AMICAF Analysis & Mapping of Impacts under Climate Change for Adaptation & Food Security

(considerations for)

Assessment, Monitoring and Evaluation for Results-based Adaptation Planning

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Outline

Assessment, monitoring and evaluation

Overview of planning, monitoring, evaluation and learning cycle

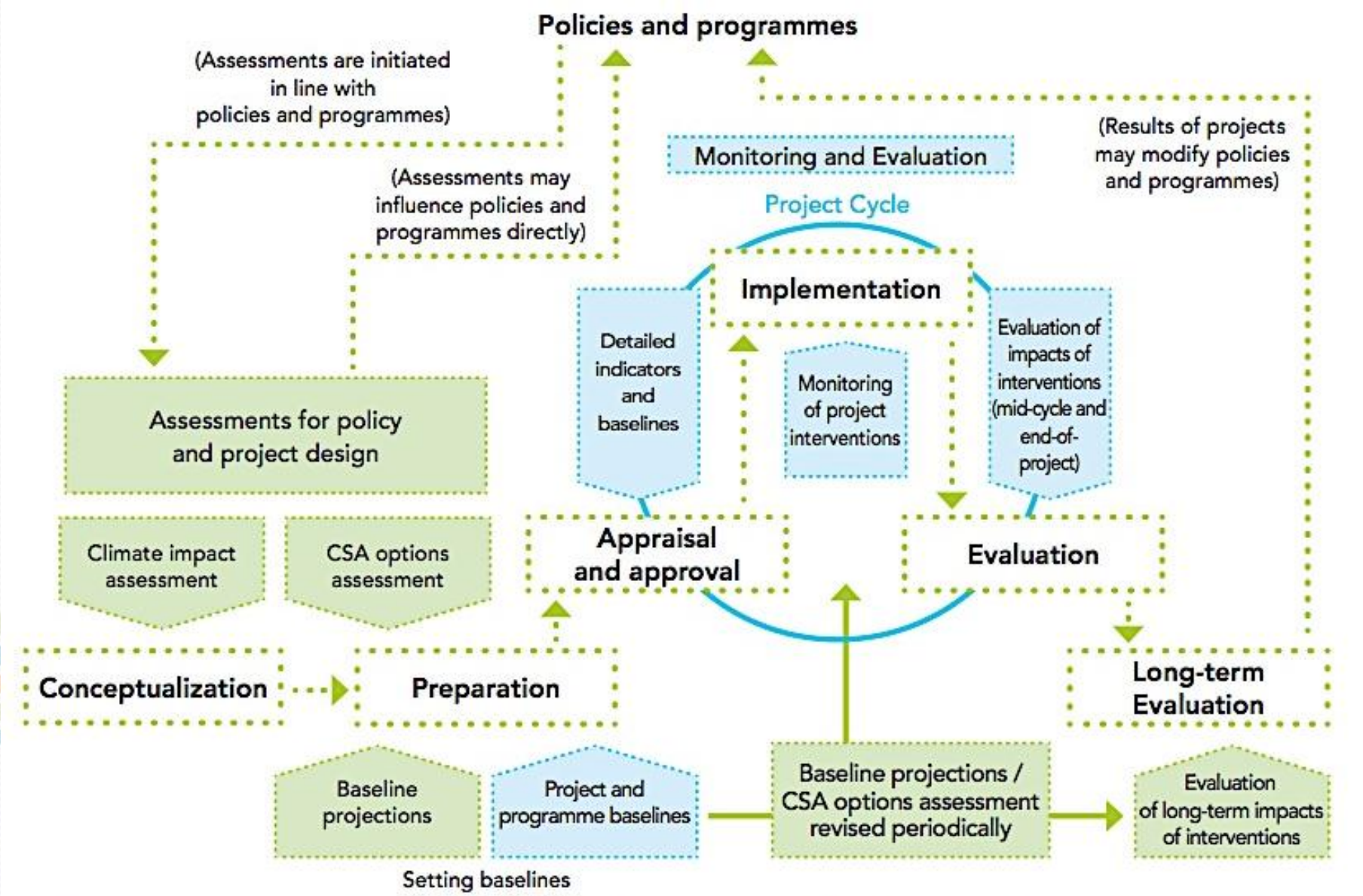
Learning is an important and continuous process in M&E

Developing indicators: the expanded SMART criteria

Baselines and baseline projections

Challenges particular to climate change impacts and adaptation assessment, monitoring and evaluation

Assessment, monitoring and evaluation within a project cycle and broader policies and programmes



Assessments for policy and project design (green background) and monitoring and evaluation (blue background) are color coded respectively.

Assessment, monitoring and evaluation

- Assessment, monitoring and evaluation are integral parts of climate change adaptation planning and implementation
- Assessment activities contribute to defining
  - indicators
  - baselines (situation at the beginning of intervention)
  - baseline projections (without intervention)
- They are also crucial for learning and for conducting policy reviews

- M&E activities set baselines, define indicators, measure progress and evaluation successes and setbacks in adaptation interventions

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Overview of planning, monitoring, evaluation and learning cycle

- **Conceptualization**
- **Preparation and appraisal**
  - Identifying contribution to adaptation
  - Forming an adaptation hypothesis and theory of change
  - Developing adaptation associated indicators
  - Developing results-based management
  - Carrying out appraisals
- **Implementation of adaptation actions**
- **Evaluation**

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Overview of planning, monitoring, evaluation and learning cycle

- **Conceptualization**
- **Preparation and appraisal**
  - **Identifying contribution to adaptation**

    - e.g. in terms of adaptive capacity, adaptation or mitigation actions, and sustained development in a changing climate

  - **Forming an adaptation hypothesis and theory of change**

    - Outline in a participatory and gender-sensitive way the possible options and their expected changes and results across activities, expected behavior changes, outcomes, and impacts

    - These are often formalized into logical frameworks and indicators and help define: inputs and activities, outputs, outcomes, and impacts.

Overview of planning, monitoring, evaluation and learning cycle

… cont'd. Preparation and appraisal

- **Developing adaptation associated indicators**

  - Indicators are developed based on the above hypotheses and changed expectations

- **Developing results-based management**

  - Provide a framework where M&E is used to drive stakeholders to focus much more on the results rather than inputs and activities (can be done by using a participatory M&E approach and applying "learning by doing"

- **Carrying out appraisals**

  - Reviewing the whole design with regard to risks, technical and social feasibility, robustness and efficiency and safeguards

- **Implementation of adaptation actions**
- **Evaluation**

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Learning is an important and continuous process in M&E

- Learning is enhanced at the evaluation stage when important issues are identified and lessons are drawn to improve the implementation of interventions
- Helps build local capacities and instill "a sense of ownership"
- In light of considerable uncertainties in the CCA interventions, the learning process significantly helps in adaptive management during implementation

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Development of indicators in a results-based framework

CSA activities

CSA practices

- Reduced tillage
- Composting and organic manure application
- Crop residue mulching

CSA support activities

- Payment for Ecosystem Services
- Crop insurance
- Capacity development for rural producer organizations

Outputs

Bio-physical variables

- Soil organic carbon levels increased
- Above and below ground biomass increased
- Soil depth increased
- Soil water retention increased

CSA support activities

- Changes in resources use (labour, mechanization, infrastructure, energy, water, etc)

Institutional processes

- Village organizations, rural producer organizations and cooperatives strengthened
- Farmers have better access to credit, extension service, weather information, marketing services

Development of indicators in a results-based framework

Outcomes

Bio-physical variables

- GHG emissions reduced
- Carbon sequestration increased
- Increased drought resilience
- Better water and nutrient availability in soil

CSA support activities

- Climate-related yield variability is reduced
- Agricultural productivity increased
- Agricultural income increased
- Natural, physical and financial asset stocks increased
- Revenue for environmental services increased
- Income levels enhanced
- Livelihoods diversified

Institutional processes

- Better knowledge about climate impacts and CSA measures
- Enhanced institutional capacity for climate risk management
- CSA policies, strategies, and regulations strengthened
- Improved infrastructure for CSA
- Area of CSA adopted farmland increased

Impacts

- Contribution to climate change mitigation
- Agriculture better adapted to climate
- Improved food security

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Developing indicators

Simple, Measureable, Attributable, Reliable and Time bound indicators (SMART). Expanded set of SMART criteria:

1. **Validity**: Does the indicator measure a change in climate risk or vulnerability?

   e.g. increase in soil organic matter? Increased water retention?

2. **Precise and specific meaning**: Do stakeholders agree on exactly what the indicator measures in this context?

   e.g. increase in asset stocks of farmers? What/which assets? natural, physical and financial assets?

3. **Practical, affordable, and simple**: Are climate- and adaptation-relevant data actually available at reasonable cost and effort? Will it be realistic to collect and analyse information?

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Developing indicators

Simple, Measureable, Attributable, Reliable and Time bound indicators (SMART). Expanded set of SMART criteria:

4. **Reliability**: Can the indicator be consistently measured against the adaptation baseline over the short, medium and long term?

e.g. livelihoods diversified? What if diversification was later caused by other programmes or cash-transfer programs, etc.?

5. **Sensitivity**: When the respective climatic effects or adaptive behaviours change, is the indicator susceptible to those changes?

6. **Clear direction**: Is it certain that an increase in value is good or bad and for which particular aspect of adaptation? Is it ultimately attributable to intervention?

- e.g. increased yield?

Developing indicators

Simple, Measureable, Attributable, Reliable and Time bound indicators (SMART). Expanded set of SMART criteria:

7. **Utility**: Will the information collected be useful and relevant for adaptive management, results accountability, and learning? Does it measure achievable results?

8. **Owned**: Do stakeholders agree that this indicator makes sense for testing the adaptation hypothesis?

Four types of indicators

- Quantitative
- Qualitative
- Proxy indicators
- Indices

Examples of indicators

Poverty and household impacts

- Percentage of population that is food insecure;
- Percentage of population below the poverty line;
- Household income, income variability and diversification;
- Gini coefficient;
- Marketing and commercialization chains that are adapted to changing conditions;
- Proportion of food and income that comes from climate-sensitive sources;
- Amount of time spent collecting firewood; and
- Amount of time spent collecting water.

Outcomes in terms of productive change

- Agricultural productivity (e.g. tonnage of crop produced per hectare);
- Changes in land use (area);
- Reduced GHG emissions;
- Changes in productive resilience to climate variability;
- Changes in biophysical characteristics (e.g. content of soil organic matter); and
- Diversification from climate-sensitive livelihood sources.

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Examples of indicators

Outcomes in terms of adoption of adaptation systems

- Number of irrigation systems that raised drought prevention standards and area of farmland area covered;
- Number of soil and water conservation works;
- Area of farmland that adopted CSA technologies (e.g. reduced tillage, permanent crop cover, agroforestry);
- Forest area in which climate-smart technologies are adopted;
- Number of fisherfolk who adopted climate-smart fishery technologies, disaggregated by sex; and
- Increased access of women to land and/or productive resources.

Outputs and outcomes related to capacity-building and service-related interventions

- Number of people who benefited from capacity development, disaggregated by sex;
- Number of male- and female-headed households that have gained direct household benefits from more climate-resilient agriculture infrastructure;
- Farm-gate and market price;
- Women beneficiaries constitute half of participants in capacity-development activities; and
- Number of officials trained on the inclusion of gender issues in CSA.

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Examples of indicators

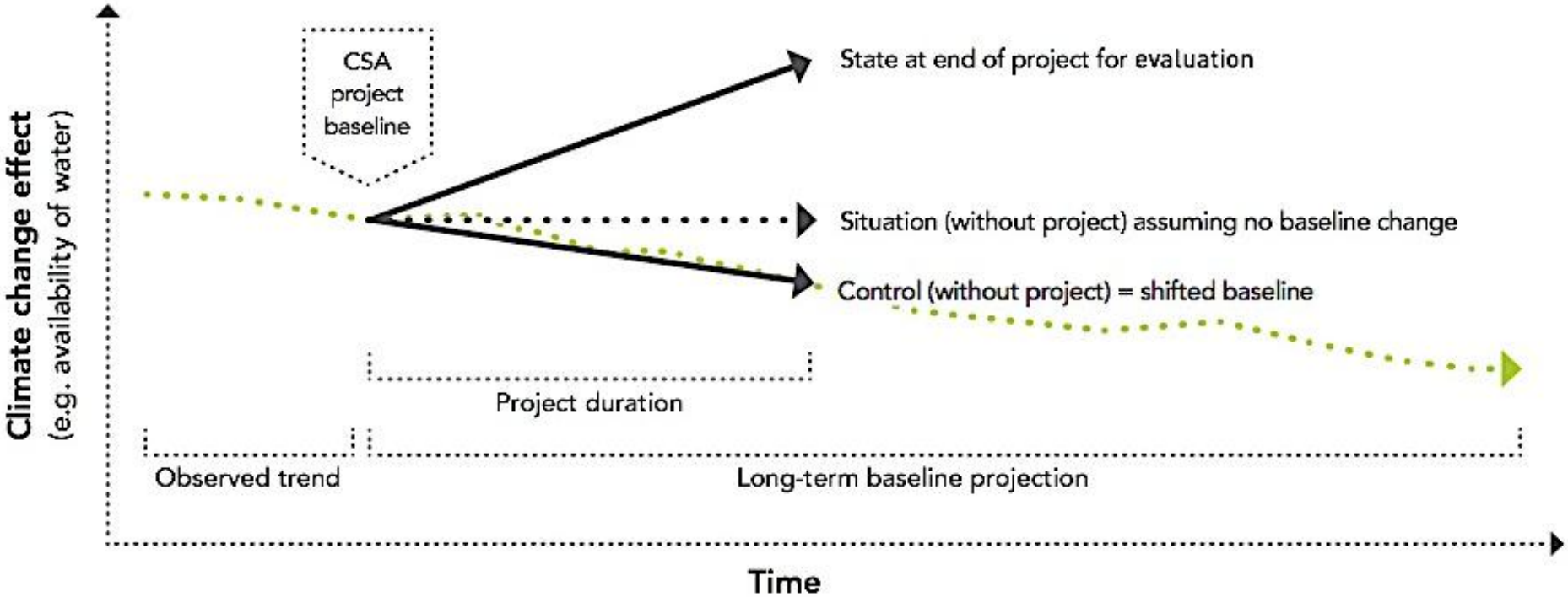
Institutional outputs and outcomes

- Strategy, policy and regulation formulated for CSA;
- Inclusion of climate change in agricultural policy frameworks;
- Actions identified and planned by local authorities to address significant vulnerabilities and opportunities not yet present in existing strategies and actions;
- Public commitments made to identify and manage climate-related risk;
- Proportion of budget allocated to support CSA;
- Proportion of budget allocated to agricultural research and development;
- Evidence of climate change mainstreaming in national and local agricultural development plans; and
- Increase in number of women participating in local, national and regional dialogues on CSA.

Baselines and baseline projections

- Baseline at the beginning of an intervention – used in evaluation at project end (shorter project)
- Baseline projection ("without intervention" scenario) provide counterfactuals – used in evaluation of long-term impacts of adaptation interventions

Baselines and baseline projections



Examples of variables used for measuring baseline projections and project and programme baselines

Examples of variables used in climate change baseline projection within a specific geographic region of interest, include:

- Key climatic variables such as temperature, rainfall, and its seasonality;
- Frequency and intensity of extreme weather events;
- Water availability;
- Climate-risk prone areas;
- The number of people affected by floods or prone to flood risks;
- Agricultural productivity in terms of crop yield (without any adaptation measures); and
- GHG emissions (without any mitigation measures).

Examples of variables and indicators for setting project and programme baseline at the beginning of intervention to compare with end results include:

- Irrigation, water availability and withdrawal;
- Size of farm and land-use areas by crop (both cash crops and crops grown for household consumption) and management practices;
- Livestock numbers and management practices;
- Domestic market prices and their volatility;
- Population groups and their location categorized by poverty, food security, vulnerability and other key socio-economic factors, such as caste, class or age, disaggregated by sex; and
- Percentage of the population with access to and control over key resources for adaptation (CSA technologies, crop insurance, early warning information, seasonal climate forecasts), again disaggregated by sex and other key socio-economic factors.

Climate impact vulnerability assessment and adaptation options assessment

- Climate conditions evolve over project and programme cycles, and new information about impacts of and vulnerability to climate change become available

  -> Baseline projections need to be revised periodically.

  -> Adaptation interventions need to be revised to reflect shifting baseline projections.

  -> evaluate the project benefits against the new projections.

Challenges particular to climate change impacts and adaptation assessment, monitoring and evaluation

1. Definition and goals

(e.g. climate smart? Climate-resilient? Climate-proof? Climate-informed?)

2. Multi-sectoral issues and engaging stakeholders

3. Scales, leakage, permanency, externality and ancillary impact

- short-term benefits but maladaptation over the longer term (e.g. resilient varieties and fertilizer over use)
- timing of M&E (e.g. agroforestry versus crop production)
- virtually every CCA option will produce some positive impact or negative externality and/or ancillary impact (e.g. pollution), whether quantifiable or not, these represent costs or benefits and should be factored in the M&E

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Example:

Enhanced CCA Capacity of Communities in Contiguous Fragile Ecosystems

MDG:F
MDG ACHIEVEMENT FUND

Enhanced Climate Change Adaptation Capacity of Communities in Contiguous Fragile Ecosystems in the Cordilleras

The project aimed to:

(1) develop inter-sectoral, rights- based, and gender-friendly adaptation approaches, including "no regret" options, in contiguous mountain/forest-lowland agriculture ecosystems and

(2) test innovative adaptation measures/technologies for agriculture, water/watershed management including biodiversity conservation.

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Monitoring and Evaluation Design

Evaluate the ability of good practice CCA options to promote or increase resilience with reference to the following criteria:

Technological Suitability
Environmental Efficiency and Effectiveness
Socio-Cultural and Economic Acceptability

These good practice options were summarized in terms of their ability to:

a)address slow-onset climate change impacts
b)reduce risk and impact of climate variability and extreme weather events (and other hazards)
c)enhance livelihood security

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Example

Crop Production: Homestead Gardening (Integrated Food Systems)

Agro-ecological Zone: Low Elevation

Good Practice/Technology Description and Benefit(s): Homestead vegetable gardening to complement integrated food production systems (i.e. rice, maize and fish (*tilapia*)).

Includes planting of *pole sitao*, *ampalaya*, eggplant, *pechay* and snap beans as season-responsive crops.

The GP can improve household nutrition and promote use of idle lots/backyards. It can also hedge for sudden fluctuations in prices in the major crops of farm households during calamities.

Season: Wet

Vulnerabilities/Hazards Addressed: Drought, Erosion; Susceptibility to sudden income loss due to crop failure during extreme weather events;

Water Management System: Rainfed and irrigation

Crop Production: Homestead Gardening (Integrated Food Systems)

File Photo:

N 16⁰ 52' 36.99"
E 121⁰ 26' 55.44"

Bearing:
South West

Elevation: 114 masl
(903 hPa)

Vegetation:

Very Low Biodiversity
(Shannon H' Log Base 10 = 0.694)

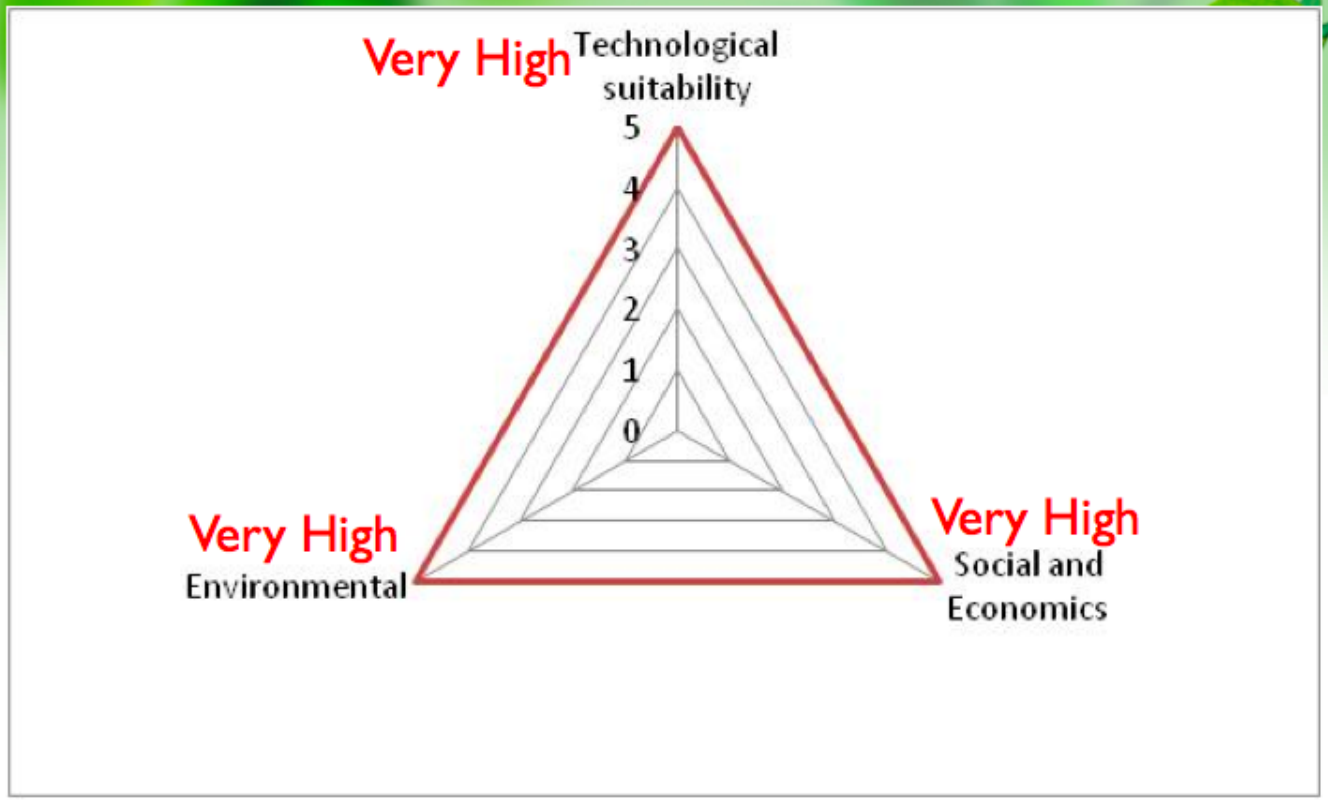
Cocos nucefera (coconut), *Gmelina arborea* (gmelina), *Leucaena leucocephala* (Ipil ipil), *Gliricidia sepium* (kakawate), *Citrofortunella microcarpa* (kalamansi), *Moringa oleifera* (malunggay), *Magnifera indica* (Mango), *Citrus maxima* (Pummelo)

Soil Characteristics:

Strongly acidic (pH 4.7)
Non-saline (Low EC at 0.31)
High levels of Ca, Mg, K, Cu, Zn, Fe, Mn
Low P; Na is <15%

MDG-F 1656

Homestead Gardening (Integrated Food Systems)



Environmental Services and Benefits from the Good Practice CCA		
Fertilizer Usage	Potential to increase soil acidity	Potential to reduce GHG
Minimal (relative to standard)	No	

Economic Benefits from the Good Practice CCA	
Estimated Additional Household Income (PhP)	Value of food consumed from the Homestead (PhP)
1,500 per week	100 per week

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Crop Production: Homestead Gardening (Integrated Food Systems)

Ability to increase resilience to CC: **High**

Capacity to address slow onsetting climate change impacts: **Medium** (as an integrated food system)

Capacity to reduce risk and impact of climate variability and extreme weather events (and other hazards): **High**

Ability to enhance livelihood security: **High**

Challenges particular to climate change impacts and adaptation assessment, monitoring and evaluation

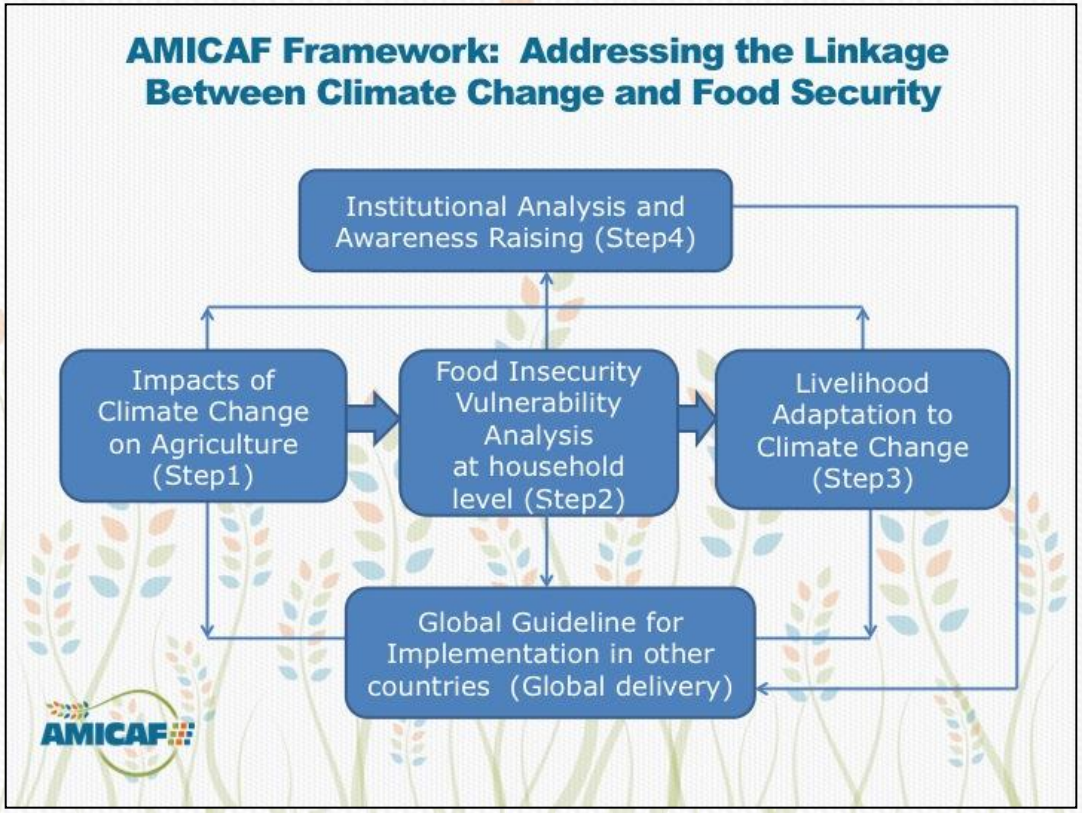
4. Availability of data and information

- Be careful with data overload (e.g. too much information with too little useful analysis); maximize use of existing systems;
- The key is to identify most relevant indicators and to continue to collect data for these indicators
- Also has an implication on how different modelling tools are linked

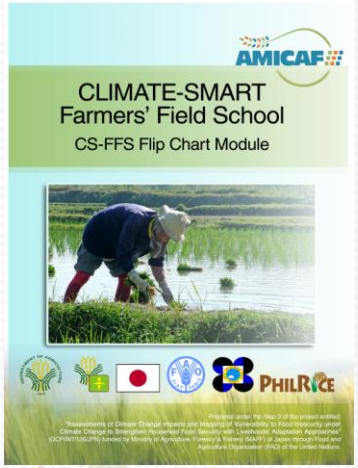
- e.g. using existing data from other activities for M&E, e.g. AESA FFS results to be used as indicators
- e.g. Dealing with climatic/weather data availability issues

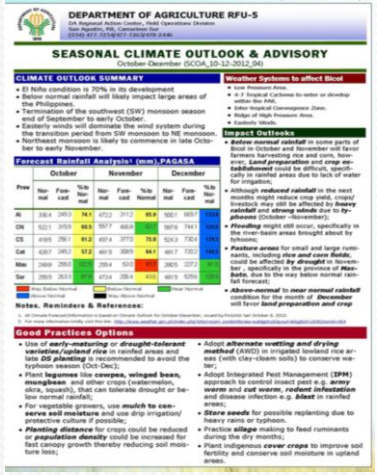
Example:

FAO's AMICAF Framework

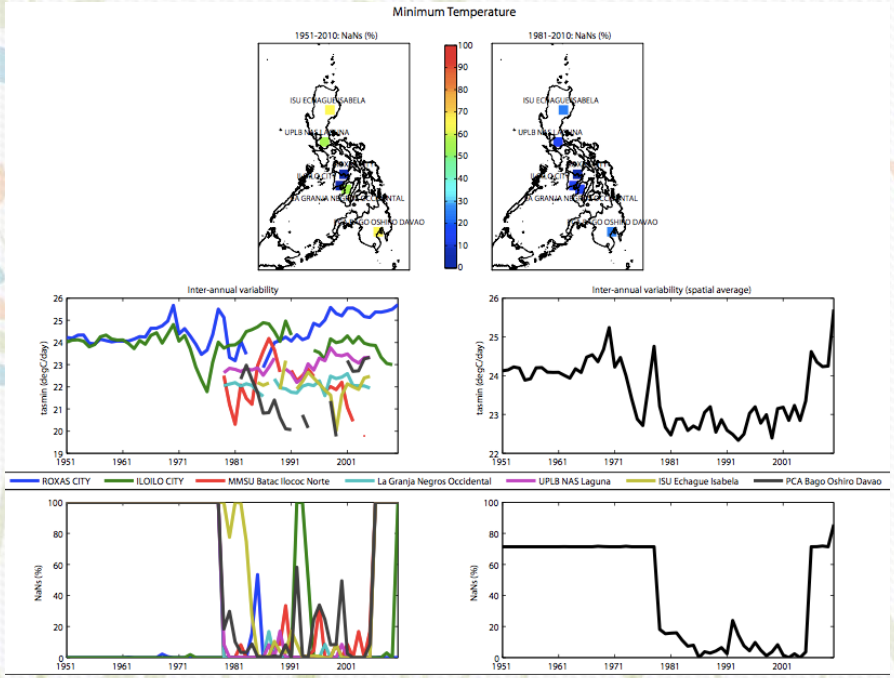


Tapping the Climate-Smart Farmer Field Schools as a vehicle for gathering M&E data





Dealing with climatic/weather data availability issues



Challenges particular to climate change impacts and adaptation assessment, monitoring and evaluation

5. Working with uncertainties

- Uncertainty is to be managed—understand the nature of the uncertainty and resulting limitations
- Take account of uncertainties and be flexible in planning adaptation strategies that withstand unpredictable futures in a robust way (e.g. by complementing it with robust bottom-up assessments and no-regrets options)

- Assumptions and their sensitivities should be explicitly stated and communicated

- Examples: i) GCM choice and downscaling methodology;
  ii) just two seasons of CCA testing versus more seasons, etc.

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Challenges particular to climate change impacts and adaptation assessment, monitoring and evaluation

6. Attribution difficulty

(Up to what degree is it possible to attribute results to a project intervention rather than to other external causes?)

- examples:

i) is the increased adoption of CSA forestry practices a direct result of the project or intervention, or is it influenced by a larger programme or other external activities?

ii) is the decrease in the number of people living below the poverty line may be due to migration or wider economic forces?

- can be addressed through robust sampling when setting baselines and use of control areas (e.g. not covered by other projects, etc.)

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Challenges particular to climate change impacts and adaptation assessment, monitoring and evaluation

7. Inadequate capacity for assessment and monitoring and evaluation

8. Practicality of methods and tools

Thank you for your attention

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