Briefing

Climate change

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Indicators for the monitoring and evaluation of adaptation

Methodologies for the monitoring and evaluation (M&E) of adaptation are being developed and tested in a variety of programmes, government systems and climate finance institutions. They face a number of challenges, including: the potentially long timescales over which climate change and adaptation responses may emerge; the lack of clear metrics and criteria for evaluating adaptation 'success'; the highly contextual nature of adaptation; and the need to evaluate success in the context of evolving and uncertain climatic conditions. The Tracking Adaptation and Measuring Development framework identifies four categories of indicator for adaptation M&E: (1) climate risk management indicators; (2) resilience and related indicators; (3) indicators of human wellbeing; and (4) climate indices. These indicators address the above challenges by allowing different but complementary approaches to the assessment of adaptation results.

Policy pointers

Climate risk management indicators track changes in institutions, policies and capacities and can be measured using scorecards to show changes over time.

Resilience-type indicators are context-specific and can be measured at any time to assess the capacity of households, communities and systems to respond to hazards.

Wellbeing indicators may overlap with regular development indicators already used by governments and can be interpreted in the context of climate indices to assess long-term changes.

The four indicator types can be linked using a theory of change to measure adaptation or resilience in a particular context.

Diverse goals and metrics for adaptation-related activities

Adaptation-related activities have many different goals, including: building resilience and adaptive capacity; reducing the loss of assets associated with climate extremes and disasters; improving climate risk management (CRM) processes; and delivering specific adaptation measures relevant to particular contexts and hazards.[1] They also aim to address typical development goals such as poverty reduction and improved health and food security.

This results in a bewildering number of metrics for assessing adaptation results. Some of these metrics map directly onto standard development indicators (for example, poverty, health and nutrition indicators), begging the question of how adaptation activities differ from 'regular' development activities. Assessing the success of activities that focus on improving resilience, enhancing adaptive capacity or reducing vulnerability requires these abstract constructs to be 'operationalised' into measurable quantities.

Whichever metrics are used, changes in metrics must be tracked for long enough to detect meaningful changes and interpreted in the context of climate trends and variations — the consequences of which might overwhelm the influence of adaptation activities for assets and human wellbeing, at least in the short term.

Indicator categories for adaptation M&E

Assessing the success of activities requires abstract constructs to be 'operationalised' into measurable quantities

The Tracking Adaptation and Measuring Development (TAMD) framework[2] defines four different categories of indicator for adaptation monitoring and evaluation (M&E) (Figure 1, overleaf). It is important to consider the experiences of different gender groups across these indicators and to conduct the M&E processes in a gender-sensitive or gender-responsive way.[3]

1. Climate risk management indicators

CRM indicators, which correspond to Track 1 of TAMD (see Figure 1), are used to assess the extent and quality of institutional processes and mechanisms for addressing climate-related risks. These indicators represent: processes such as integrating climate change considerations into planning; mechanisms such as those for screening activities/investments for climate-related risks and opportunities; the level of knowledge about climate change risks and potential responses among planners.

Nine generic institutional CRM indicators with a scorecard format have been defined within the TAMD framework.[4] The first eight TAMD CRM indicators may be used as off-the-shelf indicators as well as adapted to suit particular institutional contexts. In Cambodia, these CRM indicators have been adapted into readiness ladders that assess the extent to which national-level CRM processes are meeting predefined targets.[5] In Nepal, they have been adapted to work with the district and village development committees.[6] These Track 1 indicators can be integrated into existing government planning systems to track climate change planning at different scales and may fit within local planning and budgeting systems as well.

2. Resilience and related indicators

Improved resilience is an increasingly common goal of activities for addressing climate change. Other goals include reduced vulnerability and increased adaptive capacity. These three terms and concepts are not interchangeable, but do all relate to factors that enable people or systems to anticipate, avoid, plan for, cope with, recover from and adapt to shocks and stresses related to climate change and variability. These factors are highly contextual and will need to be identified through a combination of expert judgment, participatory assessment, and possibly quantitative analysis.

Resilience-type indicators may be gathered in or added to national databases such as censuses or national living standard surveys and used to track national changes. But they are often more useful for M&E of context-specific projects and programmes or for local scales of government planning. In Kenya, local level government committees gather resilience indicators and assess the success of adaptation interventions in a particular context as part of activities funded by decentralised climate finance.

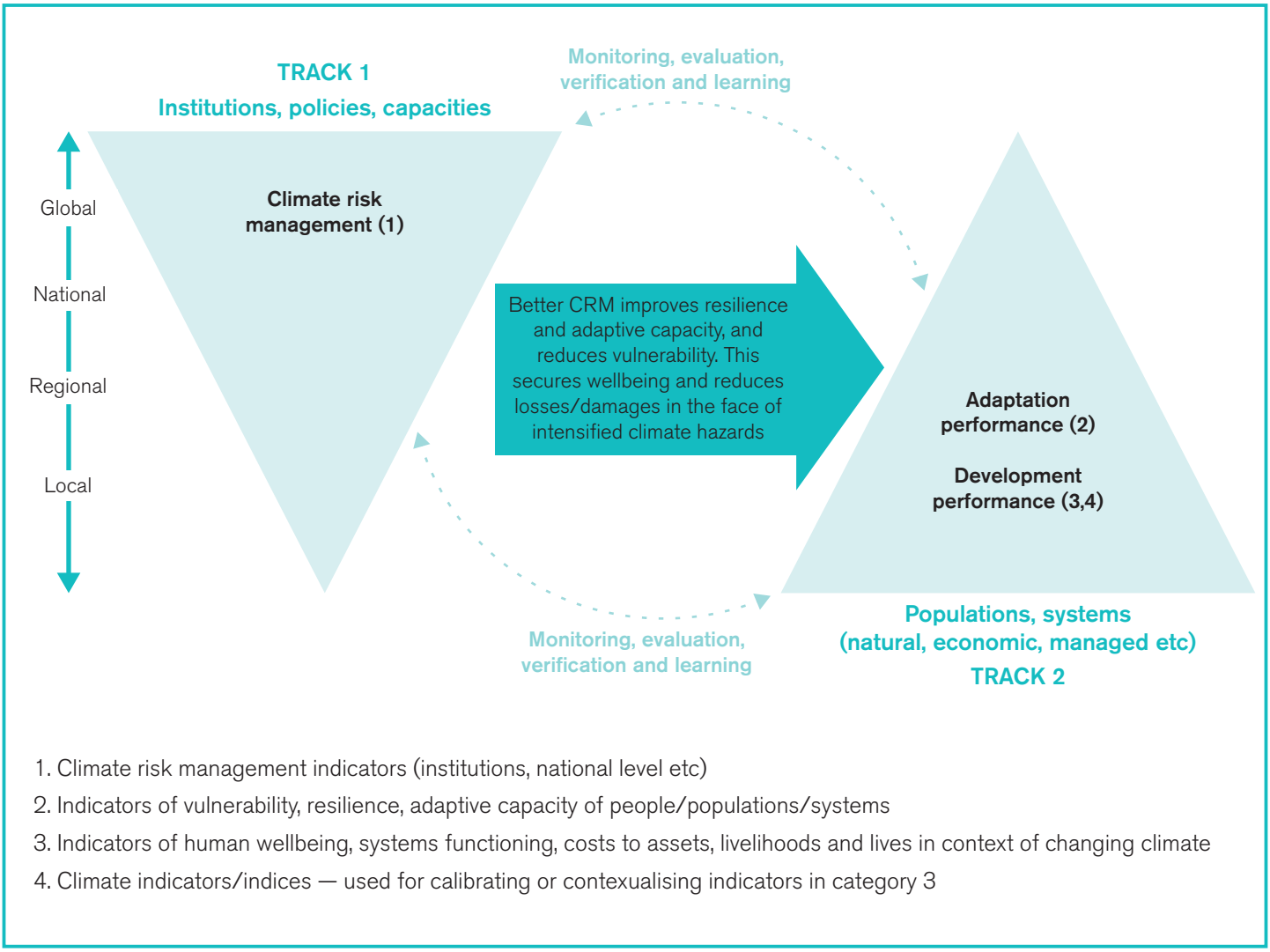
Once identified, the important factors for resilience, vulnerability or adaptive capacity can be represented by appropriate indicators. These might be categorical, binary or continuous indicators depending on the context, as shown in Box 1.[7]

Resilience-type indicators seek to capture characteristics or attributes of people and systems. They therefore can be measured at any time, enabling us to assess changes in ability to manage the effects of climate change, even in the absence of climate shocks or stresses. Provided they are based on sound theories of

Box 1. Types of resilience indicators

- **Categorical indicators.** Based on assigning an individual or household a category (low, moderate or high) according to certain criteria (for example, how easily they can access certain resources).
- **Binary indicators.** Consisting of 'yes' or 'no' answers that might be represented as scores of 1 or 0. For example, Do you use weather forecasts to decide when to plant?
- **Continuous indicators.** Based on a measurable quantity such as household income. Continuous indicators may be combined with categorical or binary indicators.

Figure 1. Categories of indicator mapped onto the TAMD framework, with the relationship between the different categories captured in a theory of change represented by the arrow linking the triangles.



change, preferably informed by empirical evidence, these indicators allow us to assess the results of adaptation activities over short timescales, addressing the problem of timescale in adaptation M&E.

Given the highly contextual nature of these indicators, they should generally be developed on a case by case basis. There may be some overlap with existing development indicators and data, but this should not be assumed. A baseline for these indicators will need to be constructed so that changes in resilience can be measured.

3. Indicators of wellbeing, including costs to assets, livelihoods and lives

Ultimately, adaptation success will be measured in terms of human wellbeing and development performance. These can be represented by indicators that track the costs of climate change — its effects on assets, livelihoods and lives and other aspects of human well-being such as poverty, nutrition and health. These well-being indicators may be tracked at the national level by governments to evaluate progress in managing climate risks, or used in the M&E of projects and programmes. In the latter case, they will be defined at the impact level.

These indicators can be tracked in absolute terms to reveal whether or not costs to assets, livelihoods and lives, or key aspects of human wellbeing are stable, improving or declining. For example, in a country such as Nepal, where landslides are a major risk, the government could track loss of assets such as livestock and crops from landslides over time. This type of information is often already collected through agencies covering disaster risk reduction.

Over years or decades, this might reveal whether or not adaptation is helping to secure or improve development in the face of intensifying climate hazards. This type of data collection is most suitable for governments wishing to monitor and evaluate their progress over the long term. But over shorter timescales, identifying meaningful trends in wellbeing indicators is hindered by variations in exposure to climate shocks and stresses due to climate variability.

Over these shorter timescales (and also over longer timescales), climate data can be used to identify whether wellbeing indicators are changing in the context of intensifying, stable, or ameliorating climate hazards, and thus assess actual levels of adaptation. Historical baselines are also important to determine whether short-term changes in wellbeing indicators are unusual within longer-term contexts.

4. Climate indicators and indices

Where climate data are used to interpret changes in wellbeing indicators, they should represent climatic phenomena that have a demonstrable effect on those indicators and be measured at appropriate scales. Indices such as time of onset of the wet season, duration of dry episodes during the growing season, and maximum rainfall intensity are likely to be more useful than average temperatures or absolute rainfall amounts.

Historical baselines are important for climate indices so that their relationships with wellbeing indicators can be established and apparent trends and variations in climate placed in their historical context. Further guidance on using climate data to interpret wellbeing indicators is provided in a separate briefing.[8]

Key challenges

Information on wellbeing and climate hazards may already be collected through existing government systems and meteorological agencies. The key challenges in setting up a climate change M&E system are: (i) identifying the relevant contextual resilience indicators at the appropriate scale; (ii) relating those to well-being indicators that can be tracked at different scales over the longer term; and (iii) using climate data to interpret well-being indicators in the context of climate changes and variations.

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Notes

[1] A climate hazard is a physical manifestation of climate variability or change to which populations and systems may be exposed. Hazards may be sudden onset (intense rainfall events) or slow onset (long-term declines in rainfall); transient (storms, floods and droughts) or long-term (sea-level rise, shifts to more arid or humid climatic regimes. They may also be 'singular' and catastrophic (glacial lake outbursts, loss of land through catastrophic erosion events). / [2] More information on TAMD can be found at www.iied.org/tracking-adaptation-measuring-development-tamd, from where TAMD working papers, reports and briefings can also be downloaded. / [3] Fisher, S (2014) Tracking Adaptation and Measuring Development through a gender lens. IIED, London. / [4] These are detailed in the following IIED publication: Brooks, N et al. (2013) An operational framework for Tracking Adaptation and Measuring Development (TAMD). IIED, London. http://pubs.iied.org/10038IIED / [5] Rai, N et al. (2014) Developing a national framework to track adaptation and measure development in Cambodia. IIED, London. http://pubs.iied.org/17259IIED / [6] See Fisher, S (2014) Tracking Adaptation and Measuring Development in Nepal. IIED, London. http://pubs.iied.org/17242IIED / [7] Guidance on the identification, construction, aggregation and interpretation of resilience-type indicators (including attribution of changes to programmes and projects) has been developed for the UK International Climate Fund (ICF) and the DFID BRACED programme, and is available online (see note 2). / [8] Brooks, N (2014) Assessing adaptation effectiveness using common development indicators and climate information. IIED, London.

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