Food Systems & Agriculture Framework: Cost-Benefit Analysis Model

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The *Cost-Benefit Analysis Model* is a customizable tool to assist stakeholders—farmers, indigenous communities, non-governmental organizations (NGOs), local governments, and private sectors—in evaluating the financial, social, and environmental impacts of initiatives under the *Food Systems & Agriculture Framework*. By comparing costs against benefits, this model supports decision-making for pilot projects or broader efforts, such as regenerative farming or local food hubs, ensuring alignment with the framework's Strategic Objectives and Core Principles of sustainability, equity, and resilience. Designed for accessibility, it is part of the Start with the Seed Kit and supports the framework's Financing goals, aiding stakeholders in securing funding and justifying investments.

Overview

The model provides a structured approach to:

- Define the scope and objectives of a project.

- Identify and quantify costs (e.g., financial, labor) and benefits (e.g., increased yields, carbon sequestration).
- Conduct a cost-benefit analysis to assess viability.
- Interpret results to guide implementation and attract funding.

This tool supports the framework's aim to mobilize $50 billion by 2027 for sustainable food systems, ensuring projects deliver measurable value aligned with Sustainable Development Goals (SDGs) and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

Accessible explanation: This tool helps you figure out if a project, like a new farm, is worth doing by comparing what it costs with the good things it brings, like more food or a healthier environment.

Alignment: Supports SDG 2 (Zero Hunger), SDG 13 (Climate Action), and SDG 15 (Life on Land).

Instructions

1. **Customize the Model**: Replace placeholders (e.g., [Project Name], [Region]) with details specific to your initiative.
2. **Engage Stakeholders**: Involve [e.g., farmers, indigenous leaders, financial experts] to ensure accurate cost and benefit estimates, prioritizing marginalized groups.
3. **Complete Sections**: Fill in each section, using local data and framework-aligned metrics where possible.
4. **Perform Analysis**: Calculate costs and benefits, using the provided formulas and example calculations.
5. **Share Results**: Present findings to stakeholders and funders via [e.g., reports, community meetings, globalgovernanceframework.org], and use them to refine project plans or secure funding.

Accessible explanation: Fill in details about your project, work with your team to list costs and benefits, do the math, and share results to decide what to do next.

Cost-Benefit Analysis Model

Project Scope and Objectives

Purpose: Define the initiative's goals and context to frame the analysis.

Scope:

- **Project Name**: [e.g., Regenerative Farming Pilot]

- **Region**: [e.g., Sub-Saharan Africa, [Country]]

- **Timeframe**: [e.g., 2025–2027]

- **Description**: [e.g., Train 100 farmers in regenerative practices to increase yields and sequester carbon on 50 hectares].

Objectives:

- [e.g., Increase crop yields by 20% by 2027].

- [e.g., Sequester 500 tonnes of carbon dioxide equivalent (tCO2e) annually by 2027].

- [e.g., Improve food access for 200 households by 2027].

Alignment with Framework:

- [e.g., Supports promoting sustainable practices (SDG 15) and enhancing food security (SDG 2)].

Accessible explanation: Describe your project, where and when it's happening, and what you want to achieve, like growing more food or helping the environment.

Identifying Costs

Purpose: List and quantify all costs associated with the project.

Cost Categories:

- **Financial Costs**:
    - [e.g., Seeds and tools: $5,000].
    - [e.g., Training workshops: $3,000 for facilitators and materials].
    - [e.g., Infrastructure (e.g., irrigation): $10,000].
- **Labor Costs**:
    - [e.g., 500 hours of farmer labor at $10/hour: $5,000].
    - [e.g., 100 hours of coordinator time at $20/hour: $2,000].

- **Opportunity Costs**:
  - [e.g., Time diverted from traditional farming: $2,000 in lost income].
- **Other Costs**:
  - [e.g., Monitoring and evaluation: $1,000 for data collection].

Total Estimated Costs: [e.g., $28,000 over 2 years].

Data Sources:

- [e.g., Local market prices, stakeholder consultations, NGO budgets].

Accessible explanation: Write down everything the project will cost, like buying seeds, paying people, or time spent not doing other work.

Identifying Benefits

Purpose: List and quantify all benefits, including financial, social, and environmental impacts.

Benefit Categories:

- **Financial Benefits**:
  - [e.g., Increased crop yields (20% more, valued at $6,000 annually)].
  - [e.g., Reduced input costs (e.g., fertilizers) by $2,000 annually].
- **Social Benefits**:
  - [e.g., Improved food access for 200 households, valued at $4,000 based on local food prices].
  - [e.g., Community empowerment through TEK training, qualitatively assessed via surveys].
- **Environmental Benefits**:
  - [e.g., Carbon sequestration (500 tCO2e annually, valued at $50/tonne = $25,000)].
  - [e.g., Enhanced biodiversity, qualitatively assessed via species counts].

Total Estimated Benefits: [e.g., $37,000 annually, plus qualitative benefits].

Data Sources:

- [e.g., Agricultural yield data, carbon market prices, community feedback].

Accessible explanation: List what the project will gain, like more money from crops, better food for people, or helping the planet by storing carbon.

Conducting the Analysis

Purpose: Compare costs and benefits to assess project viability.

Steps:

1. **Quantify Costs and Benefits**:
   - Total Costs: [e.g., $28,000 over 2 years].
   - Total Benefits: [e.g., $37,000/year × 2 years = $74,000].
2. **Calculate Net Present Value (NPV)**:
   - Formula: NPV = Σ (Benefits - Costs) / (1 + r)^t, where r = discount rate (e.g., 5%), t = year.
   - Example: NPV = ($37,000 - $14,000)/(1.05)^1 + ($37,000 - $14,000)/(1.05)^2 = $21,905 + $20,862 = $42,767.
3. **Calculate Benefit-Cost Ratio (BCR)**:
   - Formula: BCR = Total Benefits / Total Costs.
   - Example: BCR = $74,000 / $28,000 = 2.64 (a value > 1 indicates benefits outweigh costs).
4. **Qualitative Assessment**:
   - [e.g., Community empowerment and biodiversity gains add unquantified value, supporting long-term sustainability].

Example Calculation:

- A regenerative farming pilot in [Region] has costs of $28,000 and benefits of $74,000 over 2 years. NPV = $42,767, BCR = 2.64, indicating strong viability.

Accessible explanation: Add up costs and benefits, use simple math to see if the project is worth it, and note extra benefits like happier communities.

Interpreting Results and Next Steps

Purpose: Use analysis outcomes to guide decisions and secure support.

Interpretation:

- **Positive NPV and BCR > 1**: [e.g., NPV = $42,767, BCR = 2.64] indicates the project is financially viable and delivers significant benefits.
- **Negative NPV or BCR < 1**: Reassess costs (e.g., reduce infrastructure expenses) or enhance benefits (e.g., scale training).

- **Qualitative Benefits**: Highlight non-financial impacts (e.g., TEK preservation) to attract funders valuing social or environmental outcomes.

Next Steps:

- **Proceed**: If viable, use results to finalize project plans and launch, referencing the Pilot Readiness Self-Assessment Tool.
- **Seek Funding**: Present analysis to [e.g., local governments, NGOs, carbon markets] to secure [e.g., $28,000], as outlined in Financing.
- **Refine**: If not viable, adjust scope (e.g., smaller pilot) or explore partnerships to reduce costs.
- **Share**: Report findings via [e.g., community meetings, globalgovernanceframework.org] to build trust and support.

Example:

- A pilot in [Region] with a BCR of 2.64 secures $15,000 from an NGO, launches training for 100 farmers, and shares results at a community forum.

Accessible explanation: Look at the numbers to decide if the project is good. If it is, start it and find money. If not, make it cheaper or try something else.

Alignment: Supports Monitoring and Evaluation.

Cross-Reference Note: This model supports Financing and aligns with Regional Customization. Explore the Index for navigation or access additional tools at the Tools Library.