Food and Agriculture Organization of the United Nations

Costing and Monetizing Benefits for Nutrition: Using the FAO Benefit Cost Analysis Tool

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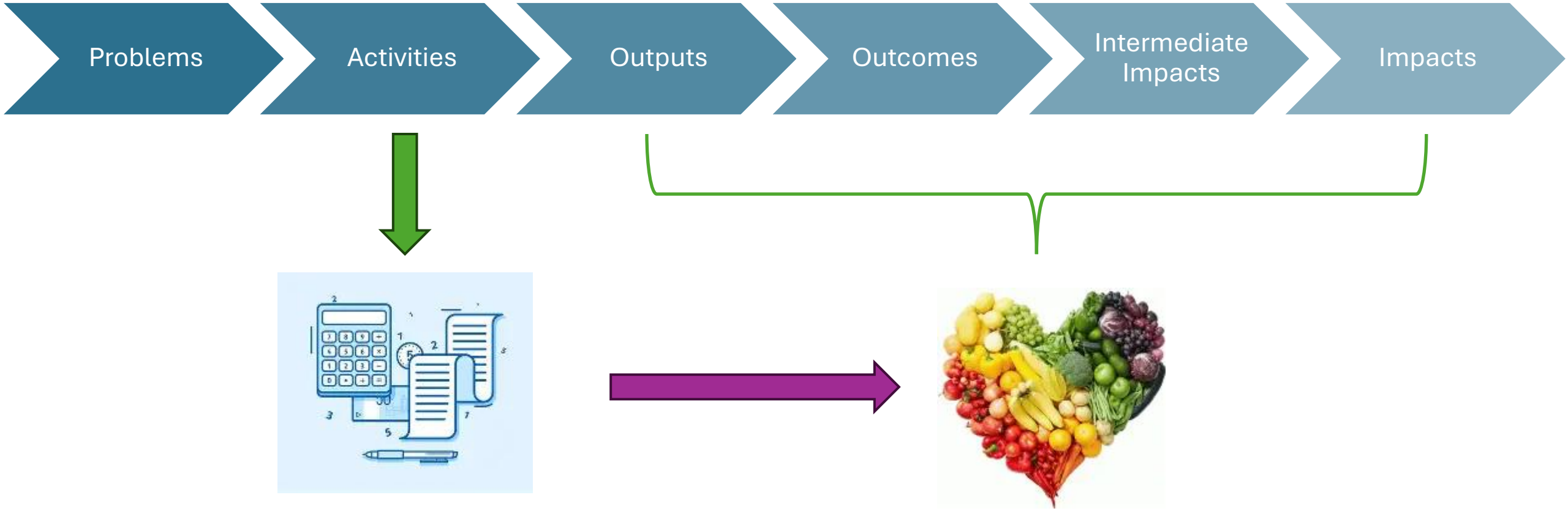
Overview

Agrifood Systems Pathway



FAO CBA Tool

Purpose

- Support FAO staff to systematically collect, analyze, and evaluate cost and benefit information for nutrition activities within agrifood system investments

Structure

- Excel tool to assess costs and benefits of nutrition actions within agrifood system investments
- Uses information from agrifood systems pathways to connect activities to costs to benefits

Users

- Collaborative effort between FAO economists and nutrition program experts

Information provided by users

- Evaluation plan and assumptions
- Agrifood systems pathways detail
- Input details for activities
- Benefit information

FAO CBA Tool Results

Costs can be displayed by any combination of:

- Inputs
- Activities (sub-activities)
- Outcomes (outputs)
- Impact (intermediate impact) / Benefits
- Year

Cost by Impact, 2021 USD

Impact	Cost Year 1	Total Cost
All impacts	-	-
Impact 1	290,000	290,000
Impact 2	230,000	230,000

Cost and Benefit by Activity, 2021 USD

RESULT: Benefit/Cost Ratio: For every USD spent, there is a return in measurable benefits of USD 0.
<ratio displayed here>

Activity	Total Cost	Common Benefit			TOTAL MEASURED BENEFIT	
	-	-	-	-	-	-
	-	-	-	-	-	-

Methods Note

Purpose

- Assist FAO staff to conduct CBAs of nutrition activities to increase the evidence base and inform investment design

Contents

- Guidance document that walks through:
  - Incorporating nutrition activities
  - Steps to assess the costs and benefits

DRAFT
Version 3

Methods Note

Conducting cost-benefit analyses to strengthen the evidence base on how agrifood system investments can enable healthier diets

DRAFT
VERSION 3
For Workshop

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Food and Agriculture Organization of the United Nations

RESULTS FOR DEVELOPMENT

Rationale for CBA tool

Advocating for Nutrition Investments

- Evidence
  - Evidence gaps + competing priorities = difficulty integrating nutrition into investments
- Awareness
  - Raise awareness of co-benefits from nutrition activities

Building on existing frameworks

- Build on existing FAO tools to include benefit/impact considerations
  - CBAs provide results in monetary terms that are comparable across projects, activities, outcomes, or impacts
- Consistency in training
  - Utility of broader training and resources to collect and assess costs in a standard way

Assumptions and Background

Assumptions

- Economists and nutrition program expert work collaboratively
- Analysis is ex-ante
- Project follows the agrifood systems pathways approach

Background

- MCC Nutrition Toolkit
- SEEMS-Nutrition Guidance
- eLearning Course on agrifood systems pathways to healthy diets

Steps for Completing BCA

1. Define the scope of the CBA
2. Estimate the nutrition activity costs
3. Estimate nutrition benefits along the impact pathway
4. Compare the estimated costs and benefits

Step 1: Define the Scope of the CBA

- Understand the program
  - Program goals and objectives
  - Specific outcomes, outputs, indicators to be evaluated
  - Target population

- Define the CBA
  - Evaluation questions
  - Cost perspective
  - Cost and data collection methods and availability
  - Investment time horizon

Step 2: Estimate the Nutrition Activity Costs

Collect the cost data in accordance with the evaluation plan

- Input or activity level (bottom-up or top-down)
  - Better results with more cost detail
    - More readily available for nutrition-specific activities than nutrition-sensitive
- Secondary data on average resource use and costs
- Expert opinion from implementing partners

Step 3: Estimate Nutrition Benefits Along the Impact Pathway

- Define the nutrition benefits to evaluate
  - Based on the impact pathway
  - Inventory of anticipated benefits from the investment
  - Include current and future benefits
- Benefit examples
  - Improved productivity
  - Increased household income
  - Increased GDP
  - Increased consumption of nutritious foods
  - Reducing illness and death
  - Improved cognition

Benefits	Description	Example
Nutrition status improved	Averted mortality and morbidity associated with nutrition disorders and their associated DALYs/QALYs, or improvements in anthropometry (i.e., stunting and wasting). Typically used in cost-effectiveness analyses.	Stunting, wasting averted Number of DALYs averted by reducing stunting, wasting, vitamin A deficiency, other micronutrient deficiencies, or diarrhea
Mortality benefits	Monetary valuation life years saved	Value of a statistical life year and other methods to monetize the value of life years saved
Morbidity benefits	Monetary valuation of reduced risk of non-fatal health risks occurring before death, or illness that poses no risk of mortality	Value of direct and indirect costs averted or saved due to prevention that reduces illness and care-seeking behavior.
Cost savings: health system	Averted health (or other social services) provider costs	Reduction in medical service costs.
Cost savings: beneficiary	Averted direct (out-of-pocket) costs and indirect (opportunity) costs	Reduction in health facility fees, medication, and travel expenses and time savings to and from health facilities, averted days of illness, averted schooling losses
Income	Increase in current household income or national GDP	Increase in current value of agricultural or livelihoods productivity; or depending on the scale of investment increase in GDP growth or levels.
Productivity gain	Increases in future income earnings due to improvements in nutrition and other health status	Change in projected wage rates
Cognitive/education gain	Gain in school attendance, increases in test performance, cognitive, and psychomotor development	Additional years of educational attainment
Dietary diversity (household, women, children)	Increase in the diversity of food consumed (usually the number of food groups)	Improvement in household dietary diversity score (HDDS) or reaching women's minimum dietary diversity (MDD)
Food security	Improvement in the quantity or quality of food access or consumption	Improvement in household food security score
Women's empowerment	Increase in women's ability to make important life choices, access opportunities, and improve their economic status and wellbeing	Percentage of women and men who are empowered in key domains related to decision-making, control of income, and time allocation (Women's Empowerment in Agriculture Index)
Mental/social health	Increase in emotional, social, or psychological wellbeing	Decrease in shame or stress or increase in pride from certain activities (e.g., open defecation, ownership of new technologies)
Knowledge/attitudes/practices	Improvement in knowledge, attitudes, or practices related to nutrition	Awareness of the importance of exclusive breastfeeding and hygiene

Step 3: Estimate Nutrition Benefits Along the Impact Pathway

- Estimate the impacts of the nutrition interventions
  - Resources
    - Lives Saved Tool (LiST)
      - Estimates impact of maternal, neonatal, and child health and nutrition interventions in LMICs
      - Model lives saved through changes in intervention coverage
    - Impact evaluations
- Monetise the benefits
  - Some benefits are easier to value and measure than others
  - Requires economic expertise
  - Requires significant assumptions and subjective decisions
    - These should be carefully documented

Step 3: Estimate Nutrition Benefits Along the Impact Pathway

- Methods Note: Annex 6 contains practical guidance
  - Monetise using LiST
  - Value lifetime productivity benefits
  - Estimate costs averted by non-fatal illness

Table 3. Benefits associated with the nutrition interventions and basis for monetization
(MCC Toolkit, p 47)

Benefit types	Monetization method
Benefits from avoided premature mortality	Estimation options: *Value of a statistical life (VSL):* Estimate VSL by transferring a value derived from the US (USD 9.4 million in 2016 US dollars, equivalent to 160× GNI per capita purchasing power parity (PPP)) using an income elasticity of 1.5. *Constant value of statistical life year (VSLY):* Use 100x and 160x GNI per capita PPP, from OECD and US, assuming an income elasticity of 1. See Robinson et al. (2019) for details on these alternative approaches.
Benefits from reduced morbidity or reduced non-fatal health risks	*Willingness to Pay (WTP) estimates for avoiding diarrheal disease:* WTP to avoid a case of diarrhea in children under five years valued at $35.40*; Adjust to country context, using GNI per capita PPP and income elasticity of 1.0. *WTP is ideally derived from country-specific literature. *Cost of illness* – Estimating an individual's averted (or saved) cost of illness involves estimating the direct and indirect costs incurred due to illness. Direct costs may relate to treatment, for example, doctor's visits and medication. Indirect costs include the value of time a worker loses while sick and the time other household members spend caring for the sick family member (Robinson et al. 2019). Valuing years lost to disability at a constant VSLY plus costs borne by third parties (outpatient costs, inpatient costs, and cost of caregivers' time). Each incidence of diarrhea corresponds to 0.00019 Years Lived with Disability (YLD) (Salomon 2015).
Lifetime productivity benefits	*Productivity gains due to reduced illness or disease* averted stunting, and/or improved cognitive gains from early education. There are significant, lifelong economic benefits from averting stunting (see seminal work from Hoddinott et al. 2008 and 2013). Various estimates and methods capture the impact of stunting on improved wages and/or consumption, ranging from 20 to 60 percent. Most assume that reductions in stunting will improve the wages of adults, beginning at age 16 to 60, using locally relevant wage rates that are country-specific and grow in accordance with GNI per capita growth assumptions. In addition, increased labor productivity due to anemia treatment and prevention has been noted in many cross-sectional and interventional studies. A recent systematic review of data from 12 studies on the effect of anemia and therapeutic iron on productivity in working adults found strong evidence that anemia negatively impacts occupational performance and that therapeutic iron interventions through fortification or supplementation can yield substantial productivity gains. Outcome measures considered were quantitative measures of labor outcome relevant to the occupational context (e.g., the mass of product harvested), which can be translated to additional income or sales (Marcus, Schauer, Zlotkin, 2021).
Benefits from increased current income	*Changes in income, expenditure, and sales* – Changes in expenditure incurred (-) or income gained (+) as the result of an intervention already are presented in monetary terms.

Step 4: Compare the estimated costs and benefits

- Cost-benefit analysis (CBA) ratio
  - Cost incurred by the investment for every one unit of currency achieved in measurable benefits (e.g., cost of X EUR for every 1 EUR in benefit)
    - Any ratio lower than 1 EUR indicates a cost-effective activity
      - Value < 1 indicates the benefits > costs
- Benefit-cost analysis (BCA) ratio
  - Value of measurable benefits incurred for every unit of currency spent
    - Value >1 indicates benefits > costs

Common Challenges

- Complex impact pathways and relationships in agrifood systems
  - Difficult to identify the impact of a single component on economic and nutrition outcomes
- Lack of evidence connecting nutrition activities to some impacts
  - Difficult to capture full range of (co)benefits from the investment
  - Lead to underestimation of true benefit
- Monetising benefits can be difficult and can often be disputed
- Concern of double counting benefits from nutrition activities
- Time preferences
  - Benefits accrue in different periods
  - Calculate present value; conduct sensitivity analysis