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Guidance note 2: Selecting indicators for climate change adaptation programming



Introduction

"Adaptation and climate resilience encompass a wide variety of measures, processes and actions, operating at different temporal and spatial scales, and this diversity needs to be reflected in any framework for the evaluation of adaptation."

Brooks et al. 2011: 10

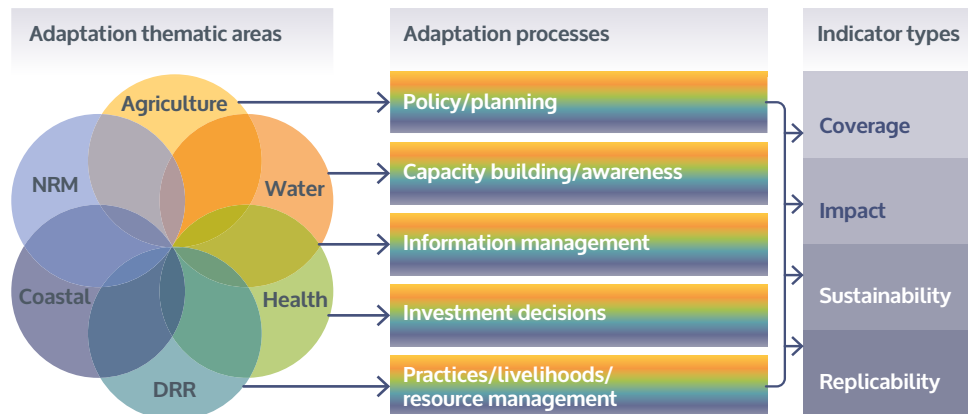
Climate change adaptation (CCA) programming is a complex, dynamic process that cuts across scales, sectors, and levels of intervention. CCA itself is characterised by many uncertainties, and it extends long past usual project cycles. Moreover, the evidence base of what works, where, and under what conditions is only beginning to emerge. How then to define, measure, and assess results of an adaptation programme?

The complexities inherent in CCA pose a number of thorny challenges for evaluators; these were detailed in in [Guidance Note 1](#) (Bours, McGinn, and Pringle 2014a). This second Guidance Note follows on from that discussion with a narrower question: how does one go about choosing appropriate indicators? We begin with a brief review of approaches to CCA programme design, monitoring, and evaluation (DME). We then go on to discuss how to identify appropriate indicators. We demonstrate that CCA does not necessarily call for a separate set of indicators; rather, the key is to select a medley that appropriately frames progress towards adaptation and resilience. To this end, we highlight the importance of process indicators, and conclude with remarks about how to use indicators thoughtfully and well.

Logframes and beyond

Before discussing the 'nitty-gritty' of indicator selection, it is useful to briefly review overall approaches to CCA DME. CCA endeavours are typically grounded in one or more specific sectors, locations, and levels of intervention. Collectively, they may be grouped into portfolios. An example of the thematic areas for UNDP adaptation programming is presented in Figure 1, showing the diversity in programming options and also four categories of indicators that are used.

Figure 1: UNDP climate change adaptation programming.
Kurukulasuriya 2008: 3.



Design of a programme would be based on an analysis of climate change context and vulnerability / resilience assessment, as well as the usual array of stakeholder, operational context, and agency capacity analyses. While there are a range of M&E methods, in practice the most common is results-based management (RBM) and its accompanying logic models/ frameworks (logframes). These should be to be familiar to anyone working in international development. A logic model aligns a hierarchy of goals, objectives, outputs/results, and inputs/ activities into a coherent programme framework (see Figure 2). For each element, measurable indicators are identified which document the programme's achievements.

Examples of CCA logframes

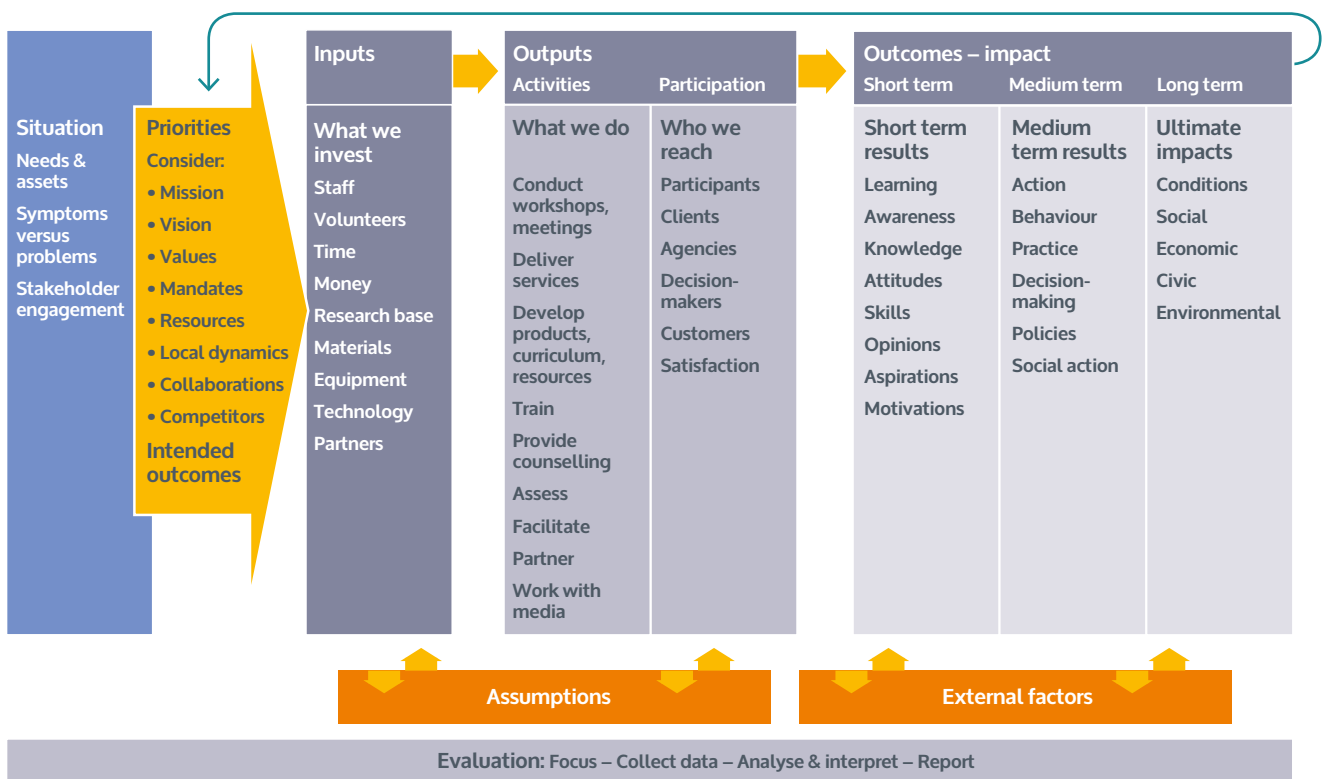
Logframe for the GEF programme Participatory coastal zone restoration and sustainable management in the Eastern Province of post-tsunami Sri Lanka.

Logframe for CGIAR's Research program on climate change, agriculture and food security.

Logframe for NGO Resource Centre Vietnam's programme Capacity building for climate change on NGOs and civil society.

Logframe for the Croatian Ministry of Environmental Protection's programme Impact, vulnerability and adaptation strategy (IVAS) to Climate Change.

Figure 2: Logic model. Adapted from Taylor-Powell n.d.: 12

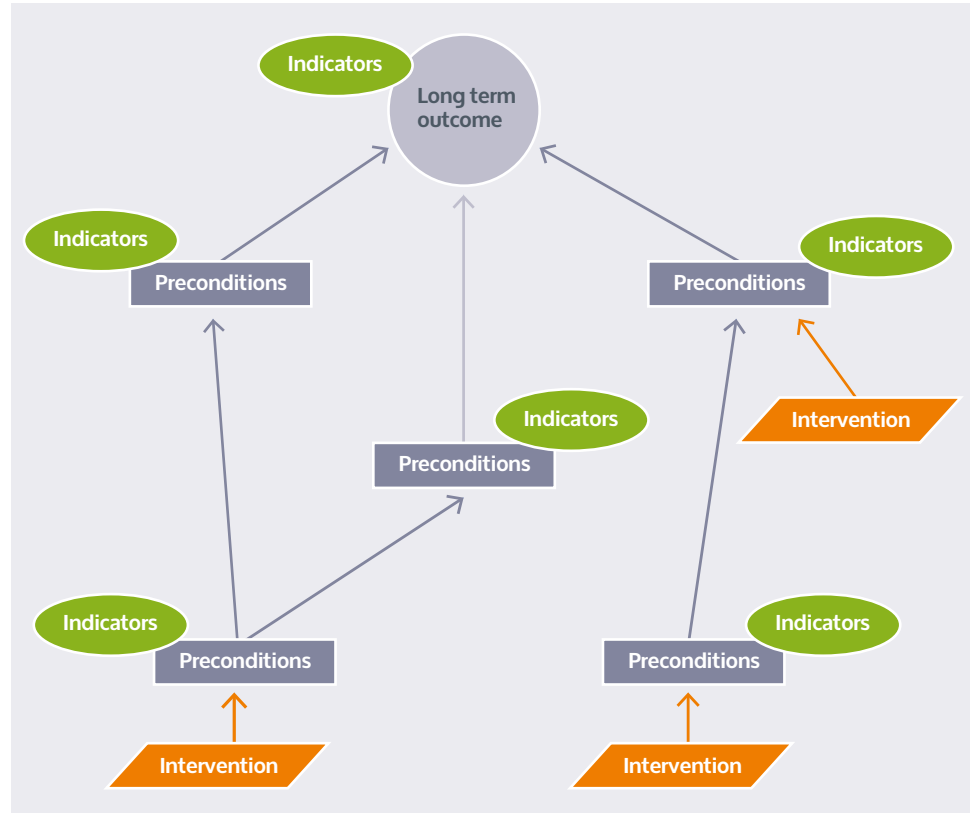


There is dissatisfaction in some professional quarters that RBM is top-down, donor-driven, and serves primarily to satisfy bureaucratic reporting requirements. It is important to recognise, however, that logframes and indicators can be designed with flexibility and innovation. In terms of indicators, it may also be helpful to consider using “a few measures of overall vulnerability” rather than “detailed objectively verifiable indicators corresponding to every component of an intervention” (Lamhauge, Lanzi, and Agrawala 2011: p. 29). This approach may help tame ‘indicator overload’ that sometimes mires programme staff and evaluation reports.

In order to ground an intervention within a larger and flexible analysis, many CCA experts are now recommending the use of a theory of change (ToC) approach to programme design, monitoring, and evaluation. ToC and other theory-based evaluations map out an anticipated ‘causal pathway of change’ towards a long-term outcome or goal, and define how an intervention contributes to or enables this pathway. It is presented as a flow chart rather than a table. Indicators are identified

for each step (usually called 'outcomes' or 'preconditions') along the pathway, together with thresholds that would signify that an overall objective has been met. These thresholds differ from RBM targets, which specify what the agency intends to achieve within the programme cycle. ToC thresholds, by contrast, define what needs to occur in order to move on to the next step along the causal pathway, and does not necessarily measure an intervention's performance. A consensus is emerging among M&E experts that ToC is one of the most robust approaches to designing and evaluating CCA and other programmes with complex characteristics (Bours, McGinn, and Pringle 2013). An example ToC model can be found in Figure 3.

Figure 3: Theory of Change diagram. Anderson 2005: 6



Indicator selection criteria

"No one set of adaptation indicators or single type of M&E system will work for all adaptation interventions. Indicators must be chosen based on the relationship between planned adaptation activities and the socioeconomic, environmental and climatic context in which they will be implemented."
Spearman and McGray 2011: 8

There is no discreet set of CCA indicators per se, because adaptation is not an outcome in itself. Rather, adaptation programming seeks to enable economies, institutions, communities, and individuals to achieve development goals and decrease vulnerability to the adverse effects of a changing climate. Consequently, indicators for particular CCA projects, program, policies, and portfolios may not necessarily look much different from those for other development programmes. It is not the CCA indicators themselves that are unique, but whether the ones that are chosen combine into a suite that appropriately frames and assesses adaptation progress and resilience to climate change over time. Moreover, the complexities and uncertainties inherent in climate change (see [Guidance Note 1](#)) are better-served with a broader selection of indicators than is usually called for in more straightforward development interventions. To this end, there should be an appropriate medley of qualitative, quantitative, and binary indicators (Lamhauge, Lanzi, and Agrawala 2011).



It is notable that several of the best manuals on CCA DME prompt the reader to ask ‘the right questions’ (Pringle 2011) rather than prescribe a list of standardised indicators. Villanueva (2011) makes a strong case that indicators should be selected according to ADAPT principles: ones that are Adaptive, Dynamic, Active, Participatory, and Thorough (p. 9). This is an explicit departure from the more familiar SMART approach (i.e., Specific, Measureable, Achievable, Realistic, and Time-bound), and one that is more suited to the complexities that characterise CCA interventions. Villanueva promotes M&E practice that focuses on tracking and measuring results “in order to promote a better understanding of how individuals deal with a changing environment” so that it is less characterised by past “approaches that prioritise deterministic and static approaches with an over emphasis on short-term results rather than learning” (p. 38).

Ayers *et al.* (2012) recommend that, once outcomes are agreed upon, stakeholders should develop a ‘long list’ of potential indicators by asking key questions including:

- How would we know that change has happened in this outcome?
- How will we know success when we see it?
- What would be the evidence of this change?

From here, a team can ask itself further questions (e.g. What are the most important pieces of information that can tell us about the outcome? p. 43–44) to whittle the suggestions down into a ‘short list’ of indicators that would ultimately demonstrate the program’s effectiveness.

Process and outcome indicators for CCA

Many development programmes emphasise outcome indicators, i.e., those that demonstrate that a particular objective has been achieved. For example, an education programme might choose an outcome indicator like ‘% increase in school enrolment.’ An improvement in this rate would signal success. However, climate change will unfold over many years; adaptation is not an outcome that will be achieved within a normal programme cycle. Furthermore, ‘adaptation’ is not an outcome in its own right; in order to assess adaptation progress, proxies for measuring ‘reduced vulnerability’ or ‘increased resilience’ will be required. Evaluators should also include process indicators which measure progression towards the achievement of an outcome (e.g. ‘resilience to drought’), but do not guarantee or measure the final outcome itself. Process indicators capture contributions towards a long-term aim, and as such are a good fit for monitoring and evaluation of complex and large-scale endeavours. Do bear in mind that the difference between an outcome and a process indicator is not always hard and fast, and can depend on what the programme objective is. For example, ‘number of people trained’ might be an outcome indicator if the programme objective itself is to conduct trainings. However, if the programme objective is wider in scope (e.g. capacity building), then ‘number of people trained’ could be a process indicator. Some of the advantages and disadvantages of process and outcome indicators for CCA are compared in Table 1.

Table 1: Process versus outcome indicators. ETCACC, as cited by Spearman and McGray 2011: 33

| Table 1: Advantages and disadvantages of using process and outcome indicators for adaptation | |
|---|--|
| Process-based indicators | Outcome-based indicators |
| Advantages | |
| <ul style="list-style-type: none"> • Allow stakeholders/sectoral experts to choose the most appropriate adaptation action to meet an outcome • Flexible approach – can adjust to new information as it becomes available | <ul style="list-style-type: none"> • Most government policy objectives/targets are outcome-based • May be possible to link adaptation objectives with objectives in other policy areas • Likely to be sector-specific |
| Disadvantages | |
| <ul style="list-style-type: none"> • Defining a process does not guarantee successful adaptation • A different approach from most other government targets, so often unfamiliar to practitioners • May make it difficult to integrate adaptation objectives with objectives in other policy areas • Not necessarily sector-specific | <ul style="list-style-type: none"> • Defining an outcome does not guarantee successful adaptation • Risk of being overly prescriptive of adaptation options (specifying suboptimal options) • May be inflexible and make it difficult to introduce new information (though great scope for flexibility in implementing specific actions to achieve outcome) |

While it is very important for indicators to be context-specific, an illustration is always helpful. Some examples of process and outcome indicators that might be found in a CCA programme include:

| Example process indicators | Example outcome indicators |
|---|--|
| <ul style="list-style-type: none"> • # of direct beneficiaries involved in project milestone decision making (household level) through community mobilisation activities • % of men and women applying drought-resistant agricultural practices learned in programme-sponsored workshops • Government disaster preparedness personnel are monitoring and analysing climate change observations and projections as per trainings provided by programme • Training quality as perceived by participants • Disaster management coordination is improved by networking structures introduced by programme • % increase in household savings through increased availability of financial services • % of schools participating in climate change awareness activities for children through project engagement with schools and teachers • % of village committees that have relationship with at least one non-timber forest product social enterprise facilitated by programme outreach activities • Provincial disaster management strategies and plans reflect the influence of the climate change adaptation initiative | <ul style="list-style-type: none"> • Coping strategies index score • Disaster early warning system is in place and effectively communicates to public • % of people with safe, convenient access to sufficient quantity of water for household use year-round • Coastal city's protective infrastructure upgraded to meet international standard • % of buildings with insurance coverage for extreme weather events • % reduction of population living in flood plain • % of hectares of crops planted with drought-resistant strains • # of provinces with practical and operational disaster management plans in alignment with national policy and standards • Local project plans reflect perspectives, needs, and inputs from marginalised ethnic minority • Property laws changed to better protect the needs and rights of female-headed households • # of hectares of forest under community-based protection and management • Fish stocks in coastal zone are stabilised |



Using indicators intelligently

Given the global scope of climate change and the newness of adaptation interventions, the evidence base that informs interventions is nascent. We do not have a clear picture of what works where and under what conditions; much less what the best indicators are (Hedger *et al.* 2008). This point also highlights how important it is to harness M&E research to identify and disseminate lessons learned.

If developed and utilised appropriately, indicators can be a vital tool in tracking progress and understanding what successful adaptation looks like. However, unrealistic expectations of what indicators can do, inappropriate use of indicators, or a desire to oversimplify can result in a failure to learn lessons, and possibly maladaptation (i.e. interventions that may seem helpful in the short run but ultimately cause harm to either the population or the environment). Remember:

1. *Not everything that is useful can be counted.* Quantitative indicators are extremely useful. So are qualitative ones! Complex socio-economic dynamics underlie adaptation effectiveness and are often either hard to quantify or the data is not available. Think carefully about how your quantitative and qualitative data sets complement one another, and together construct the most complete picture of CCA performance and progress.
2. *Avoid over-simplification.* In some quarters there is a growing emphasis on standardising and aggregating quantitative indicators for CCA (Bours, McGinn, and Pringle 2013). Standardised indicators can be relatively simple to report on, and are attractive insofar as they can be used to compare, consolidate, and present data succinctly. Indeed, this makes them invaluable for a range of critical purposes, including accountability, comparative research, and global policy analysis. However, standardised indicators may not reflect the local context and may lose opportunities to capture key lessons which underpin success or failure. This in turn can lead to an insipid or misleading set of conclusions. At times the problem here is often not the choice of indicators themselves, but how they are used later in the M&E process. For example, politicians or the media may be tempted to distil a complex adaptation issue into a few simple messages; this does not overcome complexity, it simply hides it! Be aware that indicators can be easily misused and misunderstood, especially when taken out of context and with an evidence base that is fragmentary. CCA programme designs should include indicators that more sensitively capture nuanced changes at local and behavioural levels. As Horrocks *et al.* 2012 commented, "by their nature, all of the global metrics offer the possibility of cross-country comparison... [but] adaptation is first and foremost a local issue" (p. iii).
3. *Consider scale and data availability.* In the real world, data for the indicators we would ideally use is not always consistently available. There may be abundant information on changes in water use in one region and very little in another, for example. Make the best use of what information you have. It is useful to have a set of 'core' indicators which are consistent across your project or programme, but do think how they may be complemented by localised ones, while ensuring that the methodology and analysis remains robust.

Conclusion

This paper has demonstrated that CCA design, monitoring, and evaluation does not call for a discreet, separate set of indicators. Indeed, the ones that are ultimately chosen may resemble those that also fit other development activities. However, it would be a grave misinterpretation to say that they are identical or indistinguishable. What sets CCA indicators apart is not what they are individually, but rather how they combine to measure an intervention's contribution toward adaptation on a much larger scale. As such, the suite of chosen indicators would include more process indicators than would be expected in a more straightforward development programme.

Indicators are a key tool for project and programme managers and evaluators; if used appropriately, alongside other data sources, they can illuminate our understanding of a complex issue such as climate adaptation. But they should not be viewed used as a short-cut to gaining a deeper understanding of climate adaptation. CCA programmes should be designed and evaluated within an analysis of the complex, long-term, and shifting backdrop of climate change, yet still be tailored to the local context. A Theory of Change approach to programme DME offers one of the most promising tools that we have to do this, and will be the topic of [Guidance Note 3](#).

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