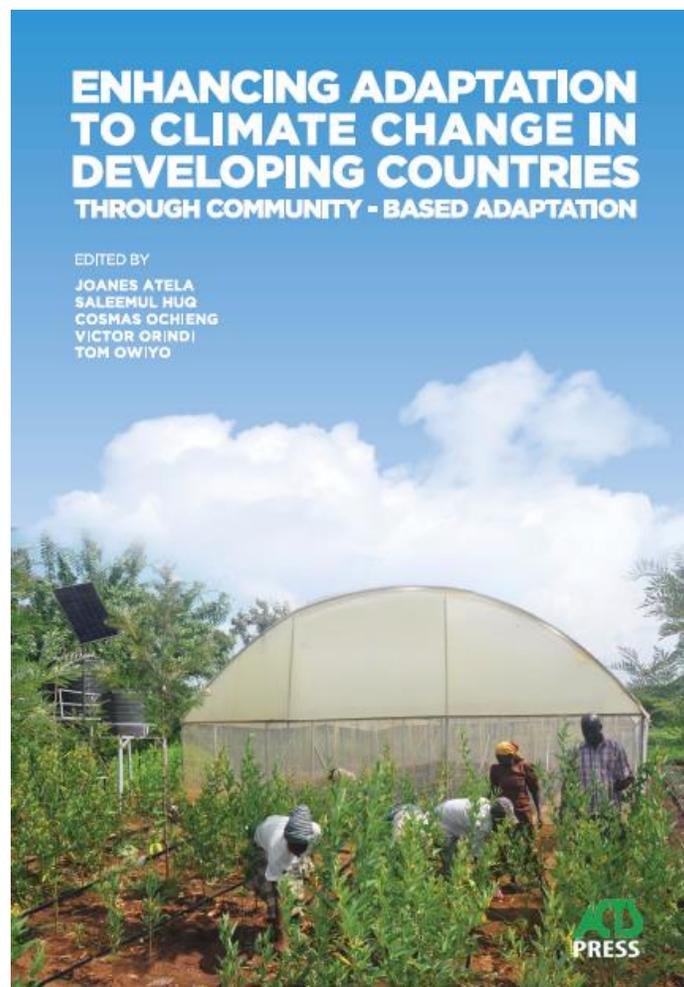


Key considerations for monitoring and evaluation of community-based adaptation to climate change: lessons from experience

Timo Leiter



Edited by Joanes Atela et al.

African Centre for Technology Studies Press 2016

About this book

The book “**Enhancing adaptation to climate change in developing countries through community-based adaptation**” is a collection of contributions from the **9th Community-based adaptation conference (CBA9)** which took place from 27-30 April 2015 in Nairobi, Kenya.

CBA9 was organized by the *International Institute for Environment and Development (IIED)* in partnership with the *African Centre for Technology Studies (ACTS)* and hosted by the Government of Kenya. The **conference theme** was “**Measuring and Enhancing Effective Adaptation**” and more than 400 people from about 90 countries attended.

The **conference proceedings** were published in 2015 by IIED and are available on the website of the CBA conference series.

The book includes **14 chapters** along the themes:

- I. Conceptual context of CBA
- II. Institutional context of CBA
- III. Implementing and monitoring CBA
- IV. Options for financing CBA



This PDF contains **Chapter 10** entitled “**Key considerations for monitoring and evaluation of community-based adaptation to climate change: lessons from experience**”. It was authored by **Timo Leiter**, an advisor for climate adaptation and climate finance at **GIZ**, the German Agency for International Development Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH).

The author can be contacted at Timo.Leiter@giz.de or Twitter [@TimoLeiter](https://twitter.com/TimoLeiter) or [ResearchGate](https://www.researchgate.net/profile/Timo-Leiter). The book can be obtained from the **African Centre for Technology Studies Press**.

Suggested citation:

Leiter, T. (2016). Key considerations for monitoring and evaluation of community-based adaptation to climate change: lessons from experience. In: Joanes, A., Huq, S., Ochieng, C., Orindi, V., & Owiyo, T. (Eds.): *Enhancing Adaptation to Climate Change in Developing Countries through Community-based Adaptation*. African Centre for Technology Studies Press.

Chapter 10

Key considerations for monitoring and evaluation of community-based adaptation to climate change: lessons from experience

Timo Leiter

Advisor, Climate Policy Group, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn, Germany. Timo.Leiter@giz.de

SUMMARY

- **Monitoring, evaluation and learning mechanisms** can effectively support adaptation planning, implementation and the mobilization of resources
- Due to the context-specific nature of adaptation there is **no one-size-fits-all approach** to its monitoring and evaluation (M&E)
- The development of adaptation M&E systems should be guided by **four key considerations**: the purpose of M&E, the content of M&E, how the information generated by M&E will be used and by whom, and what resources are available.
- Several **guidebooks** and other resources for the development of adaptation M&E systems at community, project and national level are available.

INTRODUCTION

Adaptation to climate change has gained increasing momentum over the recent decade. At the international level, the Paris Agreement adopted in December 2015 includes the **global adaptation goal** “of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change” (UNFCCC, 2015). Many governments have recognized the impacts of climate change on all aspects of sustainable development, particularly on the poor, and have put in place national strategies, policies and initiatives such as the National Adaptation Plan process (Nachmany et al., 2015).

Community-based adaptation (CBA) has emerged to involve the poor in addressing climate risks and it is now being practiced in many countries. **An important question is how effective CBA actions are.** Do they really reduce climate vulnerability of the poor and most marginalized? Which approaches work well and what can be learned from implementation? **Monitoring, evaluation and learning can play a vital role** in answering these questions and for improving CBA planning and practice (Ayers et al., 2012).

This chapter reflects on some of the experiences including those of GIZ in implementing adaptation and its Monitoring & Evaluation (M&E) systems in developing countries. Some of these experiences were presented at the 9th Community-based Adaptation conference in Nairobi, Kenya from 27 to 30 April 2015 which had the theme “**Measuring and enhancing effective adaptation**”. The chapter begins with a short introduction to Monitoring and Evaluation (M&E) of adaptation to climate change followed by key considerations for adaptation M&E systems and an overview of available guidebooks. It then describes in more detail how adaptation can be monitored at community and national level and how the two levels can be linked.

KEY CONSIDERATIONS FOR THE DEVELOPMENT OF ADAPTATION M&E SYSTEMS

M&E of adaptation to climate change is concerned with tracking the implementation of adaptation actions and assessing which results have been achieved. Assessing adaptation outcomes is faced with a number of challenges including the lack of a universal indicator to quantify adaptation, the close interrelationship between adaptation and development, the uncertainty of future climate change impacts at local level and the long-time horizons involved

(for more details please see Bours et al., 2014a or Olivier & Leiter, 2013). These challenges explain why it is difficult to evaluate adaptation outcomes in practice. They also illustrate that there is **no one-size-fits-all solution** to assessing adaptation. In contrast, **M&E systems for adaptation need to be tailor made to the respective context**. Drawing on the literature and empirical experience on adaptation M&E to date, **four key considerations should underpin the development of any adaptation M&E system** at any level. These are:

- (1) the **purpose** of M&E,
- (2) the **content** of the M&E system,
- (3) the **intended use** of the M&E findings, and
- (4) the **resources available** to develop and operate it.

Each of these is outlined in the following.

The purpose of M&E

M&E is typically done to serve a particular purpose. Three general purposes of M&E are frequently stated: (1) to support (adaptive) management, (2) to facilitate learning, and (3) to provide accountability. Each of these purposes puts different requirements on the M&E system. For instance, producing a report may be sufficient to fulfil accountability, but a report itself does not guarantee learning. Therefore, **M&E systems need to be designed in a way that facilitates the desired purpose(s)**. Accordingly, M&E systems commonly focus on just one or two of the general purposes. This is illustrated by Price-Kelly et al. (2015, p. 25ff.) for national adaptation M&E systems of several countries. For M&E of CBA, Faulkner et al. (2015) propose a multi-track M&E framework in which different components address different purposes and information needs by stakeholders (see below). Next to the three general M&E purposes of management, learning and accountability, more specific ones exist for adaptation M&E like assessing whether vulnerability has been reduced or how a portfolio of adaptation projects is performing. The Adaptation M&E Navigator (Leiter, 2016) identifies nine specific purposes for adaptation M&E and matches them to suitable M&E approaches.¹

¹The online version of the Adaptation M&E Navigator is available at www.AdaptationCommunity.net under “Monitoring and Evaluation” and “[Multi-level M&E](#)”.

The content of M&E

The design of an M&E system depends on what exactly it is meant to be focusing on. A common distinction is made between a focus on implementation of adaptation (referred to as “*process orientation*”) and results of adaptation (referred to as “*outcome orientation*”) (Harley et al., 2008). Monitoring implementation (e.g. whether trainings have taken place and policies been implemented) is much easier than assessing actual outcomes, e.g. whether vulnerability has been reduced. Therefore, many M&E systems of adaptation at project and national level have so far been limited to process orientation and as a result have not been able to assess the actual effectiveness of adaptation (Leiter, 2014). In addition to process and outcome information, M&E systems also need to account for the context in which the intervention takes place, e.g. by monitoring relevant social, political and environmental changes (Ayers et al., 2012).

Intended use of the M&E findings

Along with the purpose of M&E the intended use and audiences for information generated by the M&E system need to be identified at the beginning. Faulkner et al. (2015, p. 92) assert that “the question of “Who is this information for?” is critical as a first step in designing an approach to M&E for CBA”. To ensure that findings of the M&E system are actually being used, appropriate communication formats and channels need to be pursued. This may involve social media or online platforms to accompany traditional reports. The timing and frequency of reporting also needs to be considered.

Available resources

The available human (time and know-how²) and financial resources for the development and running of the M&E system determine the feasibility of the M&E design. Costs can be reduced if stakeholders provide in-kind support through staff time and if existing data sources are utilized as far as possible (Leiter, 2013). Arrangements to sustain the M&E system once it is operational need to be made. Kenya for example has introduced “Data Supply and Reporting Obligation Agreements” between organisations whose data sources are required for the national M&E system (Hammill et al., 2014a).

² GIZ developed an interactive **training course on adaptation M&E**. The training materials are available on www.AdaptationCommunity.net under Monitoring and Evaluation and “[Training](#)”.

These **four key considerations** should inform the development of any adaptation M&E system at any level. They help to ensure that the M&E system is useful and meeting its intended purpose. Additional guidance to implement these considerations is available through guidebooks and support materials. Table 8 provides a short description of adaptation M&E guidebooks which have been presented at CBA9 as well as a recent guidebook for the development of national level adaptation M&E systems. An overview of adaptation M&E frameworks and tools has also been compiled by Bours et al. (2014b).

Table 8: Guidebooks for adaptation M&E

Source: Author.

Organization/ author and year	Title and description
CARE & IIED (Ayers et al., 2012)	Participatory Monitoring, Evaluation, Reflection and Learning for Community-based Adaptation: a Manual for Local Practitioners. The manual provides background on key concepts relevant for M&E of CBA and outlines how an M&E strategy for CBA projects can be designed. It also describes 14 tools for participatory M&E.
GIZ (Olivier & Leiter, 2012/2013)	Adaptation made to measure. A guidebook to the design and results-based monitoring of climate change adaptation projects. This guidebook offers practical advice to the questions “What characterises an adaptation project?” and “How can adaptation results be measured?” It proposes five steps to design adaptation projects and their results-based monitoring systems (see table 9 below). An accompanying Excel tool (GIZ, 2014) supports the operationalization of M&E and can be used as ongoing monitoring device. Data can be directly entered and progress charts generated (GIZ, 2016).
IIED (Brooks et al., 2014)	Tracking Adaptation and Measuring Development (TAMD): a Step-by-Step Guide. The TAMD framework consists of two tracks: climate risk management (institutions, policies, capacities) as well as adaptation and development outcomes. TAMD has been applied in several countries at national and community level. The guide explains its implementation in six steps.
GIZ & IISD in cooperation with UNFCCC (Hayley & Leiter et al., 2015)	Developing National Adaptation Monitoring and Evaluation Systems: A Guidebook. Readers are guided through key questions along four building blocks to develop an adaptation M&E system in accordance with the national context: (1) understanding the context, (2) identifying the content to monitor, (3) designing a process for operationalization, and (4) developing communication formats. Each consideration is accompanied by practical recommendations and examples.

* *Download links to the guidebooks can be found under the authors' names in the list of references.*

DESIGNING M&E SYSTEMS FOR COMMUNITY-BASED ADAPTATION (CBA)

Principles for M&E of CBA: participatory, learning-oriented and downward accountable

In his review of past and future challenges for Community-based adaptation (CBA), Forsyth (2013, p. 439) raises the question: “*what can be done to provide monitoring and assessment of successful CBA in order to inform donors and development agencies?*” Documenting evidence of the effectiveness of CBA, which Gogoi et al. (2014) identify as key factor for up-scaling, is indeed one purpose of M&E of CBA. Equally important purposes are to facilitate learning and support ownership and adaptive management of CBA interventions by the community. In line with CBA’s principles, M&E of CBA puts a strong emphasis on participatory approaches, on communities’ perspective of successful CBA and on promoting downward accountability as opposed to upward accountability to donors (Ayers et al., 2012). Overall, a “**more enabling M&E agenda**” should be pursued to actively support CBA practices, particularly through social learning mechanisms (Faulkner et al., 2015).

A framework for M&E of CBA

In order to get a **comprehensive understanding of CBA**, Ayers & Faulkner (2012) developed an M&E framework that looks at **multiple dimensions**:

1. **Participatory M&E of vulnerable communities**: their adaptive capacity, awareness of climate change risks and evidence of adaptive behaviours
2. **M&E of CBA interventions**: how they progress and what results they achieve
3. **M&E of the capacity of local institutions** to deliver effective CBA interventions
4. **M&E of communities of practice**: how information flows nationally and internationally across CBA stakeholders and how good practices are shared and used to inform CBA.

This M&E framework **essentially consists of multiple M&E systems**, each tailored to a specific purpose and using different M&E approaches. For example, M&E of CBA interventions is based on a theory of change approach and context-specific indicators whereas M&E of vulnerable communities uses participatory approaches like surveys and self-monitoring. The M&E framework by Ayers & Faulkner (2012) highlights that M&E of CBA can focus on different

aspects and practitioners may choose to focus on only some of the four dimensions outlined above. If, for instance, the main interest is to understand institutional barriers to CBA, then an assessment of the capacity of local institutions would be particularly relevant. If, on the other hand, the main interest is to understand communities' capacity and behaviour and foster learning and ownership, then participatory approaches involving community members seem most relevant. **To get a comprehensive understanding of CBA, however, more than one of the four dimensions needs to be considered.** Since there is no one-size-fits-all approach to adaptation M&E, each dimension is best addressed through a tailored M&E system taking into account the characteristics of that dimension and the purpose of its assessment. Overall, **the M&E framework by Ayers & Faulkner (2012; also Faulkner et al., 2015) is particularly useful because it focuses on who M&E works for and what information needs exist.**

Enhancing Effectiveness of CBA M&E Systems through Theory of Change

M&E of CBA interventions (the second dimension of the framework by Ayers and Faulkner, 2012) can be implemented through a theory of change approach. A theory of change basically describes how the intervention intends to achieve its objective by linking different activities, actors and intended results to the overall objective (an example is illustrated in Olivier & Leiter, 2013, p.22/23). A theory of change approach has multiple advantages over the traditional linear results chain (also known as “log frame” or “logical model”) because it recognises interactions between project activities and accounts for a more complex environment (Bours et al., 2014c). The guidebook “Adaptation made to measure” (Olivier & Leiter, 2013) suggests five steps to design an M&E system for adaptation projects based on a theory of change.³ The five steps are described in table 9. To facilitate the implementation of M&E for adaptation interventions, an excel tool has been developed which allows users to directly enter data and generate periodic progress charts (GIZ, 2014; GIZ, 2016). The excel tool was presented at CBA9 in session 17: “Tools and Techniques for Measuring Effective Adaptation and Resilience”.

Table 9: Five steps to design a results-based M&E system for adaptation

Step	Description
1. Adaptation context	Step 1 is about understanding the adaptation context: which climate change impacts are expected and what factors influence vulnerability (see Fritzsche et al. (2014) for a guide on vulnerability assessments). This understanding provides the basis for designing the adaptation

³ The guidebook is also available in Spanish and French at www.AdaptationCommunity.net under “Monitoring and Evaluation” and “[Project M&E](#)”.

	intervention.
2. Contribution to adaptation	Step 2 is about exploring how the intervention will contribute to adaptation. For example, will it build adaptive capacity or promote specific adaptation actions like changes in farming techniques or rain water harvesting?
3. Theory of change	Step 3 defines objectives of the intervention, proposes activities and their intended results and connects them through a theory of change (see also Bours et al., 2014c).
4. Indicators and baseline	Step 4 formulates context-specific indicators based on the theory of change and establishes their baseline at the start of the project. The indicators should help to demonstrate the adaptation-specific aspects of the interventions. Examples of adaptation indicators used at national level can be found in Hammill et al. (2014b).
5. Operationalisation	Step 5 includes arrangements for data gathering, data analysis and dissemination of M&E findings to the target audience.

A theory of change approach can be complemented by additional M&E approaches to assess the effectiveness of CBA interventions after a longer period of time. One approach is to repeat vulnerability assessments at the beginning and the end of a CBA intervention to analyse changes in vulnerability. This approach is explained in the Vulnerability Sourcebook (Fritzsche et al., 2014, Chapter IV). Another approach is to quantify avoided economic damages and avoided human health impacts based on scenarios of climate impacts. This approach, called “Saved health, saved wealth”, is best suited to adaptation interventions that protect people against extreme weather events. An example of its application to a coastal protection project in Viet Nam is presented by Köhler & Michaelowa (2013). Impact evaluation methods employing control groups or other statistical techniques may also be applied. A guidebook by Silvestrini et al. (2015) provides an overview of common techniques and how they can be applied to adaptation projects.

Trade-offs in the development of M&E systems for CBA

A number of trade-offs are inherent in the development of M&E systems for CBA (Ayers et al., 2012, p. 27). They include:

- The degree of complexity of the M&E system *versus* ease of use and local ownership;
- Comprehensiveness *versus* time and resource constraints;
- Context-specificity *versus* standardised approaches.

An appropriate solution to these trade-offs needs to be determined in light of the respective circumstances, the M&E purpose and the resources available. Issues of data quality in participatory settings also need to be addressed. For instance, in a sustainable land use project in South Africa farmers are entering data about their farming practices and yields into record books. It was found that data quality improved when farmers received ongoing support from compliance officers instead of just participating in one-off training courses (GIZ, 2013). Record books or behaviour change journals are two examples of participatory M&E tools. The guidebook for M&E of CBA by Ayers et al. (2012) provides an overview of 14 tools for participatory M&E.

LINKING CBA TO NATIONAL ADAPTATION M&E SYSTEMS

Whilst CBA puts a strong emphasis on the community level, local developments are also influenced by political and economic forces at national, regional and global levels. Dodman & Mitlin (2013) find that the multi-level nature of adaptation has been neglected in the CBA discourse. In fact, integrating CBA into national policy frameworks and monitoring system can be instrumental for the allocation of domestic resources and it helps to prioritize CBA when accessing international climate funds like the Adaptation Fund, the Green Climate Fund or the Global Environment Facility.

Numerous countries are developing national adaptation M&E systems to track the implementation of adaptation plans and assess the achievement of policy goals (Leiter, 2013; Hammill et al., 2014a; European Environment Agency, 2015). The examples of Kenya, Mozambique and Nepal were presented at CBA9 in session 9 “Government Monitoring and Evaluation of CBA”. A review of ten national adaptation M&E systems by Hammill et al. (2014a) illustrates that the M&E systems differ greatly in their content, M&E methods and institutional arrangements. The primary reason is that national policy contexts, institutional mandates and available datasets differ a lot between countries, and countries also put different emphasis on the purpose of their adaptation M&E systems (the latter is illustrated in Price-Kelly et al., 2015, p. 25ff.). **National adaptation M&E systems therefore need to be customized to the particular purpose and national circumstances.** In response, GIZ and IISD in cooperation with the Least Developed Countries Expert Group and the Adaptation Committee under the UNFCCC have developed a guidebook which outlines key aspects for consideration when developing a national adaptation M&E system (Price-Kelly et al., 2015). It is structured along **four building blocks**:

- **Context:** what is the policy context the M&E system operates in and what is the purpose of the M&E system?
- **Content:** what does the monitoring focus on and what information is required to address the purpose?
- **Operationalization:** how will the information be gathered and what are the institutional arrangements?
- **Product:** how is the generated information used and disseminated?

The guidebook assists decision makers and technical staff at national level in the systematic development of adaptation M&E systems. It also makes reference to M&E of the National Adaptation Plan (NAP) process.

Experience from the development of national adaptation M&E systems has shown that the design and operationalization usually takes multiple years. To date, only a handful of countries are regularly reporting on the basis of adaptation M&E systems (including the UK, Germany and South Africa). The study by Hammill et al. (2014a) contains factsheets with detailed descriptions of ten national adaptation M&E systems including the policy context, M&E methods, indicators used and lessons learned.⁴

Most national adaptation M&E systems developed so far do not explicitly account for local adaptation actions. Due to the context-specific nature of adaptation, it is unlikely that even a comprehensive national adaptation M&E system could possibly capture the richness and diversity of CBA and other adaptation interventions at the local level. Standardized indicators which focus on aggregating numbers for accountability purposes are not suitable for this task (Chen & Uitto, 2014). Nevertheless, a complete picture of national adaptation progress can only be achieved if adaptation actions at local level are considered (Leiter, 2015).

Efforts to integrate subnational insights into national adaptation M&E systems are needed. M&E systems for CBA, however, should primarily focus on addressing their specific purpose and information needs while considering key influencing factors from other geographic levels. As presented in plenary session 2 “Measuring, linking and learning about adaptation effectiveness across scales”, a number of avenues to link national and local adaptation M&E systems exist (Leiter, 2015). These avenues, as illustrated below, are already being used in various developing countries (ibid.).

⁴ Twelve country examples (factsheets) of adaptation M&E systems can be individually downloaded at www.AdaptationCommunity.net under M&E and National-level M&E.

- **Standardized indicators which are aggregated from local to national:** this is commonly done by climate funds like the Adaptation Fund or the Pilot Programme for Climate Resilience. The primary motive is to demonstrate quantitative results for accountability purposes. Because of the diversity of adaptation, standardized indicators which need to be applicable to all types of adaptation interventions often end up as lowest common denominator indicators like “number of people involved” or “number of methods and tools developed”. Standardized indicators of this type therefore have important limitations when it comes to assessing specific CBA outcomes and understanding why CBA was successful or not.
- **Context-specific assessments which are aligned to a national M&E framework:** this avenue provides flexibility and allows for more context-specific assessments of adaptation. In Mexico for example, overarching monitoring themes and subthemes for adaptation have been proposed under which subnational entities can decide how exactly to monitor their adaptation actions and outcomes (Ramos, Altamirano, Klockemann, & Alarcon, 2014). For example, under the theme of food security each province or city can report its actions and results as they deem appropriate. The M&E findings can then be synthesised at national level based on the common themes in order to derive a national picture of adaptation progress. In another approach, South Africa has defined 10 Desired Adaptation Outcomes which together chart a pathway towards climate resilience (Department of Environmental Affairs, 2016). Progress towards their achievement will be reported annually without the use of indicators, instead summarizing available information from government and non-government sources. This avenue thus provides more flexibility to include CBA specific results in national adaptation M&E frameworks.
- **Collecting available information from subnational level without any formal link between M&E systems:** national adaptation M&E systems that are not linked to subnational ones through joint indicators or frameworks might still integrate CBA activities and outcomes through a synthesis of available information.

SUMMARY AND CONCLUSION

There is an opportunity to make M&E work for CBA by focusing on the information needs and capacities of CBA stakeholders and by tailoring M&E systems and communication products accordingly (Faulkner et al., 2015). M&E of CBA can address one or more of multiple dimensions (community capacities and behaviour, CBA interventions, capacity of local

institutions, knowledge sharing) and M&E systems need to be tailored to the respective dimension (ibid.). In doing so, **four key considerations are important for the development of adaptation M&E systems:** (1) the **purpose** of M&E, (2) the **content** of M&E (what is being assessed), (3) the **intended use** and users of the M&E findings, and (4) the **available resources** to develop and operate M&E systems. **Addressing these considerations helps to create M&E systems that work for the users and provide information that can benefit CBA implementation.** Several guidebooks are available to support the development of participatory M&E systems at community and national level (see table 8). M&E of adaptation outcomes remains an important challenge for the CBA community and the adaptation community at large (Leiter, 2014). It is therefore **essential that M&E systems strive to document the adaptation and development achievements of CBA interventions** rather than just monitoring what actions have been undertaken. Further efforts to integrate M&E findings of CBA interventions into national M&E frameworks and assessments are also needed.

REFERENCES

- Ayers, J., & Faulkner, L. (2012). *Action research for community-based adaptation (CBA) in Bangladesh (ARCAB): M&E and baseline strategy for CBA (Final report)*. Dhaka, Bangladesh: International Centre for Climate Change and Development (ICCCAD).
- Ayers, J., Anderson, S., Pradhan, S. & Rossing, T. (2012). *Participatory Monitoring, Evaluation, Reflection and Learning for Community-based Adaptation: PMERL Manual. A Manual for Practitioners*. CARE International.
- Bours, D., McGinn, C., & Pringle, P. (2014a). *Guidance note 1: Twelve reasons why climate change adaptation M&E is challenging*. SEA Change Community of Practice and UK Climate Impacts Programme. Retrieved from <http://www.ukcip.org.uk/wp-content/PDFs/MandE-Guidance-Note1.pdf>
- Bours, D., McGinn, C., & Pringle, P. (2014b). *Monitoring & evaluation for climate change adaptation and resilience: A synthesis of tools, frameworks and approaches*, 2nd edition. SEA Change Community of Practice and UK Climate Impacts Programme. Retrieved from: <http://www.ukcip.org.uk/wp-content/PDFs/SEA-Change-UKCIP-MandE-review-2nd-edition.pdf>
- Bours, D., McGinn, C., & Pringle, P. (2014c). *Guidance note 3: Theory of Change approach to climate change adaptation programming*. SEA Change Community of Practice and UK

- Climate Impacts Programme. Retrieved from: <http://www.ukcip.org.uk/wp-content/PDFs/MandE-Guidance-Note3.pdf>
- Brooks, N., Fisher, S., Rai, N., Anderson, S., Karani, I., Levine, T., & Steinbach, D. (2014). *Tracking Adaptation and Measuring Development: a step-by-step guide*. United Kingdom: International Institute for Environmental Development (IIED). Retrieved from [http://pubs.iied.org/10100IIED.html?k=tracking adaptation and measuring development](http://pubs.iied.org/10100IIED.html?k=tracking+adaptation+and+measuring+development)
- Chen, S., & Uitto, J. I. (2014). Small grants, big impacts. Aggregation challenges. In J. I. Uitto (Ed.), *Evaluating environment in international development* (pp. 105–122). Routledge.
- Department of Environmental Affairs. (2016). *South Africa's 1st Annual Climate Change Report. Theme E: Monitoring the Adaptation Landscape in South Africa: Desired Adaptation Outcomes, Adaptation Projects and the Intended Nationally Determined Contribution*. https://www.environment.gov.za/sites/default/files/reports/themeE_adaptation_landscape.pdf
- Dinshaw, A., Fisher, S., McGray, H., Rai, N., & Schaar, J. (2014). *Monitoring and Evaluation of Climate Change Adaptation. Methodological Approaches*. OECD Environment Working Papers No. 74. OECD Publishing. <http://dx.doi.org/10.1787/5jxrclr0ntjd-en>
- Dodman, D. & Mitlin, D. (2013). Challenges for community-based adaptation: discovering the potential for transformation. *Journal of International Development*, 25, 640-659.
- European Environment Agency (EEA). 2015. *National monitoring, reporting and evaluation of climate change adaptation in Europe*. Copenhagen, Denmark.
- Faulkner, L., Ayers, J., & Huq, S. (2015). Meaningful measurement for community-based adaptation. In D. Bours, C. McGinn, & P. Pringle (Eds.), *Monitoring and evaluation of climate change adaptation: A review of the landscape*. *New Directions for Evaluation*, 147, 89–104.
- Forsyth, T. 2013. Community-based adaptation: a review of past and future challenges. *Wiley Interdisciplinary Reviews Climate Change*, 4, 439-446.
- Fritzsche, K., Schneiderbauer, S., Bubeck, P., Kienberger, S., Buth, M., Zebisch, M., & Kahlenborn, W. (2014). *The Vulnerability Sourcebook. Concept and guidelines for standardised vulnerability assessments*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. [Also available in French and Spanish] Retrieved from www.adaptationcommunity.net under Vulnerability Assessment.
- GIZ (2013). *Monitoring conservation and sustainable land use practices through participatory M&E tools with farmers*. Method brief from South Africa. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from http://www.adaptationcommunity.net/?wpfb_dl=142
- GIZ (2014): Excel Tool “Monitoring Adaptation to Climate Change (MACC)”. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from http://www.adaptationcommunity.net/?wpfb_dl=232

- GIZ (2016): Handbook for the Excel Tool “Monitoring Adaptation to Climate Change (MACC)”. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from http://www.adaptationcommunity.net/?wpfb_dl=359
- Gogoi, E., Dupar, M., Jones, L., Martinez, C., & McNamara, L. (2014). Enablers for delivering community-based adaptation at scale. *Climate and Development*, 6(4), 368–371.
- Hammill, A., Dekens, J., Olivier, J., Leiter, T., & Klockemann, L. (2014a). *Monitoring and evaluating adaptation at aggregated levels: A comparative analysis of ten systems*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. [Also available in French and Spanish] Retrieved from <http://www.adaptationcommunity.net/monitoring-evaluation/national-level-adaptation/>
- Hammill, A., Dekens, J., Leiter, T., Olivier, J., & Klockemann, L. (2014b). *Repository of Adaptation Indicators. Real case examples from national Monitoring and Evaluation Systems*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. [Also available in Spanish] Retrieved from <http://www.adaptationcommunity.net/monitoring-evaluation/national-level-adaptation/>
- Harley, M., Horrocks, L., Hodgson, N. & Van Minnen, J. (2008). *Climate change vulnerability and adaptation indicators*. ETC/ACC Technical Paper 2008/9. Bilthoven, The Netherlands: European Topic Centre on Air and Climate Change, European Environmental Agency.
- Köhler, M., & Michaelowa, A. (2013). *Saved health, saved wealth: an approach to quantifying the benefits of climate change adaptation. Practical application in coastal protection projects in Viet Nam*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from http://www.adaptationcommunity.net/?wpfb_dl=139
- Leiter, T. (2013). *Recommendations for adaptation M&E in practice*. Discussion paper. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from http://www.adaptationcommunity.net/?wpfb_dl=132
- Leiter, T. (2014). *Progress and gaps in adaptation M&E: reflections from an international conference*. United Kingdom Climate Impacts Programme (UKCIP). Retrieved from <http://www.ukcip.org.uk/progress-and-gaps-in-adaptation-me-reflections-from-an-international-conference/>
- Leiter, T. (2015). Linking monitoring and evaluation of adaptation to climate change across scales: Avenues and practical approaches. In D. Bours, C. McGinn, & P. Pringle (Eds.), *Monitoring and evaluation of climate change adaptation: A review of the landscape. New Directions for Evaluation*, 147, 117–127.
- Leiter, T. (2016). The Adaptation M&E Navigator. A decision support tool for the selection of suitable approaches to monitor and evaluate adaptation to climate change. In: Uitto, J., Puri, J., & van den Berg, R. (2016): *Evaluating Climate Change Action for Sustainable Development*. Springer Publishing. Open access at https://link.springer.com/chapter/10.1007/978-3-319-43702-6_18 [The online version of the Adaptation M&E Navigator is available at: www.adaptationcommunity.net under Monitoring & Evaluation and “[Multi-level M&E](#)”].

- Nachmany, M., Frankhauser, S., Davidova, J., Kingsmill, N., Landesman, T., Roppongi, H., ...Townshend, T. (2015). *The 2015 Global Climate Legislation Study. A Review of Climate Change Legislation in 99 Countries*. Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science.
- Olivier, J., Leiter, T., & Linke, J. (2013). *Adaptation made to measure: A guidebook to the design and results-based monitoring of climate change adaptation projects*, second edition. [Also available in French and Spanish]. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from <http://www.adaptationcommunity.net/monitoring-evaluation/project-level-adaptation-me/>
- Price-Kelly, H., Leiter, T., Olivier, J., & Hammill, D. (2015). *Developing national adaptation monitoring and evaluation systems: A guidebook*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. [Also available in French and Spanish] Retrieved from: <http://www.adaptationcommunity.net/monitoring-evaluation/national-level-adaptation/>
- Ramos, M. Z., Altamiran, M. A., Klockemann, L., & Alarcon, S. M. (2014). *Identificación de Indicadores para el Monitoreo y Evaluación de la Adaptación al Cambio Climático en México*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
- Silvestrini, S., Bellino, I., & Vöth, S. (2015). *Impact Evaluation Guidebook for Climate Change Adaptation Projects*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from http://www.adaptationcommunity.net/?wpfb_dl=260
- UNFCCC (2015): *Paris Agreement* (as contained in the report of the Conference of the Parties on its twenty-first session, FCCC/CP/2015/10/Add.1). Retrieved from http://unfccc.int/paris_agreement/items/9485.php