Strengthening the Economic Evaluation of Multisectoral Strategies for Nutrition (SEEMS-Nutrition)

December 10, 2019

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IFPRI
INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

Helen Keller INTERNATIONAL

RESULTS FOR DEVELOPMENT

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Background

Supporting the National ECD program in Malawi

- Scale-up across Malawi with support from development partners and civil society

- Nutrition Embedded Evaluation Program Impact Evaluation (NEEP-IE) cluster randomized control trial found that CBCCs with parenting groups were an effective platform to implement nutrition sensitive interventions
  - Discussion with the Ministry of Gender identified opportunity to support the scale-up using scenario-based cost and impact data
  - Scenario-based data could be used to inform the regular planning processes by presenting the results of models of the different activities and plans

Agenda

Objectives for today

- Introduce new SEEMS-Nutrition project and support for government planning of the national ECD program
  - Overview of new approach for economic evaluation of multisectoral strategies to improve nutrition
  - Present application of the SEEMS-Nutrition approach to NEEPIE CBCC-based intervention in Malawi
- Discuss plan to undertake costing and develop scenarios for scale-up
  - Generating information on the cost of scale-up and expected impact of scale-up of ECD programming in Malawi

Introduction to the SEEMS-Nutrition project

The nuts and bolts

The University of Washington, the International Food Policy Research Institute (IFPRI), Helen Keller International (HKI), Results for Development (R4D) and the International Livestock Institute (ILRI) are embarking on a new collaboration:

Strengthening
Economic
Evaluation for
Multisectoral
Strategies for
Nutrition

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SEEMS-Nutrition

Evidence on costs and benefits of multi-sectoral nutrition-sensitive programming is missing

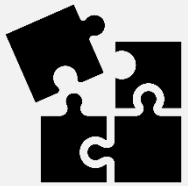
Multi-sectoral nutrition-sensitive actions are **critical** to achieve the WHA targets for nutrition by 2025 and the SDGs

Decision-makers rely on available evidence to inform **strategic planning, priority setting**, and **resource allocation** for multi-sectoral nutrition programming

But evidence on program costs and benefits is lacking and this limits the ability of decision-makers to invest in nutrition

SEEMS-Nutrition is developing a common approach to guide how economic evaluations for nutrition are conducted

1. Develop a typology of interventions
2. Map impact pathways and identify program activities, inputs, and costs
3. Develop standardized cost data collection tools and collect cost data alongside impact evaluation
4. Compare program costs and benefits to reflect the relevant question/decision and sector



Standardized data across programs and countries

Relevant information to decision makers

Stronger evidence for nutrition

The SEEMS-Nutrition approach is being applied to 6 nutrition projects to generate data on costs and benefits

Nepal

Suaahara II

A nationwide multisectoral nutrition strategy aiming to improve nutrition outcomes in women and children in 42 of Nepal's 75 districts.

Burkina Faso

Soutenir l'Exploitation Famaliales pour Lancer l'Elevage des Volailles et Valoriser l'Economie Rurale (SELEVER)

An integrated poultry value chain and nutrition intervention to improve nutrition status and diets.

Kenya

MoreMilk

A market-based intervention in the informal dairy sector to generate nutrition and health benefits for children

Bangladesh

Targeting and realigning agriculture to improve nutrition (TRAIN)

A maternal and child health and nutrition behavior change communication strategy integrated within an agricultural credit program aiming to improve production diversity and income generation.

Malawi

Nutrition Embedded Evaluation Programme Impact Evaluation (NEEP-IE)*

A community-based pre-school meals and household food production intervention to improve children's diets, currently planning for nationwide scale up.

Kenya

Marketplace for Nutritious Foods

A skills-building and financial investment project to create local markets full of diverse, nutritious, and affordable foods.

* Indicates retrospective analysis

Economic evaluation of NEEP-IE CBCC based agriculture and nutrition intervention in Malawi

Background

Rationale

- Children at risk of not achieving their **developmental potential** due to malnutrition and other challenges
- **Multisectoral/nutrition sensitive programs** have the potential to accelerate progress in tackling malnutrition
- Dearth of evidence on the **costs** and **cost effectiveness** of nutrition sensitive programs

Background

The integrated intervention

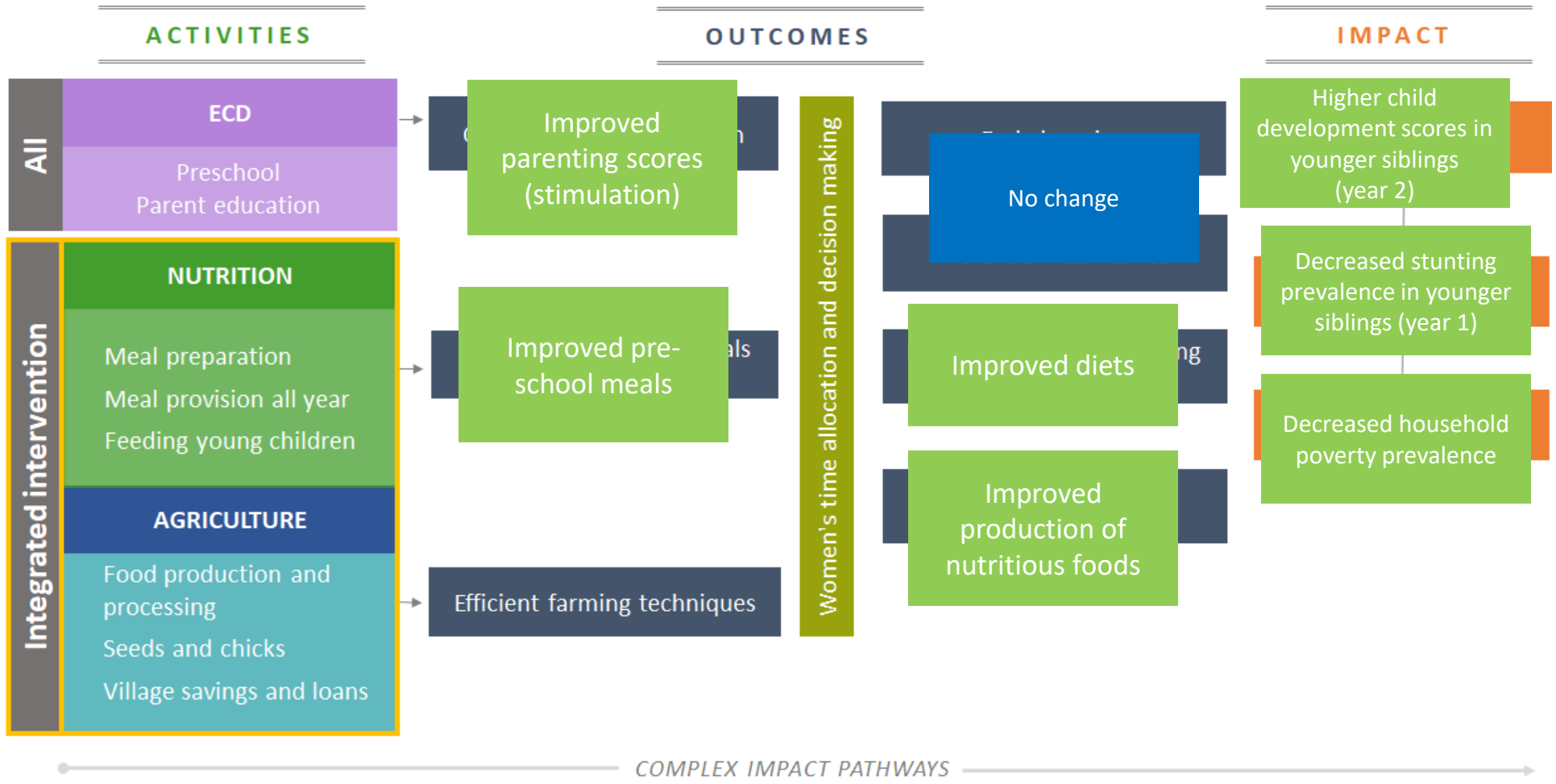
- CBCC-based
- Driven by community level actors
- Intervention activities include information and agricultural inputs (no food transfers)

Background

Impact evaluation*

- Cluster randomized trial
- Study population= 1,199 households in catchment area of 60 community based ECD centers in southern Malawi
- Primary outcomes:
  - Household production and diversity
  - Preschooler enrollment and attendance
  - Dietary intake and minimum diet diversity
- Secondary outcomes:
  - Anthropometric measures
  - Child development scores
  - Women's asset ownership and time use

*Gelli, Aulo, Amy Margolies, Marco Santacroce, Natalie Roschnik, Aisha Twalibu, Mangani Katundu, Helen Moestue, Harold Alderman, and Marie Ruel. 2018. "Using a Community-Based Early Childhood Development Center as a Platform to Promote Production and Consumption Diversity Increases Children's Dietary Intake and Reduces Stunting in Malawi: A Cluster-Randomized Trial." The Journal of Nutrition Nutritional Epidemiology.


ACTIVITIES
OUTCOMES
IMPACT
All
ECD
Preschool
Parent education
Integrated intervention
NUTRITION
Meal preparation
Meal provision all year
Feeding young children
AGRICULTURE
Food production and processing
Seeds and chicks
Village savings and loans
Improved parenting scores (stimulation)
Improved pre-school meals
Efficient farming techniques
Women's time allocation and decision making
No change
Improved diets
Improved production of nutritious foods
Higher child development scores in younger siblings (year 2)
Decreased stunting prevalence in younger siblings (year 1)
Decreased household poverty prevalence
COMPLEX IMPACT PATHWAYS

Study Objectives

Economic evaluation

- Estimate intervention cost
  - Cost-efficiency
- What is the cost-effectiveness of this intervention?
  - Cost outcome analysis
  - Cost effectiveness analysis
- Calculate return on investment for the intervention
  - Benefit-cost analysis

Methods

Costing – methodology

- SEEMS approach: top-down expenditure analysis and bottom-up microcosting approach
  - Retrofitted cost data to SEEMS framework and standard codes
  - Valued opportunity cost for government, volunteers and beneficiaries
  - Developed allocation rules for shared costs

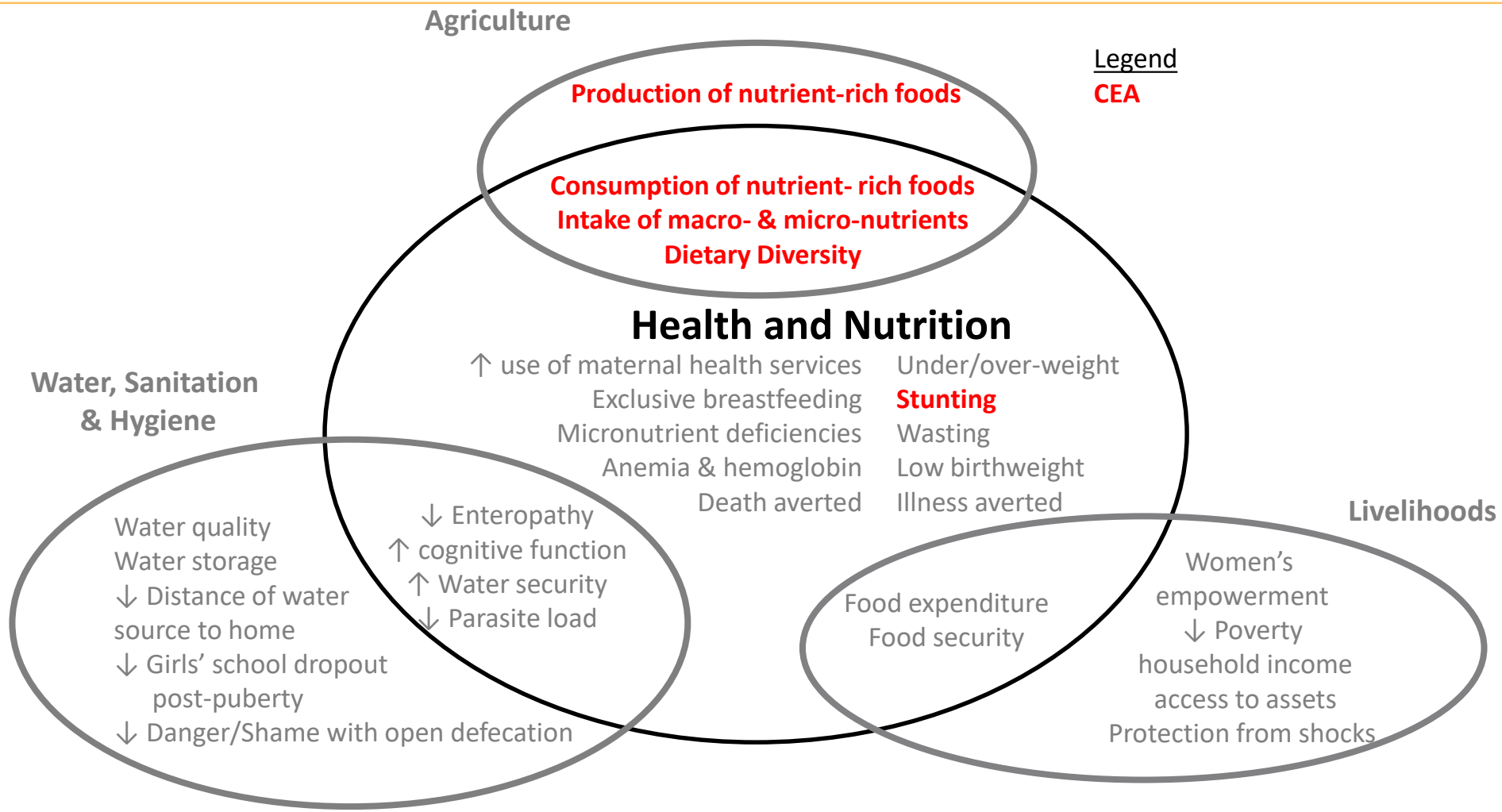
- Total costs and cost-efficiency
  - Total intervention cost divided by number of target population reached.

Methods

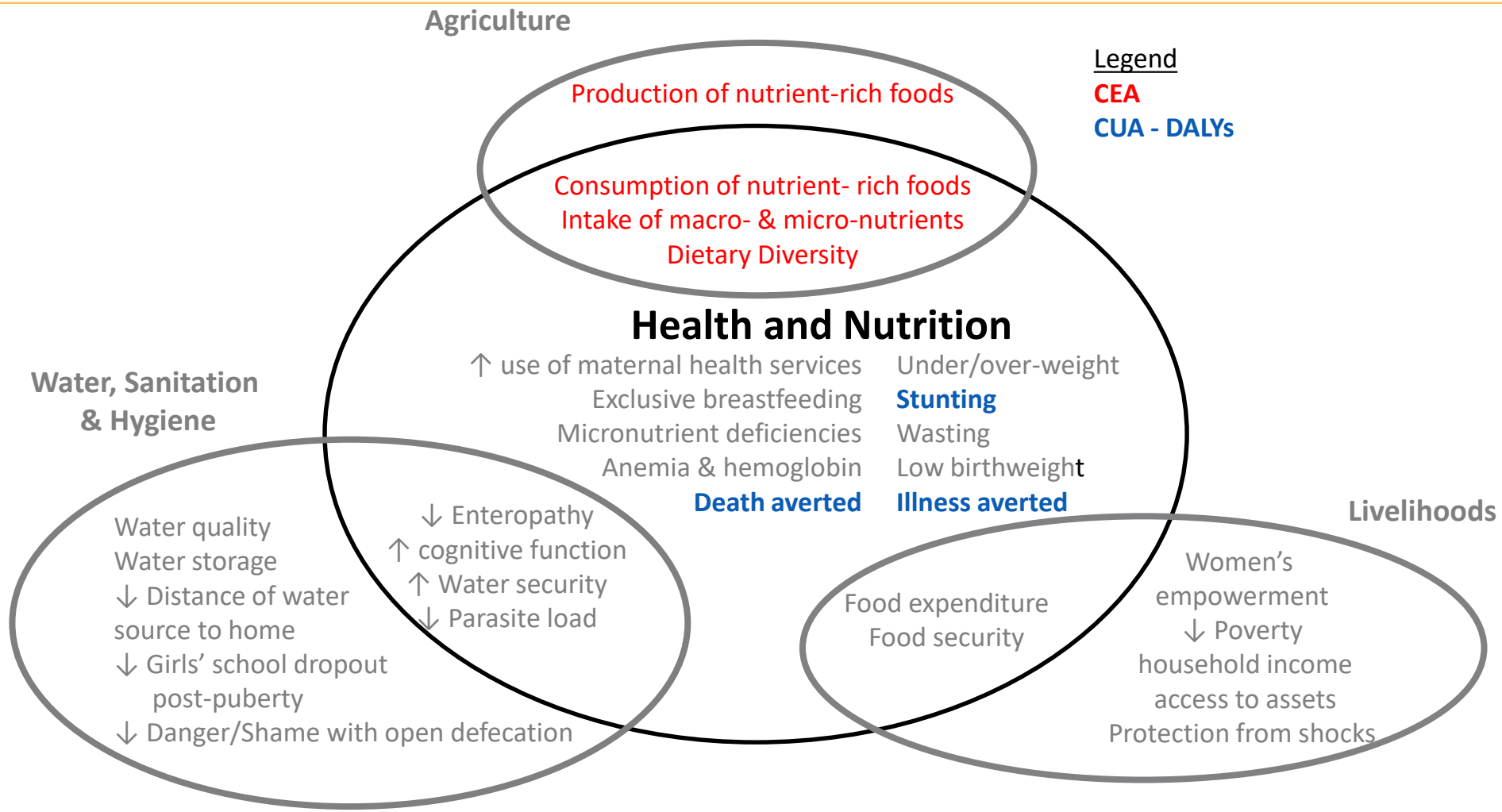
Economic Evaluation

- Cost-effectiveness analysis:
  - Premature deaths estimated using the Lives Saved Tool
  - Stunting cases averted
  - Disability-Adjusted Life Years (DALYs) averted estimated incorporating premature mortality and disability due to stunting
- Benefit-cost analysis:
  - Value benefit streams from mortality, lifetime productivity and agricultural production
  - Sensitivity analyses explored other Value of a Statistical Life (VSL) calculations and discount rates

Benefits


Agriculture
Legend
CEA
Production of nutrient-rich foods
Consumption of nutrient- rich foods
Intake of macro- & micro-nutrients
Dietary Diversity
Health and Nutrition
↑ use of maternal health services
Exclusive breastfeeding
Micronutrient deficiencies
Anemia & hemoglobin
Death averted
Under/over-weight
Stunting
Wasting
Low birthweight
Illness averted
Water, Sanitation & Hygiene
Water quality
Water storage
↓ Distance of water source to home
↓ Girls' school dropout post-puberty
↓ Danger/Shame with open defecation
↓ Enteropathy
↑ cognitive function
↑ Water security
↓ Parasite load
Livelihoods
Food expenditure
Food security
Women's empowerment
↓ Poverty
household income
access to assets
Protection from shocks

Benefits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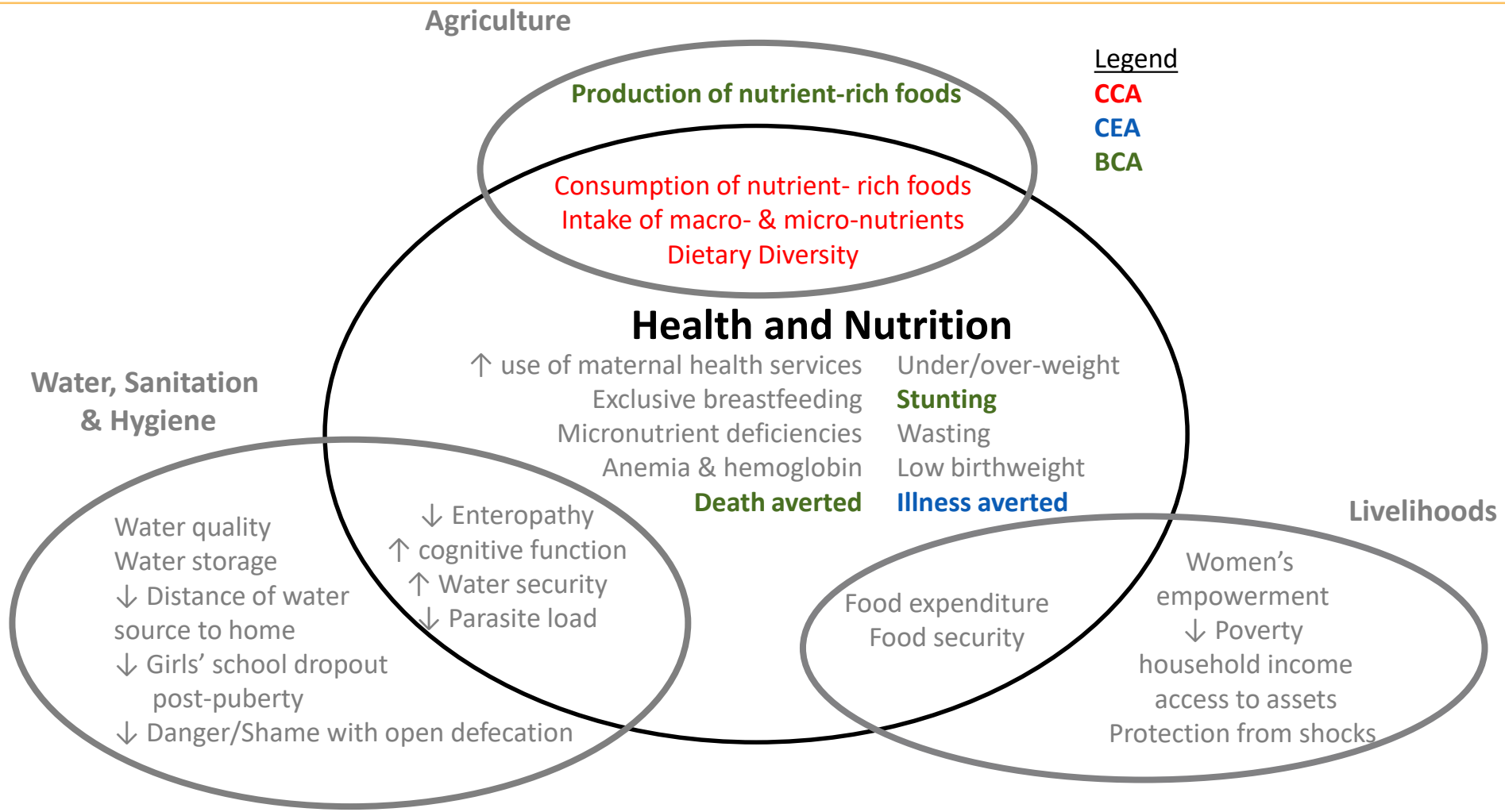
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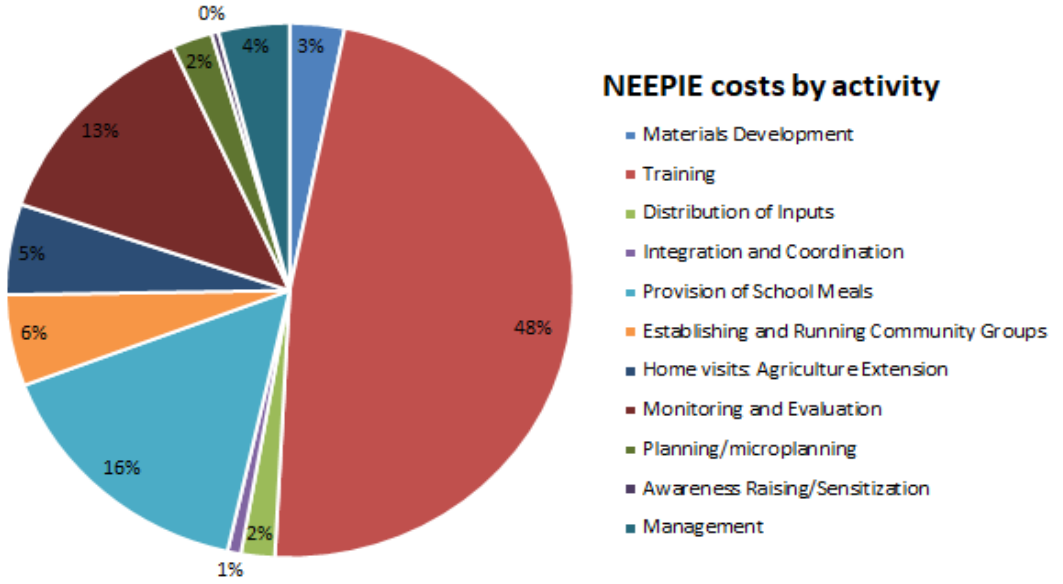
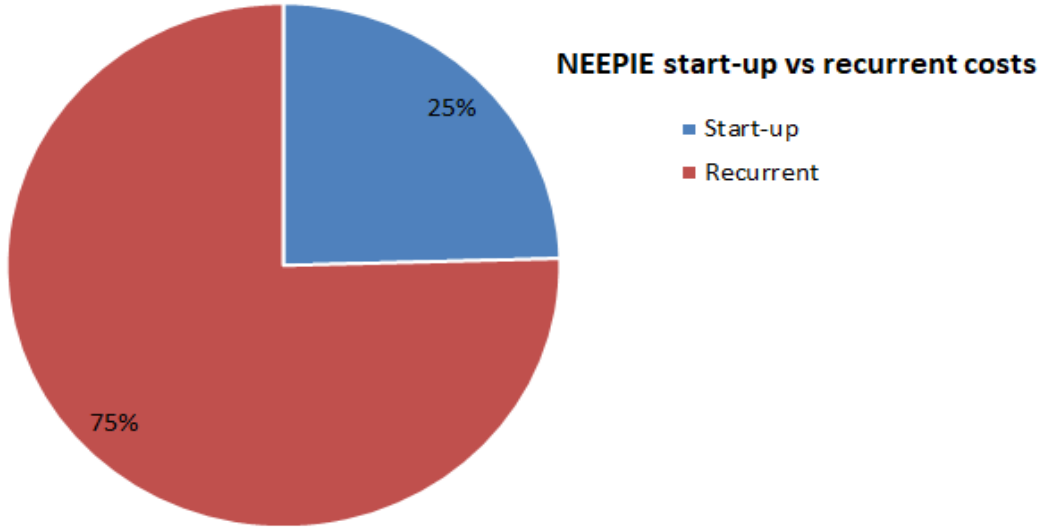
Results

Costs

Input	USD	%
Personnel (hired and volunteer)	$71,967.88	39%
Equipment (capital goods, including vehicles)	$1,301.31	1%
Supplies	$30,618.89	16%
Agriculture supplies	$3,585.16	2%
Fuel and maintenance	$1,200.22	1%
Travel/per diem/allowances	$44,356.00	24%
Mixed Inputs	$32,903.80	18%
Overhead	$898.19	0%
Total:	**$186,831.46**	**100%**





Results

Cost-Efficiency

Total Cost	Population		Cost/reached	
$186,832	Pre-School Children:	1,017	$182	per child
	Beneficiaries:	4,806	$39	per beneficiary
	Households:	900	$206	per household

Results

Cost-Outcomes

Cost	Beneficiaries	Effects	Original		Standardized		Cost-outcome
$186,832	4,806	Change in production diversity score	0.71	units	0.52	SD	$75/SD increase
		Change in production variety score	2.14	units	0.51	SD	$76/SD increase
		Change in diet adequacy (MPA)	5	p.p.	0.34	SD	$114/SD increase
		Change in individual dietary diversity score (IDDS)	0.37	units	0.23	SD	$169/SD increase
		Change in household dietary diversity score (HDDS)	0.36	units	0.17	SD	$229/SD increase

Results

Cost-Effectiveness

Cost	
NEEP-IE intervention cost (**not NET**)	$186,832

Outcomes	
Stunting cases averted	329
Deaths averted	12
DALYs averted (standard LE)	382
DALYS averted (Malawi LE)	363

Incremental Cost Effectiveness Ratio (ICER) Estimates		
Stunting	$569	$/case of stunting averted
Death	$15,569	$/death averted
DALY (standard LE)	$488	$/DALY averted
DALY (Malawi LE)	$514	$/DALY averted

Results

Benefit Cost Analysis

	Base	Low	High
Benefits	**$1,055,864**	**$529,775**	**$3,547,220**
• Deaths Averted	$345,009	$345,009	$2,342,400
• Lifetime Productivity	$609,826	$121,435	$1,085,523
• *Agricultural Production*	*$101,028*	*$63,330*	*$119,297*
Costs	**$186,832**		
• Program	$147,917		
• Community contribution	$38,915		
Net benefits	**$869,033**	**$342,944**	**$3,360,388**
Benefit-cost ratio	**5.7**	**2.8**	**19.0**

Sensitivity analyses:

- VSL calculation (US VSL extrapolation, age/life expectancy adjusted, US ratio, OECD ratio)
- Discount rate (3%, 5%, 12%)

Discussion

Comparisons to similar interventions

Intervention	Country	Sectors	Benefit-Cost Ratio	Source
Essential nutrition-specific interventions	17 countries	Nutrition, health	18 (3.6 – 48)	Hoddinott et al 2013
NEEP (Integrated nutrition/ECD)	Malawi	Nutrition, agriculture, education	5.7 (2.8 – 19)	Gelli et al 2019
Essential nutrition-specific interventions	Haiti	Nutrition, health	5.2 (2 – 8.4)	Wong & Radin 2019
School feeding	Nepal	Nutrition, education	5.2 (3.1 – 8.6)	WFP & MasterCard 2018
Rural sanitation project	India	WASH	2.5 – 5	Weiss et al 2018
Community-led total sanitation	Hypothetical Sub-Saharan Africa	WASH	1.6 (1.2 – 2)	Radin et al 2019
Integrated nutrition and ECD	Nicaragua	Nutrition, education	1.5 (1.3-2.3)	Lopez Boo et al 2014

Generating information on the costs-and expected impacts of scale-up of the ECD program in Malawi

Supporting scale-up of national ECD program

Aim of the modelling and costing work

- Use evidence generated from the NEEPIE research to support roll-out of the national ECD program, combining the planning data on roll-out of activities of the Government and partners across different areas of Malawi
  - Generate scenario-based data on the costs and benefits of the ECD program activities
  - Incrementally integrate the activities of development partners and civil society, over time and across the different areas of the country

Proposed activities

Scenario-based planning

- Use the ECD program planning data and evidence from the NEEP-IE and other relevant research, to model the budget, cost and impact of the different activities that are being rolled out by the Government and development partners
- Different activities would have different budgets, costs and impacts that we could model using scenarios
  - Base case scenario would be the plan as signed-off by Government
  - Scenario variations could include activities by development partners, or different levels of intensity in implementation, or simulating a “shock” e.g. flooding/drought

Proposed activities

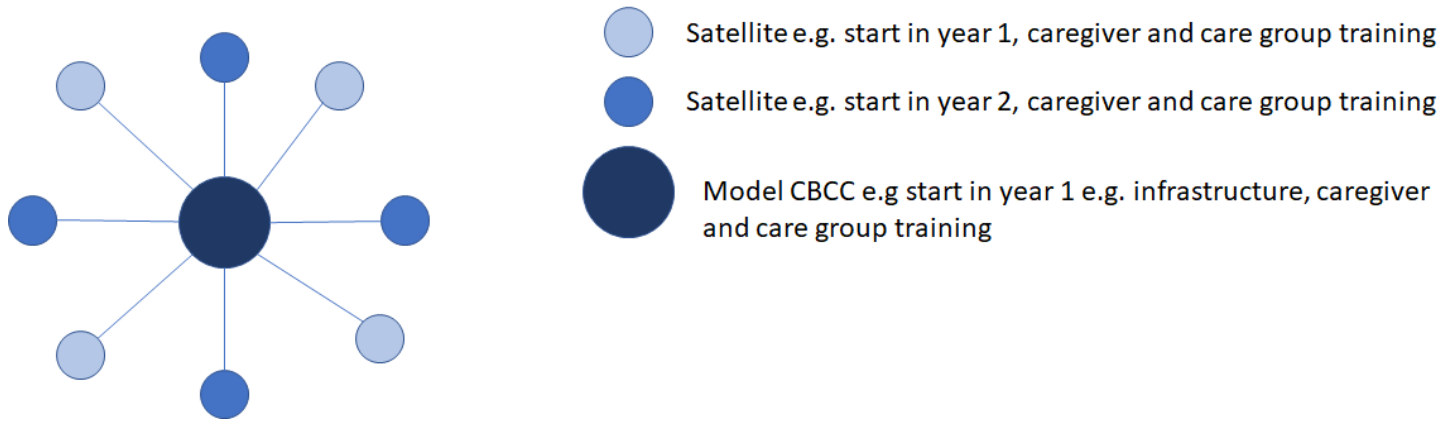
Costing of scaled-up program

- Collect additional data to explore the economic cost of implementation at scale
  - NEEPIE cost data is from small-scale, NGO based implementation
  - Government roll-out will involve different cost structures, including economies of scale
- Activities will generate critical country level evidence on the costs for planning and scaling up nutrition sensitive programs
  - In addition it will contribute badly needed empirical evidence on the costs of working across sectors for SUN efforts for supporting financial projections for multisectoral approaches to improve nutrition and health outcomes

Develop scenario-based models

Example

- "Model CBCC" and "satellite CBCC" and link with care group activities with variations in timing and geography, where different activities have different costs and impacts
  - Component 1: Care group activities (e.g. activities involve behavior change on IYCF practices)
  - Component 2: Activities in model and satellite CBCCs (e.g. activities could involve caregiver training on ECD and meal preparation)



Proposed activities

Developing base case and updating cost analysis

- If Government and partners agree, we could start working on base case using detailed planning data on scale up
  - Government shares details of roll-out
  - Follow-up meetings to 1) understand rollout details with Government and 2) develop alternative scenarios and 3) prepare cost analysis (expenditure and activities mapping)
  - SEEMS team presents draft results between March-June
  - Cost data collection in June
  - Updated cost analysis by September

Any questions?

Thank you!

Questions?