing with Development Partners (in US$000,000)								
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Six-Year Total**	
Total government contributions	$1.73	$1.91	$2.54	$4.04	$5.16	$6.29	$21.67	53%
User fees, market cost recovery (fortification)	$0.04	$0.10	$0.22	$0.47	$0.58	$0.00	$1.41	3%
Total Domestic Contribution	$1.77	$2.01	$2.76	$4.51	$5.74	$6.29	$23.08	57%
Total FTRM component	$7.13	$6.08	$7.25	$6.53	$7.56	$6.16	$40.71	
Financing Gap and Proposed Donor Share	$5.36	$4.07	$4.49	$2.01	$1.82	$0.08	$17.84	43%

The financial gap identified is mainly from the following areas of activity:

- Start-up and capacity-building activities outlined in components 1 to 7
- Phase-in support for procurement of expanded packages of therapeutic and nutritional products, outlined in components 1 to 4, mainly the treatment of SAM
- Phase-in of expanded incentive payments for community and village-level activities outlined in components 1 to 5
- Initiation of local government resource mobilization initiative, Component 6
- Operational research and development described in Component 8

Annex 1:

Demographic Data

Target Groups Adjusted for 2014		
Population growth	1.52%	Census 2008[46]
Private facility births	9.00%	CDHS 2010
Annual births/Pregnant women	388,713	HMIS, 2014
Children < 5 years	1,608,626	HMIS, 2013
Children 6-59 months	1,427,864	HMIS, 2013
Births in public sector	353,729	MOH 2014 corrected for public sector nirths
Children < 5 Years	1,630,876	MOH 2013 corrected for one-year growth with presumed 9% accessing public sector
Children 6-59 months	1,304,611	
Children 12-59 months	1,127,747	
Children 6-23 months	530,593	
Children < 2 years	707,458	

- Data for target groups is based on information downloaded from MOH HMIS in October 2014.
- 2013 data on children younger than 5 years old has been corrected for 1 year projected population growth at 1.5 per cent.
- For children aged 6-23 months and 0-23 months, the population segment was taken as a multiple of the birth rate, i.e., children younger than 2 are simply twice the birth rate.
- Only 91 per cent of the target population is projected to access public health services. This assumption is based on 2010 CDHS, which reported 9 per cent of births in private facilities.

46 http://www.nis.gov.kh/index.php/pop-demog-stat/censuses/census2008/provisional-population-totals

ANNEX 2:

Calculation Parameters for Cost of Health Centre Staff to FTRM

Income of health care staff is an integral part of the cost of delivering the eight FTRM components. While this may or may not be an incremental cash cost to the programme, it represents the value of current personnel and infrastructure invested in the potential implementation of FTRM component programmes. This value of 'in-kind' effort is attributed mainly to nurses and midwives who deliver most of the products and services included in FTRM programmes.

Income of health staff is a moving target, changing district by district and reflecting a mix of inputs received from a range of sources in addition to official government salary, including user fees, HEF and community insurance payments, range incentives and performance pay. Based on most recently available data, government salary for nurses and midwives, including both functional and basic salary rates, ranged from US$108-US$150 per month. Based on workforce MOH data reporting the total number of nurses and midwives employed by the system, we estimate a weighted average of US$132 monthly for nurses and midwives likely to deliver FTRM nutrition products and services.[47]

Calculation for Average Monthly Salary Applied to Delivery of Fast Track Programmes				
	Functional salary[48]	**Basic salary**	**% Workforce**	**Weighted average monthly salary**
Primary nurse	$38	$70	24%	$26
Secondary nurse[49]	$48	$102	40%	$59
Primary midwife	$38	$70	17%	$18
Secondary midwife	$48	$102	20%	$29
Weighted average salary before other payments and incentives				$132

To project real income, this US$132 figure needs to be corrected for a range of other payments and funding sources including user fees, HEF and community insurance payments, community insurance, range incentives and performance pay. To support the costing of overall MPA services, a recent study, which included a survey of income across a number of health centres, found salary, overtime and mission payments at "annual rates of US$417 (1,710,520 riels), US$228 (936,618 riels) and US$133 (544,398 riels), respectively" and that income from these three sources represents about 54 per cent of total income of health centre personnel, after the range of additional payments were taken into account.[50] Correcting by this factor of 54 per cent suggests an average of US$246.63 per month.

47 Cambodia Ministry of Health, Department of Planning & Health Information, *Health Sector in Progress 2013*, March 2014.
48 Sub-decree 262 on Functional Salary of Civil Servants of Ministry of Health (Article 4),
49 Average secondary nurse/midwife and bachelor nurse/midwife wife bachelor.
50 Collins, David, Zina Jarrah and Prateek Gupta, *Cost and Funding Projections for the Minimum Package of Activities for Health Centres: Ministry Of Health, Royal Government of Cambodia*, Arlington, Va., USA, Basic Support for Institutionalizing Child Survival (BASICS) for the United States Agency for International Development (USAID), 2009.

Beyond the US$246.63 per month, the cost to the government for an average employee includes indirect costs for management, administration and ongoing M&E as well as fixed costs for plant, equipment and components of the supporting MOH infrastructure. The recent 'Cost and Funding Projections for the Minimum Package of Activities for Health Centres' included a list of itemized cost estimates, segmented by staff, and indirect and fixed costs for a range of health centre services. As indicated in the table below for the four services included in the study covering FTRM component programmes, indirect costs and fixed costs averaged 49 per cent of staff costs. This suggests that US$246.63 in health care staff costs generates another US$120.42 in indirect and fixed costs.

Parameter for Indirect and Fixed Costs Used Applied to Nurse Wife Salary				
Indirect cost	**Staff**	**Indirect**	**Other fixed**	**Staff costs as % indirect and fixed costs**
Vitamin A	259	18	107	48%
Antenatal care	3,012	285	1,243	51%
Malnutrition	4,016	284	1,657	48%
Deworming	173	12	71	48%
Average				49%

The string of linked estimates above indicate the full cost to the Government of Cambodia for the average nurse/midwife services to the portfolio of FTRM programmes is estimated at US$367.05 monthly. Based on eight work hours per day and 18.8 days per month,[51] this suggests a theoretical cost of US$0.04078 per minute for Fast Track delivery of products and services that will be used in costing the time of nurses and midwives involved in services lasting from one to 15 minutes each. Based on average of 16.4 services per day delivered, of 29.2 minutes per consultation or service, this suggests a cost per contact of US$1.18, including all indirect and fixed costs.[52] This estimate is a bit lower than the US$1.33 cost per contact found by Fabricant in a 2013 financial analysis of MOH health centre services. However, since FTRM services are largely preventative rather than curative, one might expect a slightly lower cost.

51 Based on five-day work week and 37 days government holidays.
52 Sub-decree 262 on Functional Salary of Civil Servants of Ministry of Health (Article 4).

Annex 3:

Cost of Per Diems and Incentives for Government Officials

Cost of participation in various capacity-building events was based on the following 2014 sub-decree on mission incentives. We assume most nurses and midwives and participants from hospitals and health centres fall into Grade E. Since these are for missions to Phnom Penh, the study assumes 50 per cent of these costs for provincial meeting and 33 per cent of these costs for district-level meetings.

Sub-decree 216 on Local Mission Incentives

No.	Position	Incentive (1 person/day) – riel unit		
		Pocket	Food	Accommodation
1	Grade A1	40,000	100,000	200,000
2	Grade A2	35,000	90,000	160,000
3	Grade B	30,000	80,000	120,000
4	Grade C	25,000	70,000	100,000
5	Grade D	20,000	60,000	80,000
6	Grade E	16,000	40,000	80,000

A1: From minister to upper levels

A2: From secretary of state to ministers

National from sub-decree 216 (in US$)	
Per diem	$34
Travel	$20
Province meeting	
Per diem 50% national	$17
Average travel	$10
District meeting	
Per diem 33% national	$11.22
Average travel	$5
Health centre meeting	
Per diem	$2.50
Travel	$2.00