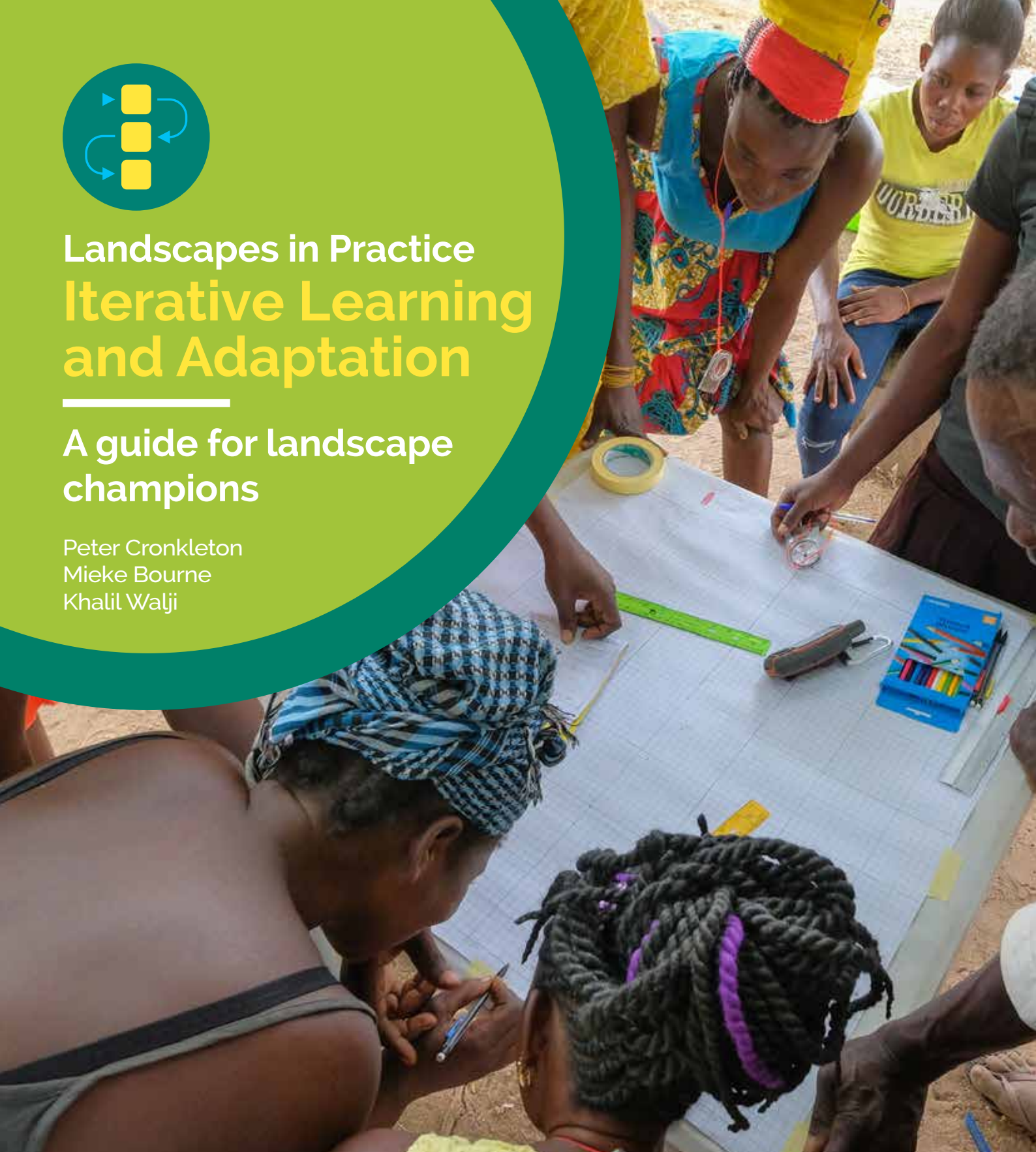




Landscapes in Practice Iterative Learning and Adaptation

A guide for landscape champions

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Landscapes in Practice is a series of practitioner guides to facilitate implementation of landscape approaches. The series is written and published by Landscapes For Our Future, a European Union-funded programme that supports 22 projects across >30 countries in the Global South, proposing Integrated Landscape Management as a process for fostering co-created sustainability and resilience in landscapes through adaptive, inclusive and integrating strategies. For other guides in this series, see landscapesfuture.org/landscapes-in-practice.



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Key messages

- Iterative and adaptive learning are seen as key characteristics of effective Integrated Landscape Management (ILM) initiatives, yet ILM implementers may need support to operationalize iterative learning and adaptation in their programmes.
- Given that landscapes are highly complex and dynamic socio-ecological systems fraught with uncertainty over how they function, interact and react, stakeholders involved in management should adopt a 'learning by doing' approach to identify best practices and improve over time.
- Adaptive management is an approach that treats management as an experiment that tests interventions based on available information, and evaluates outcomes to adjust future management decisions and actions.
- By convening stakeholders to work together towards a common goal (to collaborate), and by promoting social learning (developing a shared understanding within groups), ILM facilitators can encourage an iterative approach to planning and decision-making to better manage complexity in a changing world with many unknowns.
- There are four steps that can assist in operationalizing this concept in ILM: stakeholder engagement, problem/objective definition, action planning, and monitoring/reflection (then back to action).

The role of iterative learning and adaptation in Integrated Landscape Management

Integrated Landscape Management (ILM) entails dealing with complexity and uncertainty, of which the interests of diverse stakeholders are an important part. Management strategies such as Adaptive Management and Collaborative Management have emerged to address these challenges and have been operationalized as an approach called Adaptive Collaborative Management (ACM).

This Landscapes in Practice edition aims to offer an overview of the common themes and concepts across these approaches, identifying lessons and proposing ways in which they can contribute to an ILM process. It will also synthesize steps to incorporate iterative learning processes and adaptation into ILM-focused programmes and projects. Ultimately, our goal is to explain key concepts and identify essential steps for practitioners who employ an ILM approach to develop the critical pillars of iterative learning and adaptation within their project cycle.

Why do we need adaptivity?

Conservation and natural resource management deal with complex problems characterized by high levels of uncertainty and low levels of predictability. To deal with the complexity of socio-ecological systems, managers need to understand and integrate information on dynamic environmental, socio-economic and political processes to make decisions and take action. These decisions must be made in the context of multiple stakeholders with competing natural resource interests, requiring the balancing of trade-offs. Ideally, to navigate such conditions, managers base decisions on the best available information, observe the effect of their decisions and actions, and then evaluate how to adjust decisions and actions moving forward. In other words, to advance towards their ILM goals, they predict how their actions will affect the landscape and then *adapt* management in response to the outcomes they observe.



What is Adaptive Management?

Adaptive Management (AM) is an approach in which resource managers treat the decisions they make as experiments. It is grounded in the admission that humans do not know enough to manage ecosystems perfectly, but seek to understand the key variables and behaviours that drive the system (Lee 2001). The AM concept is designed to help managers learn about and navigate the complex social-ecological systems in which they work. It employs a 'learning by doing' approach to improve decision-making under broad conditions of uncertainty (Gregory et al.

2006). The AM process involves taking actions informed by (a) what is known and (b) what is unknown at that time (Williams 2011).

Management decisions are deliberately experimental. Every experimental success or failure yields lessons about the complex system in which it is embedded, which, in turn, contributes to learning. As a rule of thumb, experiments should be small and of relatively short duration initially (Hillborn et al. 1995) – in part to avoid wasting resources, but also to ensure that management actions that are also experiments do not yield unanticipated consequences that cannot be reversed.

Adaptive Management attempts to systematize a deliberate process of learning into project implementation, combined with an iterative process of decision-making, monitoring and assessment that builds on improved knowledge and understanding (Williams 2011).



The approach does face constraints and challenges that limit its effectiveness. For example:

- Experimentation can be costly and slow, which can limit and delay actions (Allen and Gunderson 2011).
- Managers might emphasize topics that are easy to address at the expense of larger issues or broader actions.
- Decision-makers might delay actions, waiting for perfect solutions or avoiding politically difficult choices.
- Despite best intentions, actions could be biased to focus on certain questions or the narrow interests of particular stakeholders (Allen and Gunderson 2011).

Adaptive Management is sometimes criticized for insufficient consideration of the complex social dimensions of learning (Cundill et al. 2012). Also, because AM was originally intended to bridge the interdisciplinary gap between scientists, project managers and policymakers, over time researchers recognized the need for greater effort to strengthen collaboration. So, although clearly defined in the literature, AM has had more influence as an idea than as a way of performing natural resource management (Lee 2001).



How does adaptivity and iterative learning fit within ILM?

Project managers often follow a course of action based on the best available knowledge at the outset, but do not anticipate learning and modification of management choices as experience grows (Rist et al. 2013). This approach is referred to as 'Passive Adaptive Management.' While this is a common approach, ILM projects work in complex environments with significant unknowns, so a more active approach to learning and adaptation is advisable.

Active Adaptive Management is a process in which goals and actions are deliberately designed and tested with learning as an explicit objective of the management approach, and where experimentation is highlighted (Lee 1993). The distinction between active and passive approaches is important, as most natural resources management is characterized by passive adaptation. Typically, managers make decisions in response to continuous learning and interaction within the system, leading to some point of revision or deviation from originally planned actions – thus managers naturally adjust in response to learning. The novelty of the active AM approach is the formalization of the learning process with explicit experimentation to clarify interconnections and structure within the system (Allen and Gunderson 2011).

A formalisation of learning based on experimentation (not just by scientists but by the project team trying new things and tracking results) at regular intervals, and then adapting and changing course in response, is critical for ILM implementation success.





What is Collaborative Management?

Collaborative management recognizes the presence of multiple stakeholders in most resource management contexts, and works towards understanding and improving their interaction. Collaborative management takes place in contexts where “two or more social actors negotiate, define, and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibility for a given territory, area or set of natural resources” (Borrini-Feyerabend et al. 2000).

It usually involves the allocation of rights and responsibilities between government and local people, for example the legal frameworks underlying many community forestry initiatives where government devolves some forest management rights but retains others in an attempt to ensure compliance with forestry regulations by local forest users (Cronkleton et al. 2012). One motivation for the adoption of collaborative management regimes has been the recognition that government cannot easily exclude local resource-dependent people completely, especially groups using collective action to demand recognition of their rights. However, the effectiveness of co-management systems depends on the decision powers that are granted or retained by the state and whether responsibilities and benefits are balanced between different actors.¹

When co-management works well, it includes mechanisms for feedback and adjustment leading to adaptation.

1. In some cases, local communities have resisted co-management, arguing that the local area is primarily theirs to manage/govern based on traditional rights and evidence of good management thus negating the legitimacy of the government's allocation of rights. This rationale convinced CIFOR's ACM team to change their programme name from what was originally Adaptive Co-Management to Adaptive Collaborative Management- recognizing that the strength of the respective voices need not be 'equal' (Colfer C, personal communication, April 2024).

Related concepts for operationalizing adaptive processes



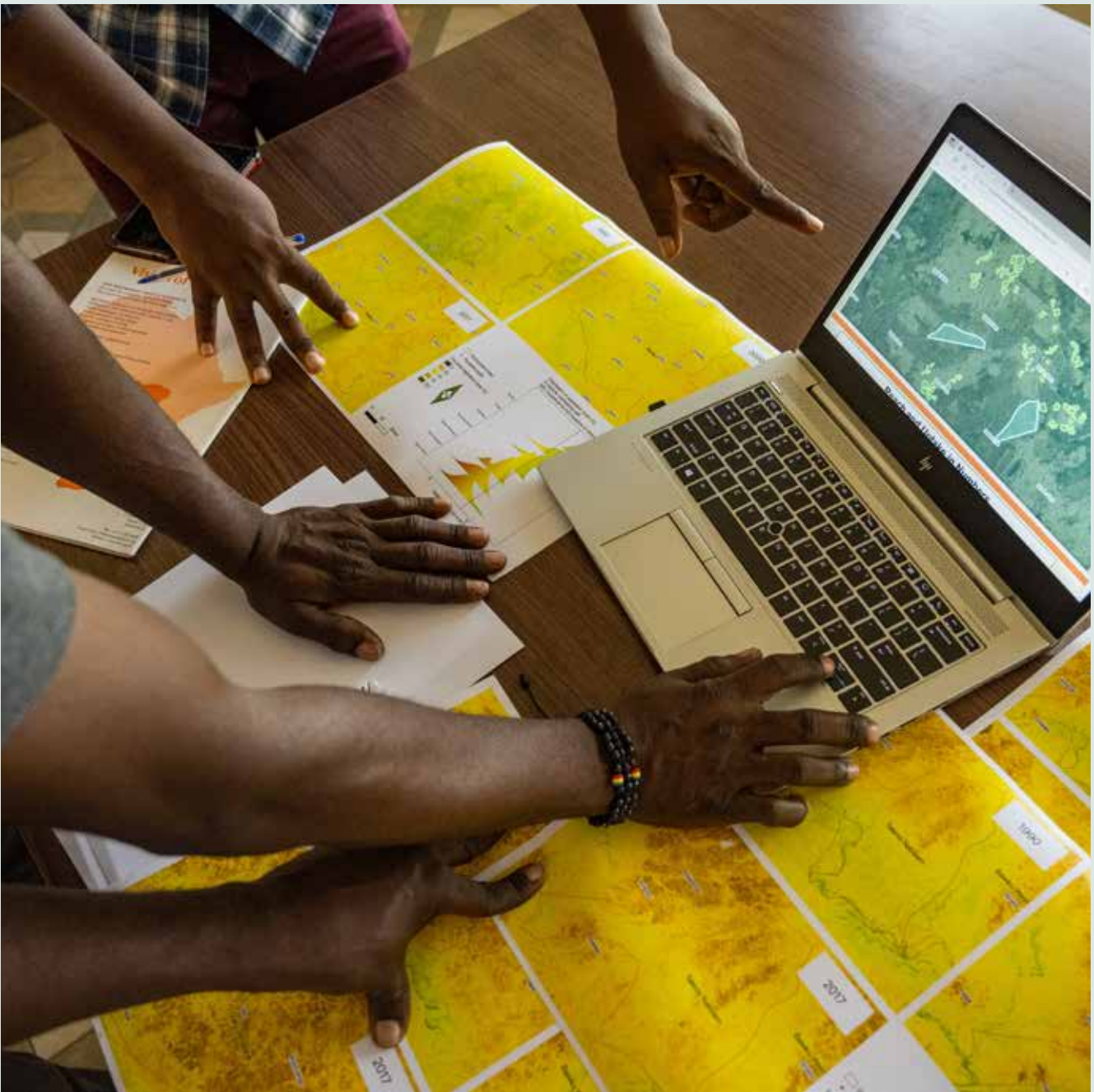
Iterative learning: a stepwise process to gather, synthesize and apply information, providing feedback for subsequent steps (iterations) in a continuous fashion. It can be conceptualized as a cycle of actions attempting to refine (or obtain) understanding using self-assessment and building on failure by evaluating what went wrong to improve the process.

Social learning: a “collective reflection and action among groups to understand the relations between social and ecological systems” (Keen et al. 2005). Promoting social learning often requires participants to be conscious of how they learn. Facilitators introduce processes with which to observe change together, to interpret information collected through group-reflections, and then discuss the implications to develop a consensus understanding of the result or need for further steps. One approach for structuring such social learning is Participatory Action Research.

Participatory Action Research is an approach that brings together groups (e.g., local stakeholders, development practitioners and scientists) to co-create knowledge and social change in tandem through collaborative, iterative, often open-ended steps that prioritize the expertise of those embedded in the process and that are designed to generate new insights on the topic addressed (Cornish et al. 2023).

An example of learning and adaptation from Regreening Africa

Within Regreening Africa, a large research-in-development restoration programme, learning and adaptation were formalized through annual 'joint reflection and learning missions' (Regreening Africa 2022). Scientists, project partners and government representatives were invited to reflect on feedback from communities, project implementers on the ground, and research and monitoring data. Through this reflection, which was structured and facilitated, incremental changes were made to programme plans and implementation. For example, it was discovered that the diversity of tree species requested and planted by communities in Rwanda was low. As a result, project managers diversified the species available in the nurseries and discussed the importance of diversity with stakeholders. With these changes, farmers began planting a wider variety of trees. To make this type of learning and adaptation possible in Regreening Africa, trust had to be built between partners, with an understanding that the reflection was not judgement but rather co-learning with the intention of improving over time, rather than casting blame.





What is Adaptive Collaborative Management?

Adaptive Collaborative Management (ACM) promotes learning, both experiential and experimental learning and collaboration, both horizontally and vertically, thus merging adaptive management with collaborative management. By emphasizing collaboration across stakeholder groups, ACM was intended to overcome a key problem thwarting ecosystem management, namely “overlapping authority, conflicting decision-making processes and tension between stakeholders with different interests” (Susskind et al. 2012).

Adaptive Collaborative Management attempts to operationalize the concepts discussed above through participatory methods to facilitate and enable collaboration and social learning among stakeholders to manage adaptively. ACM has been described as a process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic,

ongoing, self-organized process of learning-by-doing (Folke et al. 2002). In this approach, people “act together to plan, observe and learn from the implementation of their plans while recognizing that plans often fail to achieve their stated objectives,” a process “characterized by conscious efforts among such groups to communicate, collaborate, negotiate and seek out opportunities to learn collectively about the impacts of their actions” (Colfer 2005).

Adaptive Collaborative Management was developed with the recognition that collaboration among stakeholders was a key bottleneck for AM. ACM acknowledges that local people operate within complex, dynamic systems that are constantly changing; that they have the capacity to act and the Indigenous knowledge to influence local systems, often effectively; and that efforts to manage resources need to address equity to minimize conflict and violence (Colfer et al. 2022).

A central idea underlying ACM is that for conservation or development efforts to be successful over the long term, local people have to be both willing and empowered to sustain them (Colfer et al. 2022).

In Adaptive Collaborative Management, the iterative process related to social learning is often depicted as a spiralling loop progressing over time.



The ACM ‘worm’ above shows the systematic steps in this iterative learning process once stakeholders have been engaged in the change process.

How can Adaptive Collaborative Management be incorporated into Integrated Landscape Management?

We can define four broad steps that enable the incorporation of ACM into an ILM initiative. In these steps, 'management' is still treated as an experiment that is improved through hypothesis testing. The overarching idea, however, is to conceptualize management as a learning process that concentrates on facilitating collaboration between relevant stakeholders. As depicted in Figure 1, this should be an iterative process that continues over time.



Step 1: Stakeholder engagement

This crucial first step is to facilitate broad participation by relevant stakeholders to ensure their interests are included, to increase the pool of contributions for potential management solutions, and to mediate conflicts that might arise from change. The identification or definition of relevant stakeholders depends on the context. This should include actors with influence over the landscape, who have rights (customary or formal) to resources in the landscape, and/or

who rely on these resources. Managers should ask: "Who is present in the landscape?" "Who uses resources in the landscape and how?" And "what actors or groups have property or decision-making rights in the landscape?" Or "who has the capacity to influence landscape condition?" Depending on the stakeholder, they may have different roles in management design and decision-making.

Stakeholder identification and engagement is intended to define the people who will carry out the ACM activities. It is not necessary that all stakeholders be involved constantly in all



activities, but they should all have opportunity to participate if they wish and there should be mechanisms to ensure that all are aware of the effort and informed about key developments. The group can provide the structure as well as mechanisms to collect and document ACM activities that are being carried out.



Step 2: Problem definition/ objective setting

Participants clearly identify the management problems they want to address and the objective of this effort. This includes clearly identifying what they hope to change or intend to maintain, and how possible actions will bring about change. They develop a model that represents, as simply as possible, the existing understanding of how the system functions, including its main characteristics, processes, and interrelationships. The participants identify unknowns and uncertainties in their understanding of the system. They should also consider alternate explanations based on experience and other evidence that might explain how the system functions. They should ask “how does the system function?” “What are the main drivers of change?” And “how are the proposed management actions expected to influence the system?”



Step 3: Action planning

Once the problem and management objective have been identified, the group selects a proposed action (or set of actions) and develops a plan for testing the action to judge its effect. The plan should be specific, defining not just the action, but who will do it and how. Including a plan to monitor the intervention is crucial as the information gathered will be used by the group to evaluate impact and to decide whether to continue or choose a different course of action.

The process is organized around patterns of iterative learning where an action is agreed upon and implemented, observations and monitoring are carried out, collected information is evaluated, and then further actions are selected.



Step 4: Reflection

After Participatory Action Research groups have

implemented and monitored their actions, the results are shared, discussed and evaluated to review whether the expected results occurred, whether the intervention should continue or whether a different course of action is needed.

An important part of iterative learning is taking the necessary steps to reflect on and learn from monitoring results and identify implications for the hypothesis being tested. In other words, members of the group should ask “is the action or policy producing the expected outcome? If so, how, or why is this happening? If not, should the action be changed?”

Once the fourth step is completed, the group goes back to action planning and continues until the problem is addressed or a new problem emerges, at which point they loop back to Step 1.

Initially, while starting ACM activities, the group should focus on short cycle learning – in other words a plan that can be conceived, implemented and evaluated in a quick interval to allow participants to conceptualize how the steps in the process fit together and how they themselves should be involved. When implementing a process of iterative learning, working initially with short periods between taking an action, monitoring and evaluating effects, will allow participants to understand the process and how it is related to management and adaptation.





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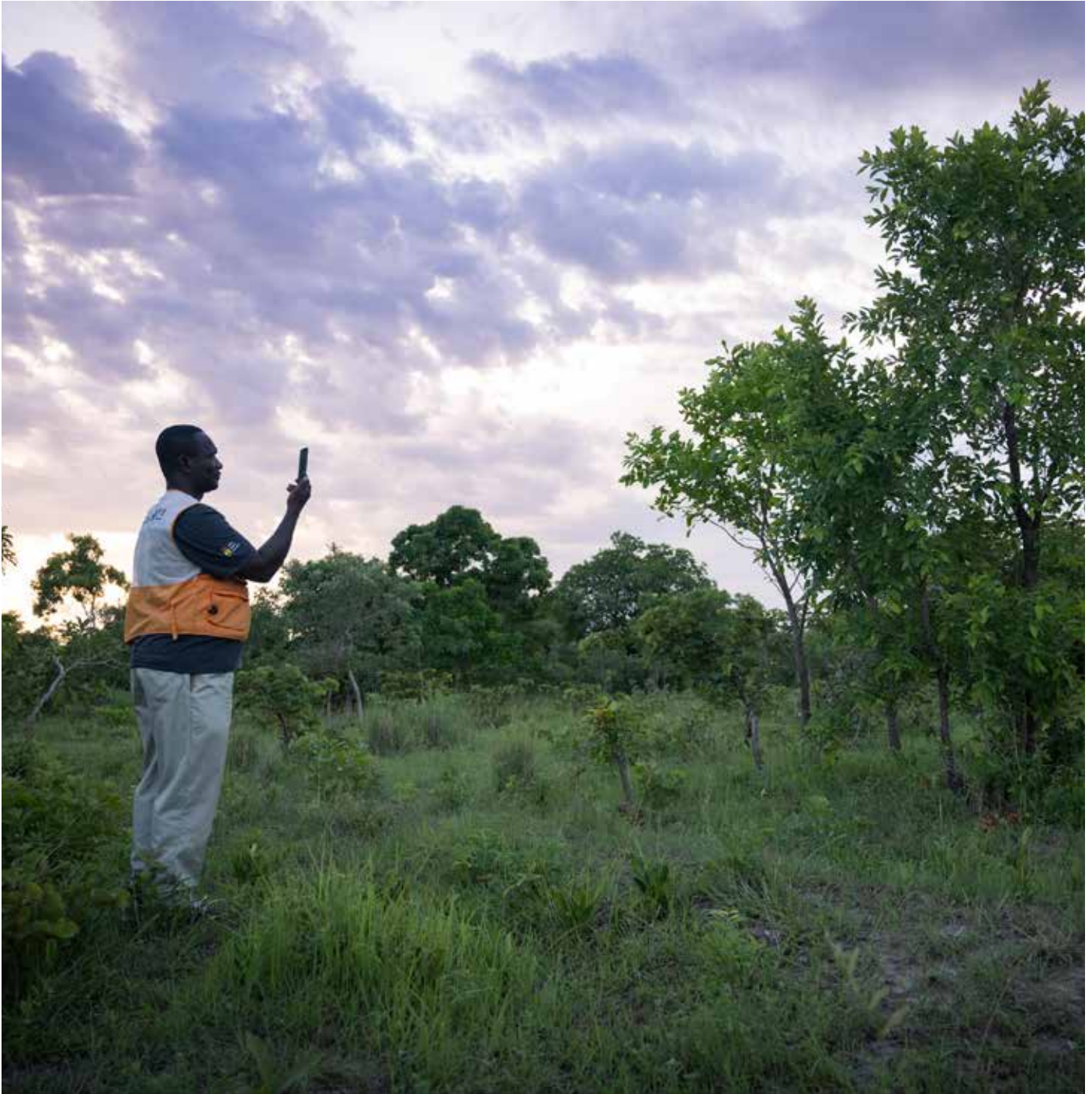
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Photos in this brief tell a story of iteration and adaptation, a process of dialogue, reflection and learning through discussion and with data. Examples included in the brief are i) Mapping workshop in Nakhon, Kassena Nankana District, Ghana, cover photo by Axel Fassio/CIFOR-ICRAF; ii) collecting information on restoration using the Regreening App in Ghana, photo p2 by Kelvin Trautman/Regreening Africa; iii) sorting participant feedback on sticky notes during a stakeholder engagement with evidence workshop in Senegal, photo p4 by Regreening Africa; iv) reviewing a land health map in the field to inform planning in Rwanda, photo p5 by Kelvin Trautman/Regreening Africa; v) reviewing land health maps in Ghana, photo p6 by Kelvin Trautman/Regreening Africa; vi) discussing pest and diseases for fruit trees in a Rural Resource Centre in Rwanda, photo p8 by Regreening Africa; vii) two people planting and discussing a tree in Ghana, photo p10 by Kelvin Trautman/Regreening Africa and viii) measuring tree growth using the Regreening App in Ghana, photo p12 by Kelvin Trautman/Regreening Africa. The ACM 'worm' on p7 is derived from Colfer, 2005.

