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Making ‘resilience’, ‘adaptation’ and ‘transformation’ real for the design of sustainable development projects

Piloting the Resilience, Adaptation Pathways and Transformation Assessment (RAPTA) framework in Ethiopia

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Executive summary

What is this report about?

The global changes that we face are rapid, novel, interacting and cumulative – we are operating in uncharted territory and that means that there are no 'off-the-shelf' solutions. There is an urgent need to understand, design and effectively implement interventions to guide social-ecological systems along sustainable paths into the future. The magnitude of changes needed will range from minor adaptations through to major structural change. This spectrum of change is spanned by the terms resilience, adaptation and transformation. These three closely related terms are now commonly used in science and popular culture, as well as by governments and a range of business and other organisations. We define resilience as 'the capacity of a linked social-ecological system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks – to have the same identity' (Walker and Salt, 2012). Resilience thinking embraces the ideas of adaptation of the current system, and also transformation to a different kind of system when the existing one is in an irreversibly undesirable state, or on a trajectory towards such a state.

This report is about how we can use our knowledge of resilience, adaptation and transformation theory to help design sustainable development projects. The Resilience, Adaptation Pathways, and Transformation Assessment (RAPTA) framework has been developed to guide the practical application of these concepts in the management of complex social-ecological systems. RAPTA aims to assist stakeholders with understanding their systems, and how they might need to change, in order to meet particular goals (for example, sustainability goals). Interim guidelines for using RAPTA to design, implement and assess development projects were published in March 2016 (O'Connell et al. 2016).

This report presents key findings from piloting the use of RAPTA in supporting the design of two food security and sustainable livelihood projects in Ethiopia in 2016. The Stockholm Resilience Centre (SRC) Guidance for Resilience in the Anthropocene: Investments for Development (GRAID) program and United Nations Development Programme (UNDP) provided the opportunity to pilot and evaluate the RAPTA approach in the following two case studies:

- at the country level, supporting the development of a 'project document' (a second stage of planning for a project in the Global Environment Facility (GEF) Food Security Integrated Approach Pilot Program (Food Security-IAP))
- at the local village level, working with the Telecho community in the Welmera district, Oromia region, Ethiopia. It built on earlier discussions hosted by project partners SwedBio, UNDP and local non-government organisation, Movement for Ecological Learning and Community Action (MELCA). The result of this RAPTA pilot is currently being used to develop a proposal to submit for funding (funding partners not yet identified).

This report describes the application of RAPTA in the Ethiopian pilot projects, and the benefits and next steps for the Ethiopian participants of these two case studies. It also presents results on an assessment of the utility of the RAPTA approach, and suggests further steps.

What is RAPTA?

RAPTA (the Resilience, Adaptation Pathways and Transformation Assessment framework) is an approach designed to support the application of resilience concepts in planning and implementing sustainable

development projects, to achieve systemic and transformational change where needed. RAPTA is designed to foster understanding of systemic causes of problems, and dialogue on the magnitude and nature of change and pathways required to achieve desired outcomes. It has seven components that can be applied in a flexible manner, drawing on existing tools for individual components. RAPTA assists project developers to design more effective projects, with sustained benefits, through improved understanding of their system, and robust stakeholder engagement. RAPTA is applicable across a wide range of project types targeted at different scales.

The components of RAPTA are:

1. ***Scoping*** where the purpose and nature of the project are provisionally set.
2. ***Engagement & Governance*** concerns involving the right people in appropriate ways using ethical and transparent processes, and establishing roles, responsibilities and accountabilities in project governance.
3. ***Theory of Change*** captures the rationale for how and why interventions will deliver desired impacts and maps the planned activities, outputs and outcomes into impact pathways. It is iteratively revised through the design process and used retrospectively to evaluate impacts, costs and benefits of the project.
4. ***System Description*** produces a record of the current understanding of the system, its key components and influences and how they are connected, as well as the assumptions and evidence underpinning this understanding. Different stakeholder perspectives form part of the system description in order to foster mutual understanding of diverse perspectives.
5. ***System Assessment*** identifies risks and uncertainties, points of no return and key influences on how the system will respond to anticipated future shocks or changes. It is where resilience, adaptive capacity and opportunities for transformation are assessed.
6. ***Options & Pathways*** identifies options and arranges them into a provisional order for implementation. It is linked closely to the ***Learning*** component (see below) and options and pathways are updated and managed adaptively.
7. ***Learning*** is an iterative process that connects all RAPTA components. It guides monitoring and assessment, informs adaptive management and is used to test and revise the theory of change, system description and system assessment.

RAPTA has been designed to be flexible: to work in different settings, complement and interact with existing agency frameworks and tools, and deliver useful outcomes in circumstances where there are inadequate time and resources and where there may be highly contested topics. RAPTA is a generic framework that utilises tools and methods from diverse bodies of theory and practice. RAPTA is an iterative process. The seven components need not be applied sequentially; users are encouraged to adapt to suit their context.

RAPTA's unique strengths are the way it brings together the concepts of resilience, adaptation pathways, and transformation in a practical manner that integrates familiar processes for project design; is underpinned by a systems outlook to problems and opportunities; and introduces processes for identifying and assessing options and pathways for implementation. Leading practices in project design are included in many of RAPTA's components: scoping, multi-stakeholder engagement, theory of change and learning activities.

Less than a year has passed since the release of the Interim RAPTA guidelines, and so results presented in this report are preliminary, and more piloting is required. Although it is early in the process of developing and refining RAPTA, the emerging results show that RAPTA is achieving early impact in desired ways. The data also provide an early opportunity to reflect on complex challenges, lessons learned, and plan next steps to adapt and modify the approach (in keeping with the strong learning and adaptive management philosophy espoused within the RAPTA guidelines).

Part I The Ethiopian case studies

Pilot applications for RAPTA were conducted at national and local and community levels in Ethiopia.

National-level pilot study

The UNDP[1] used RAPTA in the design of a project part of the GEF's Integrated Approach Pilot (IAP) program on 'Fostering Resilience and Sustainability for Food Security in Sub-Saharan Africa'. The end product of project design is a 'project document' providing a detailed plan of activities to implement in the project.

The national pilot primarily involved workshops with project design team and national-level stakeholders of the Food Security-IAP in Ethiopia. These workshops, conducted from 7 to 11 March 2016, focused on introducing RAPTA, and on project design. All RAPTA components were covered, but some of them required only a light touch because these steps had already been addressed by the project design team. Time and data limitations prevented a more thorough application of RAPTA.

Within the national-level Ethiopia pilot, the process of using RAPTA (even in a limited way in the short time available) had valuable outcomes:

- provided a system perspective that was not evident in earlier versions of the project design
- led to proposing a set of interventions that originally appeared to be out of scope to the stakeholders, because it was based on the usual narrower sector-specific framing. Through the combination of a desire for an integrated approach to food security as specified by the GEF, and the application of RAPTA in the detailed project design phase, a different set of interventions[2] (e.g. see Figure 2-1) was revealed as potentially valuable for supporting a transition to a more food-secure system
- supported a different set of discussions, narratives and understanding about what interventions and other stakeholders might be needed in order to reach a more food-secure state. There are many examples reflecting the broader narrative that emerged when stakeholders pointed to ways in which NRM objectives could be met more effectively by reducing demand on natural resources for food production, rather than working only on direct NRM activities. It opened up the discussion to include a wider range of drivers of land degradation, for example including health, education, household energy sources, population and family planning. It provided a forum for a structured discussion of transformational change
- provided some of the participants with a more clear understanding of where and how to start with sequencing a complex set of options and decisions (e.g. see Figure 2-3).

Therefore as well as providing a more robust project design (with a *prima facie* improved chance at reaching desired outcomes and goals), the process of using RAPTA helped to build capacity for those who participated, for example some feedback from a workshop participant:

> *Expectations met? Yes, in terms of the dynamic participation that the few stakeholders had and some of the breakthroughs in terms of understanding the need to expand the scope of the goal, understanding what might need to change and the magnitude of t change and the idea of thresholds*

[1] UNDP Ethiopia Country Office and UNDP GEF Africa office

[2] i.e. different to the interventions proposed in the first stage of the project development ('project identification') which preceded the use of RAPTA to develop a more detailed project document, and also different to the Food Security IAP projects in other countries

These outcomes were apparent in a broad range of participant feedback as well as in the revised project document (approved but not yet publicly released).

Community-level pilot study

In the local-level Ethiopia pilot at Telecho (Maru et al., 2017b), the use of RAPTA was more comprehensive and took place over three workshops over a nine month period. This process led to

- a shared understanding of possible alternative futures, in an inclusive process with women, men, youth and experts (e.g. see Figure 2-6, Figure 2-7, Figure 2-8)
- identified some critical thresholds in soil acidity, nutrient cycling, capital and market linkages that warrant monitoring because they will influence the future state of the system
- enabled the community to plan in a structured way why change might be needed, what needed to change, and how these changes might be achieved (e.g. see Table 2.5)
- revealed unresolved questions and contested issues, and enabled them to be articulated more clearly and discussed in a structured and safe manner (e.g. see Table 2.6)
- provided clarity about where the community could start with moving towards their desired outcomes, by knowing what to do, how to sequence their actions, and what to monitor in order to learn and adjust. Three distinct but complementary pathways to transition to a more food-secure system were constructed (see Figure 2-11):
    1. Improving the productivity and resilience of rain-fed agriculture with interventions to reduce significant losses in the integrated soils-crop and livestock system and establishing cooperatives and networks to markets.
    2. Expanding small-scale irrigation and specialisation in horticulture, bee-keeping, poultry, dairy, feedlots and linking in to market and value chains through strong cooperatives.
    3. Negotiating decent jobs and career paths for landless and youth in emerging industries in surrounding urban centres.
- priority areas for structured learning, continuous monitoring and reflection were decided: governance and communication; capacity building; and networks and value chains

As well as a concrete plan to move forward, it was clear that the process of applying RAPTA helped to build capacity, as shown by feedback from various participants, for example:

> *We have learned a lot about ourselves through this process. We always wanted to have projects like this which consult us from the very beginning. We need this to continue. We are very happy to see that you are taking this much time in consulting our elders, women and youth*.
>
> *We believe that this project if implemented will bring significant change in our lives. This is because it is being designed involving us all and with a depth of understanding of our situation.*
>
> *Today I have learnt how problems are causally linked and how we can bring effective solutions if we understand the root causes of the interconnected problems*

We are currently working with MELCA and SRC to explore potential donors for a project proposal built on the systems understanding and on options and pathways articulated in the RAPTA workshops.

As well as the concrete outputs from the pilot studies, a learning framework was set up to ensure that we could understand the benefits and challenges to stakeholders in using a RAPTA approach. These early

evaluations are presented in the first section of the report, while the details of the case studies are presented in the second section.

Part II Learning quickly and early: assessing the utility and impact of the RAPTA approach to project design

On the whole, RAPTA has been enthusiastically endorsed by stakeholders, who identified many things that are working well. RAPTA has provided welcome clarity on practical ways to apply concepts of resilience, adaptation and transformation. This report presents many quotations from the feedback we sought from a range of stakeholders. A few salient words from various stakeholders demonstrating strong support include:

> *RAPTA has clearly contributed to greater awareness of possible ways to operationalise resilience across the GEF Partnership, as well as a more focused discussion as to what policy, procedural and operational steps could be taken to do so more systematically moving forward.*
>
> *Was RAPTA useful? Definitely!! [It] provided a logical structure around which to have a conversation in what is an extremely complex context, encouraged participants to confront complexity and systemic causes of the current dynamics.*
>
> *I have learnt and what it's given me more confidence in pushing for is a bigger effort upfront to engage stakeholders and understand the system as well as you can. So rather than rushing into what we think we're going to do, let's put more effort into understanding the situation, the context and all first.*
>
> *RAPTA has increased awareness about the importance to early on identify the most suitable pathway for an intervention and that it, depending on the system assessment, can be adaptation, strengthening of resilience, or transformation.*
>
> [*Other frameworks] are quite static and they don't deal with transformation and change particularly well. So, I think in a sense it's helped in that, in terms of the knowledge, or the way of interpreting change and transformation*
>
> *RAPTA assessment has helped me improve my understanding about the village and its surrounding environment as well [as to] recognise and respect the depth of knowledge held among the community.*
>
> *I think it's really RAPTA just takes a more holistic vision of resilience and I think integrating all these components and take the engagement, the understanding of the system I think are the really unique contribution of RAPTA, and also really brings, I think, out of the academic community this body of knowledge that really hadn't been utilised in project planning thus far, so I think it's not necessarily a novel way of looking at things in terms of an academic context, but I think it really is a novel way of looking at things, project planning for the World Bank and the way decisions are made at present.*

Assessing our early progress on impact pathways

Some of the concepts underpinning RAPTA are well established, but have not previously been combined and applied in the context of designing sustainable development projects. In this sense, RAPTA is in the early stages of maturity and in order to demonstrate utility and relevance, we are conducting evaluation much earlier than would normally be the case so that we are able to evolve the approach based on what we learn about what works, or not. In order to understand and articulate how we expect RAPTA to make a difference, we have proposed a theory of change (also sometimes known as impact pathways) for the development and application of the RAPTA process. We use this to structure our learning from the

experiences of applying RAPTA in different settings, to distil key messages and lessons and adapt RAPTA to contribute more effectively to sustainable development goals.

Three pathways to impact are proposed in the theory of change for RAPTA itself, framed in terms of immediate, intermediate and ultimate desired outcomes that we consider are necessary to achieve the long-term goal (see Figure 4-1). The learning framework is set up to monitor the progress towards these outcomes and pathways. Early results from the stakeholder assessments thus far point to promising progress in terms of achieving some of the immediate outcomes along each of these pathways:

Pathway 1 Improved outcomes and benefits from the practice of RAPTA in designing investments in sustainable development projects

The proposed immediate outcomes for this pathway include:

- Design of projects, programs, policies and other specific interventions and investments is influenced by RAPTA , improving the likelihood of effective outcomes and benefits from investments

While the intermediate and ultimate outcomes include:

- Evidence that the practice of using RAPTA for design of projects does indeed lead to improved on-ground outcomes and benefits of the investments, and that this is evaluated and communicated

Putting RAPTA into practice in project design in two projects in Ethiopia has seen broader system perspectives reflected in project assumptions and narratives of how to bring about change, including transformational change. The resulting project activities as described in the documents have been developed with a broader range of stakeholders than is typical for natural resource management projects, allowing them to contribute towards integrated sustainable development goals. In addition, it is clear that the RAPTA-based project design for the GEF project deviated from the 'Business as Usual' approach.

Feedback from stakeholders (presented more completely in Part II of this report) indicates strong evidence for the immediate outcomes, for example

> *By bringing the concepts together in an assessment framework, we have a better chance now of understanding how you can design a project that truly is focused on addressing both environment and development benefits into one that is looking at the system and long term with layers that goes beyond just the primary purpose for which we finance which is to global environmental benefits*

Since projects are only at the design stage, it is too early to evaluate whether the on-ground outcomes and benefits outlined in the intermediate outcomes have been achieved.

Pathway 2 Robust resilience, adaptation and transformation approaches mainstreamed into formal rules – for example global, regional, national conventions, initiatives and policies

The immediate and intermediate desired outcomes for this pathway include:

- RAPTA championed by highly influential actors and organisations
- Institutional constraints and inertia from established procedures and interests recognised and challenged

The analysis of interviews and feedback, as well as the formal documentation we have scanned, shows some evidence for these proposed outcomes. RAPTA has been championed by key actors and agencies influential in international development and conservation efforts and recognised in some formal policies, agreements and initiatives. For example, RAPTA was acknowledged in decision 21/COP.12 at the United Nations Convention to Combat Desertification (UNCCD) 12th Conference of the Parties, October 2015. RAPTA has informed the development of the conceptual framework for land degradation neutrality by the

Science Policy Interface of the UNCCD, and informed a Global Environment Facility screening tool for assessing cross-domain projects.

Pathway 3 Adequate capacity and agency for systemic and transformational change towards sustainability goals across all domains and scales

The proposed immediate and intermediate outcomes for this pathway include:

- Evidence of learning – e.g. systems approach, key points intervention, effective stakeholder engagement, dealing with uncertainty, how to start sequencing etc.
- Emerging trust – e.g. acknowledgement of multiple perspectives, differential impacts on marginalised including women and children, skills and knowledge, respect of and by broader range of stakeholders and across levels

Early evidence for these desired outcomes is shown in the analysis of stakeholder feedback. There is growing capacity and agency to use RAPTA. For example, RAPTA has helped to provide a structured dialogue around transformational change:

> *[Other frameworks] are quite static and they don't deal with transformation and change particularly well. So, I think in a sense it's helped in that, in terms of the knowledge, or the way of interpreting change and transformation.*

Including transformation as one of the considerations in the design of projects initiated questions and discussion identifying parts of the system that may need to be transformed to achieve the desired goals. Using RAPTA supported a dialogue between stakeholders on the need to consider transformation seriously, and to identify precursors or steps that enable transformation.

> *So, it wasn't just about building resilience, but as you know, it's also got that element of transformation, which is, I think, a useful discussion to have in primary meetings and stakeholder consultation.*

Participants understood the need for transformation, especially where food production systems will continue to decline in productivity given increasing impacts of climate change, population growth, and diminishing farm sizes.

> *The big issue is that we've got to understand these transformations as big, structural changes taking place globally. Understanding that transformation from a structural perspective is so important. And so, we have to find alternative approaches and think about this is a more nuanced complex way. So, I think in a sense, RAPTA can help absorb some of that.*

Workshop participants also wanted to see more organisational learning and a reframing of the GEF view on its role and project design.

> *GEF needs to give more time and more budget to the design process, and also allow a lot of flexibility in the way projects evolve so they can learn and adapt.*
>
> *GEF to consider itself as part of the system and respond to feedbacks to enable change on the ground.*

We have applied RAPTA to two pilot projects and given RAPTA presentations at many international meetings, which has led to a growing network of decision makers and organisations who have become aware of and started using RAPTA to design projects for systemic and transformational change. An impact of RAPTA evident in stakeholder feedback has been its value in providing a structured process to encourage thinking 'outside the box', planning for future transformations rather than attempting to maintain the current system, knowledge integration and the achievement of long-term sustainability goals.

Feedback on unique contributions, challenges and opportunities of RAPTA

Learning is central to effective design and implementation of RAPTA-based interventions. Learning is also fundamental for the development and evolution of RAPTA as an approach. This report provides detailed stakeholder feedback which has enabled us to evaluate some of these early successes as well as reflect on challenges and next steps forward. We recognise the complexity of the social-ecological systems in which RAPTA will be expected to operate. We also know that practical applications of RAPTA will encounter challenges and reveal its limitations, hence the need to garner learning from these early trials, in order to be able to modify RAPTA guidelines, as well as the associated communication, engagement and implementation strategies.

Feedback from the users of RAPTA

We received feedback from stakeholders who engaged with RAPTA via a range of means including RAPTA interim guideline testing meetings, RAPTA presentations, RAPTA training and piloting workshops with stakeholders and partners from different organisations, working at different scales. They identified areas where RAPTA provides a valuable step forward, has some unmet challenges and constraints, and opportunities to improve through further work. Two categories of challenges and opportunities were distinguished

- Opportunities to apply RAPTA in addressing complex problems
- Specific operational challenges in applying RAPTA.

Applying RAPTA to complex problems (e.g. food security)

Development projects, by definition, take place in areas that face many complex challenges to which RAPTA can contribute:

- **Using RAPTA helps work with rapid change, and enable transformation**: it puts to rest some stakeholders' preconceptions that resilience is about 'staying the same', and places transformational change on the agenda from the start of stakeholder engagement. Transformational change is critical for sustainable development. How transformations pathways are realised in practice is a major priority area of focus for RAPTA.
- **Working with high-level sustainability goals (e.g. SDGs) and working across sectors and scale**: RAPTA offers a way to span isolated sectoral approaches but the challenge is to build the will, capacity and tailored applications without reducing the quality and benefits that can be gained.
- **Working with social structures, gender, power and inequality issues**: RAPTA is intended to be used in addressing issues of social structure, power, gender and inequality – but relies on using the appropriate methods, skills and level of resources required to do so effectively.
- **Working through tensions and contested issues, and making a place for emotion**: RAPTA is designed to foster understanding of systemic causes of problems, and dialogue on transformation and pathways to achieve desired outcomes. Use of RAPTA places high value on logic, analysis and evidence, but transformational change must also address issues of values, and rules, and this relies on trust, respect and care for one another – which of course cannot be fulfilled by the use of RAPTA alone. Again, appropriate skills and resources are required.

Specific operational challenges in applying RAPTA

There are many applications in which RAPTA could be beneficial, and there are also specific challenges identified:

- **Applying RAPTA in the context of pre-existing goals, processes and protocols**: the RAPTA framework and guidelines add to an area that is already crowded with tools, methods and approaches used by agencies for designing and implementing development projects. RAPTA will require some tailoring for each domain of use to build on the existing approaches within each agency.
- **Using RAPTA in depth takes time, but even a light use achieves benefits**: the RAPTA process requires multi-stakeholder involvement throughout a set of components, each comprising several steps, and preferably through iterative cycles of increasing thoroughness. A light use of RAPTA has shown benefit, and more in depth use will increase the benefit.
- **Challenges in translating complexity and systems thinking into actions:** 'systems thinking' and raising awareness of the complexity of social-ecological systems and problems are recognised as a strength of RAPTA. RAPTA can be considered as part of managing knowledge and learning for the project, as well as for systems thinking theory. However, moving from conceptualising and characterising systems to defining concrete actions that can lead to real-world improvements through projects remains challenging.
- **Communication challenges**: There also are challenges in communicating what RAPTA is about and how it adds value to existing approaches. Presentation and translation into different languages to engage with different stakeholders are also important communication issues – though resolvable with sufficient resources.

Feedback from the developers of RAPTA

The CSIRO team and our key collaborators from UNDP, SRC, STAP, and GEF also identified a range of challenges and opportunities that emerged during the development of the RAPTA concepts, framework and tools and subsequent trialling with stakeholders.

- **Balancing flexibility and integrity; a multiplicity of concepts and approaches**: RAPTA pulls together a vast range of closely aligned concepts and approaches. The unique contribution is not the invention of a new concept or approach, but rather the ways in which it links and articulates coherence across disparate ideas, tools, and processes that, many agencies are already acquainted with or are actually using. While this offers flexibility of using RAPTA, there is the challenge of applying minimum set components to maintain the integrity of RAPTA principles such us a systems perspective, a pathways approach and learning stance.
- **More effectively include and integrate diverse lines of evidence:** Current applications of RAPTA rely on direct involvement by stakeholders who bring their knowledge and experience to the project design process. The primary vehicle for doing so is workshops. Stakeholder agreement or buy-in is not a sufficient indicator of the quality of underlying evidence, and evidence from other sources may well contradict what stakeholders believe. These assumptions warrant testing and analysis throughout project design and implementation, and this requires sufficient resources.
- **Opportunities to trial and improve RAPTA:** RAPTA was designed to have a built in 'apply-learn-reflect-refine/adapt' approach. Thus, opportunities to apply RAPTA were deemed by RAPTA developers as critical to trialling and improving RAPTA. Piloting RAPTA in different contexts with a

range of stakeholders is essential to ensure RAPTA evolves so it can better match agencies' and other groups' interests, needs, and contexts.

- **Broadening applicability of RAPTA beyond current focus on food security and land degradation:** RAPTA was initially developed with a focus on food security and land degradation, the key problem domains of relevance to the case studies and our collaborators in Ethiopia under the GEF Integrated Approach Pilot (IAP) program. RAPTA has the potential to be relevant for a broader set of global social-ecological challenges (e.g. fisheries decline/collapse; biosecurity-human health risks; energy security, cities) However, more work needs to be done to demonstrate the applicability of RAPTA to other problem domains.
- **Training courses and materials:** Course materials are best developed using direct experience gained from application. At the time of writing there was no completed RAPTA application to develop field-tested course material. This challenge has been addressed through the development of fictitious case studies for course participants to work with. These examples are well informed by problem domain knowledge of relevant systems; the RAPTA guideline and allow discussion of some politically contentious issues.
- **Meta-indicators are needed for effective reporting:** Meta-indicators for reporting on the progress, quality and outcomes of RAPTA applications in ways that could be collated for aggregate reporting purposes (e.g. nation-level reporting) have been proposed, but not developed. Further pilot case studies and consultation with a wide range of agencies is required to define effective and useful meta-indicators (see Grigg et al. 2017).
- **'Leaving the academic nest':** Some stakeholders perceived RAPTA as an academic exercise, particularly before witnessing it in use. We experienced wariness by some when they were considering whether to use RAPTA, and there were assumptions that RAPTA is for conducting research instead of designing and implementing project interventions. This is a valuable signal to us that we must do more to ensure that RAPTA is useful and practical, and to communicate RAPTA more effectively for diverse non-academic audiences.

Critical reflections on what we have learned

We have welcomed the honest and thoughtful feedback and critique that so many have given us over the course of RAPTA development and application. In addition to providing practical guidance and advice, it has given us much helpful food for thought and sparked our own critical reflections on the system we operate within.

We notice a system-generated impatience or time trap. Our stakeholders (and us) feel like we are all operating in time-poor environments with limited opportunities to take the time needed to engage thoughtfully, and inclusively, to navigate complex problems to create sustainable long-term outcomes. We see considerable impatience to design complex projects in a hurry, citing lack of time and resources as causes. Timelines are often set by financial reporting requirements of agencies, and represent a systemic issue. The RAPTA framework, and the Theory of Change component within it, could be used to recognise and understand such constructed constraints and work out pathways to changed decision-making contexts.

Short-term projects are the primary vehicles for all our work, even though we are deeply engaged with systems whose dynamics unfold on much longer time scales. We are adept at making the most of such projects, treating them as building blocks that together build a path within a broader strategy. Nevertheless we can't help but wonder if there are more effective ways that would allow more reliable, continuous engagement on the time scales required.

We recognise that feedback responses are opinions and on some matters we will have differing views, while benefiting from learning more about others' perceptions. Some responses in the interviews and questionnaires stated that it is too early to be able to provide feedback on RAPTA. While this is certainly true for evaluating long-term impacts of RAPTA, the learning posture we need to take requires early, frequent feedback. This mode of operating served us well, with rich responses from stakeholders allowing us to learn valuable lessons that would have eluded us had we not asked for feedback this early.

Contradictory details in the feedback also make for interesting comparisons. We've learned that it is valuable for RAPTA to be flexible, and easily adapted to fit in with all manner of different project and context requirements. On the other hand, we've also heard calls to simplify and offer a minimal RAPTA that does not hamper users with superfluous details, and yet different users benefit from a different minimal set. We've also heard that one of RAPTA's strengths is its ability to accommodate system complexity and include system properties that are often overlooked. On the other hand, users want easy, clear guidelines on how to use tools with minimal expert help. These comments point to the challenges in meeting a spectrum of needs, from providing sufficient detail to meet all requirements (e.g. examples of how RAPTA can be used to address questions of power and gender) to providing simple messages that are readily understood with minimal effort. Many would like something quick and brief, but once they start using it in earnest they inevitably need more detailed and specific guidance. This needs a staged approach with multiple products and training opportunities suiting different levels of experience.

RAPTA places a high value on thinking, and in doing so carries an implicit assumption that logic is the primary means underpinning the development of pathways to achieve high-level goals. We know, however, that development doesn't come by logic alone. Emotions and relationships move people to change, and relationships are bound by trust, respect and care for one another. In Ethiopia, the word 'resilience' itself holds tremendous emotion behind it, it is core to a sense of identity and is not simply a technical term. Similarly, transformational change in currently undesirable social-ecological systems requires courage. If we try to make these concepts sterile of emotion we are losing an opportunity to engage a powerful force for good. It is awkward territory for researchers because emotions are private and very context-dependent. Emotional expression in one context may be inappropriate in another, making it difficult to document and work with. Furthermore, emotional expression opens the potential for manipulation and could make stakeholders more vulnerable. It is an area that requires our attention. We aspire to learn how to listen to and reflect the emotions that motivate stakeholders to set out along an adaptive pathway better prepared for an uncertain future.

Part III Conclusions and next steps

More detailed descriptions of the pilot case studies in Ethiopia, and analysis of the early impact will be published in peer-reviewed journal papers: Butler et al. (2017, in prep), Grigg et al. (2017) Maru et al. (2017a, in prep), Maru et al. (2017b, in prep), O'Connell et al. (2017, in prep).

The focus on learning, on testing assumptions and improving the knowledge base is one of the features that sets RAPTA apart from many previous approaches to project design and implementation. RAPTA does this iteratively, as understanding and competence grow. It builds in learning at every stage and uses the increasing understanding to refine the project plans and develop the capacity of stakeholders to manage for adaptive and successful implementation, in the face of the rapid, novel, unforeseen changes that we are now facing.

It is this focus that will break the cycle of business-as-usual investment that does little to fundamentally change the dynamics of complex and entrenched problems. The philosophy embedded in RAPTA is that a deliberate and structured approach for multiple-loop learning needs to be adopted, to address many complex problems and seize opportunities for sustainable improvement of social-ecological systems.

Through this process, stakeholders systematically fill critical knowledge gaps and test assumptions over time, while still achieving their project objectives.

Further work is required to address the specific opportunities and challenges identified, through the following priorities for use of RAPTA:

1. **For the Ethiopian GEF Food Security IAP project**: Continue the application of RAPTA in the implementation phase of Ethiopian national-level pilot (as per the learning framework for this project), with a strong emphasis on testing the assumptions with evidence and modifying the theory of change if necessary. Seek further opportunities to establish and strengthen the *Options and Pathways* planning for regions, as well as the monitoring required to assess the progress towards the intermediate and longer-term outcomes and benefits which underpin the Food Security IAP goal.
2. **For other GEF Food Security IAP projects**: Support the further application of RAPTA, including training and familiarisation courses, and adaptively improving the design of projects in the other GEF Food Security-IAP projects which are about to start the implementation phase. This could include articulation of detailed implementation options and pathways and application in monitoring, learning and assessment activities.
3. **Community level (Telecho) pilot**: Seek funding partnerships for implementing the project designed during this pilot, while maintaining support for building the capacity of the community.
4. **Pilot the RAPTA approach in a wide range of case study situations across different problem domains**: RAPTA can be used in a range of problem domains – for example for resilient cities, disaster resilience, adaptation planning, health, and water and energy security; and with a range of different investors and stakeholders.
5. **Work with a range of stakeholders including investors, implementing agencies, different levels of government, NGOs, industries and communities** to apply and tailor RAPTA (or other configurations of resilience, adaptation and transformation planning as appropriate). It is clear that in order to make these core concepts operational and accessible, the language and process must complement and build on existing approaches that various stakeholders might use. The version 1 RAPTA Guidelines (O'Connell et al. 2016) were configured to complement the GEF context, language, and process. It can be easily adapted for other contexts and users. This will help to build capacity for systemic transformation for a wide range of stakeholders, as well as improve the likelihood of success of the investments in achieving the desired goals (an assumption which itself requires monitoring and evaluation).
6. **Synthesise and effectively communicate the learnings from comparative case studies, as well as the evaluation of capacity for systemic change** to broad and varied audiences to encourage reframing assumptions, strategies and transforming paradigms essential for systemic change where needed.
7. **Use RAPTA to engage early on in high-level investment initiatives, policies and programs.** Several social –ecological systems will require transformative change to be on resilient (desirable) and sustainable paths. While important to demonstrate impact at local project level, RAPTA would offer better value if it is also used early on in informing investment initiatives, policies, as well as in designing programs, which then makes it easier to support changes required at different local, national and regional scales.
8. **Improve, refine, evaluate and adapt the RAPTA approach** itself in response to learning.

Achieving these eight priority areas will require a strong commitment to building knowledge systems and a learning culture. An immediate need that will continue to put this learning stance in practice is to revise RAPTA version 1 informed by the piloting done so far and through establishing multiple pilots in different problem domains. This requires adequate resourcing, partnerships, and expertise at all stages of design and implementation. We look forward to developing these opportunities further and welcome discussion about future partnerships and participation.

1 Introduction and background

The global changes that we face are rapid, novel, interacting and cumulative – we are operating in uncharted territory and that means that there are no 'off-the-shelf' solutions.

There is an urgent need to understand, design and effectively implement interventions to guide social-ecological systems along sustainable paths into the future. The magnitude of changes needed will range from minor adaptations through to major structural change. The spectrum of magnitudes is spanned by the terms resilience, adaptation and transformation, three closely related concepts used in science and popular culture, as well as by governments and a range of business and other organisations. We define resilience as 'the capacity of a linked social-ecological system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks – to have the same identity' (Walker and Salt, 2012). Resilience thinking more broadly embraces the ideas of adaptation, and also transformation to a different kind of system when the existing one is in an irreversibly undesirable state, or on a trajectory towards such a state.

The Resilience, Adaptation Pathways and Transformation Assessment (RAPTA) framework was developed to operationalise the concepts of resilience, adaptation and transformations in the design and implementation of development projects. The framework was a result of work commissioned by the Scientific and Technical Advisory Panel of the Global Environment Facility (STAP) (O'Connell et al. 2015), and STAP also commissioned interim guidelines for using RAPTA to design, implement and assess development projects (O'Connell et al. 2016).

This report presents key findings from piloting the use of RAPTA in supporting the design of two food security projects in Ethiopia in 2016. The Stockholm Resilience Centre (SRC) Guidance for Resilience in the Anthropocene: Investments for Development (GRAID) program and United Nations Development Programme (UNDP) provided the opportunity to pilot and evaluate the RAPTA approach in the following two case studies:

- at the country level, supporting the development of a 'project document' (a second stage of planning for a Global Environment Facility (GEF) Food Security Integrated Approach Pilot (IAP) project)
- at the local village level, working with the Telecho community in the Welmera district, Oromia region, Ethiopia. It built on earlier discussions hosted by project partners SwedBio, UNDP and local non-government organisation, Movement for Ecological Learning and Community Action (MELCA). The result of this RAPTA pilot is currently being used to find a funding partner for developing and implementing a community project.

This report shows how the Ethiopian pilot projects were conducted, and the benefits and next steps for the Ethiopian participants of these two case studies. It also presents results on an ongoing assessment of the utility of the RAPTA approach, and suggests further steps.

1.1 What is RAPTA?

RAPTA (the Resilience, Adaptation Pathways and Transformation Assessment framework) is an approach designed to support the application of resilience concepts in planning and implementing sustainable development projects , to achieve systemic and transformational change where needed. RAPTA is designed to foster understanding of systemic causes of problems, and dialogue on the magnitude and nature of

change and pathways required to achieve desired outcomes. It has seven components that can be applied in a flexible manner, drawing on existing tools for individual components. RAPTA assists project developers to design more effective projects, with sustained benefits, through improved understanding of their system, and strong stakeholder engagement. RAPTA is applicable across a wide range of project types targeted at different scales.

The components of RAPTA are:

1. ***Scoping*** where the purpose and nature of the project are provisionally set.
2. ***Engagement & Governance*** concerns involving the right people in appropriate ways using ethical and transparent processes, and establishing roles, responsibilities and accountabilities in project governance.
3. ***Theory of Change*** captures the rationale for how and why interventions will deliver desired impacts and maps the planned activities, outputs and outcomes into impact pathways. It is iteratively revised through the design process and used retrospectively to evaluate impacts, costs and benefits of the project.
4. ***System Description*** produces a record of the current understanding of the system, its key components and influences and how they are connected, as well as the assumptions and evidence underpinning this understanding. Different stakeholder perspectives form part of the system description in order to foster mutual understanding of diverse perspectives.
5. ***System Assessment*** identifies risks and uncertainties, points of no return and key influences on how the system will respond to anticipated future shocks or changes. It is where resilience, adaptive capacity and opportunities for transformation are assessed.
6. ***Options & Pathways*** identifies options and arranges them into a provisional order for implementation. It is linked closely to the ***Learning*** component (see below) and options and pathways are updated and managed adaptively.
7. ***Learning*** is an iterative process that connects all RAPTA components. It guides monitoring and assessment, informs adaptive management and is used to test and revise the theory of change, system description and system assessment.

RAPTA's unique strengths are the way it brings together the concepts of resilience, adaptation pathways, and transformation in a practical manner that integrates familiar processes for project design; is underpinned by a systems outlook to problems and opportunities; and introduces processes for identifying and assessing options and pathways for implementation. Leading practices in project design are included in many of RAPTA's components: scoping, multi-stakeholder engagement, theory of change and learning activities.

RAPTA has been designed to be flexible: to work in different settings, complement and interact with existing agency frameworks and tools, and deliver useful outcomes in circumstances where there are inadequate time and resources and where there may be highly contested topics. RAPTA is a generic framework that utilises tools and methods from diverse bodies of theory and practice. RAPTA is an iterative process. The seven components need not be applied sequentially; users are encouraged to adapt to suit their context while maintaining a systems outlook on the components applied.

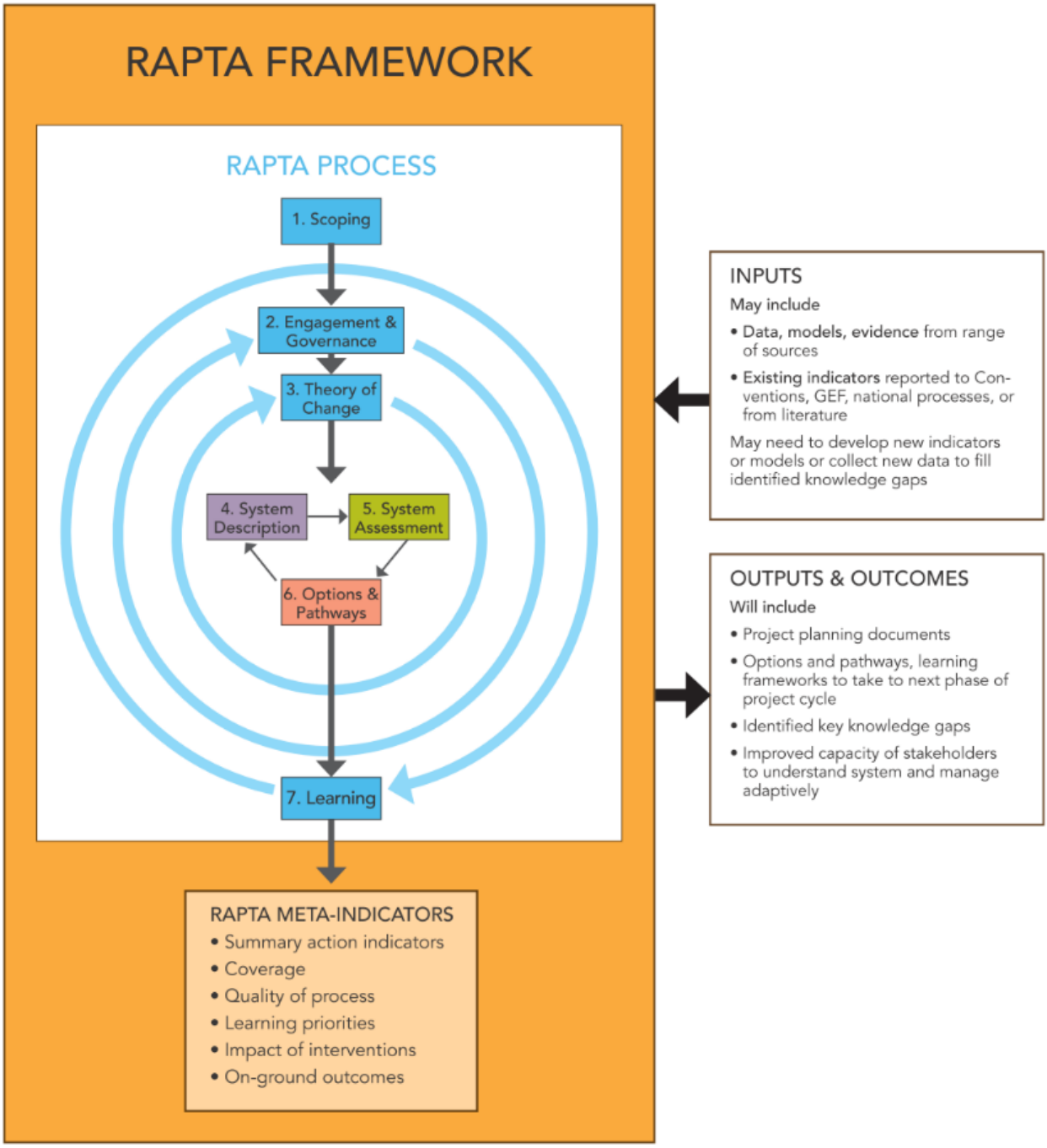

Figure 1-1 The RAPTA framework (O'Connell et al. 2016)

The RAPTA with seven components and inputs and outputs is shown in Figure 1-1. The components, inputs and outputs are readily configured to suit different project needs and need not be conducted in a prescribed sequence. The guidelines outline steps for working within components, and point to different tools and methods available (O'Connell et al. 2016). In this way, the framework was developed to be flexible and able to accommodate methods from a range of bodies of theory and practice.

1.2 Applying the concepts of resilience, adaptation and transformation

The terms resilience, adaptation and transformation hold different meanings to different people and groups, and RAPTA has been designed to put concepts into practice rather than resolve definitional differences. Consensus on definitions is not a prerequisite to applying these concepts: when using RAPTA, the important thing is to focus on the desired goals, and the magnitude, types and pathways of changes to the system required to attain those goals.

The RAPTA Guidelines are used to:

- understand why, how, where, when and with whom to make key interventions in the system
- informed by the concepts of resilience, adaptation, and transformation
- applied in an intentional way
- to manage the system to maintain options and deliver desired values into the future, as specified by sustainability (or other) defined goals.

The Stockholm Resilience Centre (SRC) Guidance for Resilience in the Anthropocene: Investments for Development (GRAID) program and United Nations Development Programme (UNDP) provided the first opportunities to test the application of RAPTA. These included the design of two food security projects in Ethiopia, a number of presentations in workshops, conferences and other forums, and the development and delivery of training course material. One of the opportunities for testing RAPTA was assisting a project design process for a Global Environment Facility (GEF) Food Security IAP project in Ethiopia. The second opportunity was facilitating RAPTA-based participatory project design with the Telecho community.

It is less than a year since RAPTA was first put into practice through these two pilot projects. Although it is still too early to appraise the full, long-term outcomes of this work, we are already seeing evidence of changes in project design practices, policies and capabilities. The results and achievements presented here are summaries of more detailed material in manuscripts currently in preparation for peer-reviewed journal papers ((Butler et al. (2017, in prep), Grigg et al. (2017) Maru et al. (2017a, in prep), Maru et al. (2017b, in prep), O'Connell et al. (2017a, in prep)). After outlining the key achievements and results from the RAPTA pilot projects (Part I), we also present the theory of change and learning framework used to gather evidence for RAPTA's impact and learn from it (Part II) before making some conclusions and recommending next steps (Part III).

Part I Two pilot studies for sustainable development projects in Ethiopia

2 RAPTA pilots at country and community levels

RAPTA, as an approach for designing projects, was piloted in Ethiopia at national and local community levels. The original intention was to have a pilot as part of a Global Environment Facility (GEF) project proposal that covers national, state/regional and local community levels, but that was not feasible due to logistics, funding and the short time frame for proper and adequate stakeholder engagement. Instead, the village of Telecho was selected as a local community pilot. Telecho is in close proximity to Addis Ababa, the capital city of Ethiopia, and has a close trusting relationship with an endogenous non-government organisation called Movement for Ecological Learning and Community Action (MELCA).

This section presents a high-level overview of the two case studies. Further details can be found in Maru and O'Connell (2016) and Maru et al. (2017a, 2017b, in prep).

2.1 National pilot: Ethiopia Food Security Integrated Approach Pilot

2.1.1 Background and activities

The UNDP Ethiopia Country Office and UNDP GEF Africa office used RAPTA in the design of a project as part of the GEF's Integrated Approach Pilot (IAP) program on 'Fostering Resilience and Sustainability for Food Security in Sub-Saharan Africa' (henceforth the Food Security IAP). Consultants were employed by UNDP to undertake the project design, and Yiheyis Maru was brought in as a RAPTA expert to assist the design team. The end product of project design is a 'project document' (ProDoc) providing a detailed plan of activities to implement in the project. Activities involving RAPTA at different stages of ProDoc preparation are summarised in Table 2.1.

Given the Food Security IAP project proposal is still in a process of being cleared for implementation as at April 2017, only generic descriptions and learning from RAPTA input are provided in this report.

Table 2.1 RAPTA-based input, activities and summary results Food Security-IAP in Ethiopia

Activity/date	RAPTA-based input	Result
Inception workshop 13 Feb 2016	Revision to a PIF-based Theory of Change (ToC) diagram	Introduced and reinforced the need for broader conception of food security
	RAPTA familiarisation with project design team	Prepared team to facilitate the workshop Changed the agenda from directly working on the project as was originally intended to start with a familiarisation of RAPTA in the first day
RAPTA Workshops	RAPTA familiarisation with the invited stakeholder	Allowed focus and some experience on RAPTA steps
7–11 March 2016	RAPTA-based project design with the stakeholders	Provided a systems picture of what needed to be addressed for achieving food security in a way that delivers local and global environmental benefits
	Input to preparation for field visits to six regions and 12 proposed project sites	Revised survey instrument and provided simple tools that could help with structuring interaction with state/regional stakeholders
23 May 2016	Took part in project design validation workshop	Helped project design team incorporate feedback from key stakeholders and UNDP internal project reviewers
Writing sections in and edits to ProDoc	Feb–June 2016	ToC that formed the strategy section of the ProDoc System description that assisted with description of food security context Recommendation for evidence-informed RAPTA to identify options and pathways and set a Monitoring, Assessment and Learning framework as first core activity implementation of the project once endorsed

2.1.2 Summary of country-level project design process and results

Two sets of workshops involving RAPTA were held in March 2016. The project design team participated in both, and the second workshop also included national project stakeholders. There was a mix of familiarisation sessions explaining RAPTA process and concepts, as well as sessions applying RAPTA to the project design.

The national pilot primarily involved workshops with project design team and national-level stakeholders of the Food Security IAP in Ethiopia. These workshops, conducted from 7 to 11 March 2016, focused on introducing RAPTA and on project design. All RAPTA components were included, however the largest amount of time and effort was spent on *Theory of Change*, *System Description* and *System Assessment* components. *Scoping*, *Stakeholder Engagement and Governance* required only a light touch because these steps had already been addressed by the project design team. Time and data limitations prevented more time on the *Options and Pathways* and *Learning* components, which were covered in less detail.

Within the national-level Ethiopia pilot, the process of using RAPTA (even in a limited way in the short time available) had valuable outcomes:

- provided a system perspective that was not evident in earlier versions of the project design

- led to proposing a set of interventions that originally appeared to be out of scope to the stakeholders, because it was based on the usual narrower sector-specific framing. Through the combination of a desire for an integrated approach to food security as specified by the GEF, and the application of RAPTA in the detailed project design phase, a different set of interventions[3] was revealed as potentially valuable for supporting a transition to a more food-secure system
- supported a different set of discussions, narratives and understanding about what interventions and other stakeholders might be needed in order to reach a more food-secure state. There are many examples reflecting the broader narrative that emerged when stakeholders pointed to ways in which NRM objectives could be met more effectively by reducing demand on natural resources for food production, rather than working only on direct NRM activities. It opened up the discussion to include a wider range of drivers of land degradation, for example including health, education, household energy sources, population and family planning
- provided some of the participants with a more clear understanding of where and how to start with sequencing a complex set of options and decisions.

Therefore as well as providing a more robust project design (with a *prima facie* improved chance at reaching desired outcomes and goals), the process of using RAPTA helped to build capacity for those who participated. These outcomes were apparent in a broad range of participant feedback as well as in the revised project document (approved in Feb 2017 but not yet publicly released) – the following section contains more details and stakeholder feedback. A short picture based presentation of the project design workshop has been circulated to all participants (Maru and O'Connell 2016; Maru et al. 2017a).

2.1.3 Detailed methods, learnings and stakeholder feedback

Most expectations were met

Participants expressed a variety of expectations before the workshops. Expectations ahead of the RAPTA familiarisation sessions included: learning about RAPTA in practice; gaining skills, understanding and experiencing project design for addressing food insecurity and related complex problems; linking RAPTA components so that they better inform each other; bringing new ways to catalyse change into the project design; more stakeholder inclusion and better integration across sectors; addressing cross-cutting issues like gender and climate change; bringing a system understanding to pilot sites and to guide field baseline data collection; aiding interactions between the Ethiopia project and regional hub; and demonstrating the importance of addressing both socio-economic and environment drivers of food insecurity in tandem in the GEF Food Security IAP.

Feedback after the workshops indicated most of these expectations were met:

> *It is the first time I heard of RAPTA and it has been an excellent experience… largely met my expectation … it was participatory – transformation is a key component of project design.*
>
> *I got a broad knowledge of RAPTA in each of its steps.*
>
> *Yes it was a new way of project design. My impression is positive towards the approach. Community transformation and systemic thinking are the best points I learned from today's workshop.*

[3] i.e. different to the interventions proposed in the first stage of the project development ('project identification') which preceded the use of RAPTA to develop a more detailed project document, and also different to the Food Security IAP projects in other countries

Healthy concerns about RAPTA were raised. Participants wondered if it is too theoretical, requires additional time that is burdensome, and shifts activities too far away from natural resource management. Feedback indicates workshops went some way to address these concerns:

> *I'm more impressed than I thought I would be in terms of depth of thinking – use of knowledge, included. The sense I get is that RAPTA is problematising GEF planning in new ways and dragging it into a more 'real-world complex analysis' (plus development planning responses).*
>
> *I have seen how the RAPTA approach reinforces the integrated approach. The thresholds are a big eye opener.*
>
> *I learned a lot about the project and how we can plan to apply theory of change… I learned food security is availability and access to food so it not only depends on the crop and livestock production – it is more than that.*

We also recognised a challenge that is applicable and warrants attention more broadly using RAPTA:

> *I was generally impressed with the workshop and RAPTA framework. One thing I would have liked to see is the inclusion of more real data into the system description process. Without data on the systems there can be a tendency to have existing biases unduly influence the process.*

Scoping, Engagement and Governance were brief

The design team had already addressed *Scoping*, *Engagement and Governance* considerations in consultation with Ethiopian government stakeholders, so these were covered only briefly in the workshop. The key recommendation was to widen stakeholder engagement to include other government ministries (agriculture and livestock) and more representatives of beneficiaries, non-governmental organisations (NGOs) and the private sector. More gender balance was also recommended. These are important recommendations because project governance structures will be replicated at regional states and project sites.

Theory of Change (ToC) expanded impact pathways beyond NRM-based activities

A draft generic theory of change was presented to the Inception workshop with stakeholders on 13 February 2016, and it was revised in the first RAPTA workshop. The project design team used a backward mapping exercise: they started from an agreed ultimate goal and identified necessary and sufficient conditions to reach that goal. This revised version was presented at the stakeholder workshop and was revised further with stakeholders (Figure 2-1).

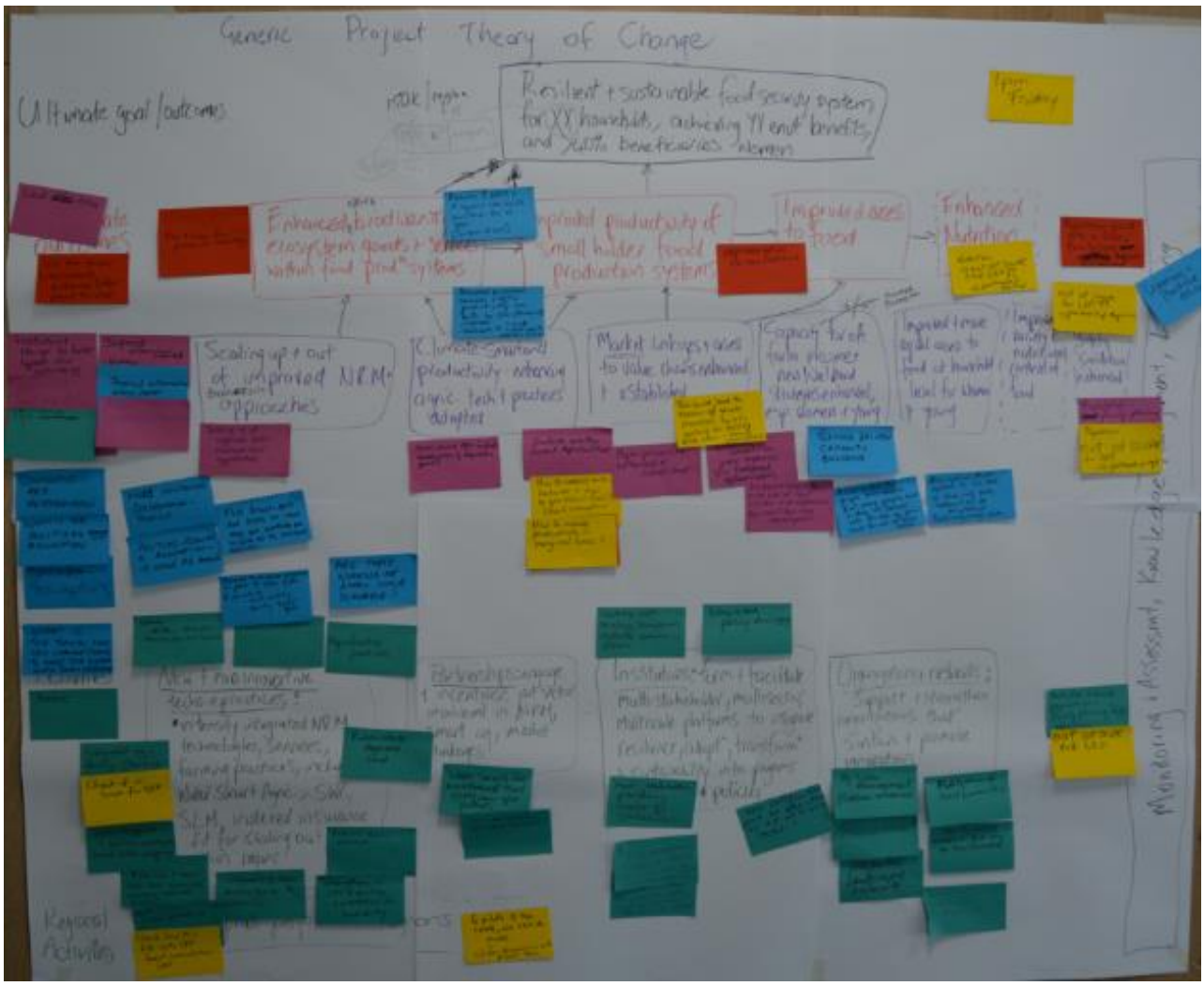

Figure 2-1 Participants' input to generic Theory of Change of the Ethiopian Food Security IAP project proposal. The final Theory of Change is described in more detail in Maru et al. (2017a in prep)

This iterative process yielded several good outcomes:

- it allowed the project design team and stakeholders to consider the whole system without excluding things that were considered out of scope for GEF, making it clearer what GEF's role in the project is and what partners will be needed to cover the activities identified as necessary for reaching the goal, but beyond scope.
- it facilitated broader awareness and understanding for the need to include complementary impact pathways beyond the conventional focus on NRM only.
- it allowed a new narrative to emerge that emphasises alternative pathways that improve productivity and generate income while taking pressure off natural resources.
- this narrative led to an understanding that reducing the demand on natural resources to produce food may be just as effective, or even more so, than working directly on improving natural resources. This naturally opened the discussion to consider a wider range of drivers, including health, education, household energy sources, population and family planning and their impact on both food security and the environment.

In this way the Theory of Change activities readily brought about the kind of integration that the GEF is seeking in the integrated approach pilot:

GEF's interest in these issues is from the lens of how social economic drivers interact with the environmental drivers of food insecurity and therefore well within its mandate. And most importantly – this is the essence of the integrated approach.

System description reinforced the value of systems outlook for project design

There are six regions targeted by the project proposal, and three of them were selected for the system description and assessment components. Elements of the system description were classified into three categories: landscape, livelihoods and lifestyle (see Figure 2-2 for example).

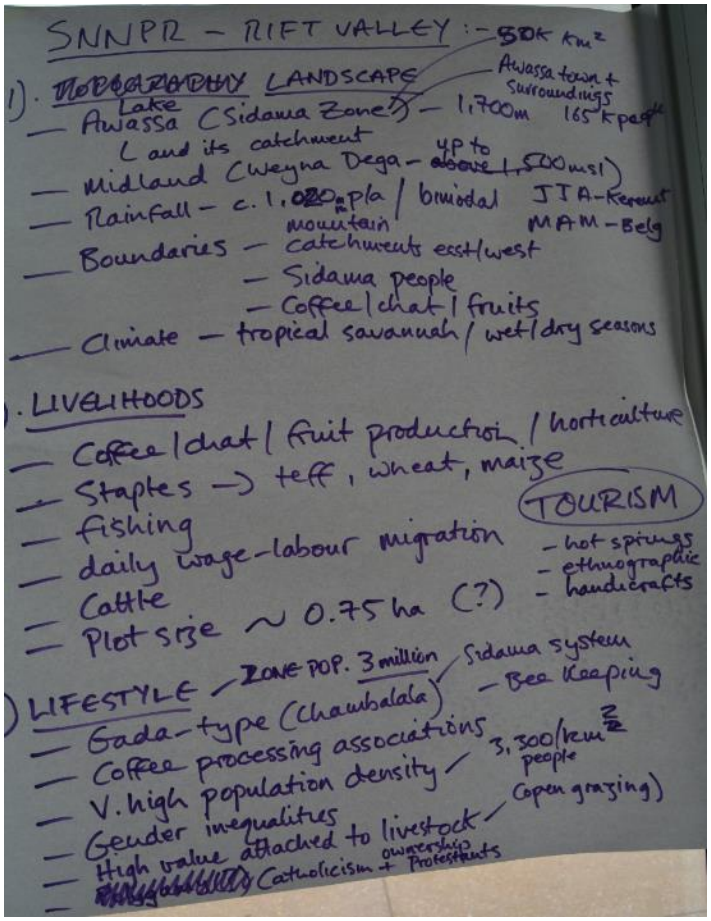

Figure 2-2 An example of systems description from workshop group work on Sidama Southern Nations, Nationalities and Peoples' Region (SNNPR)

While simple at this early stage, the system descriptions again embedded a system outlook for addressing food security, and expanded participants' perspectives to see interventions beyond conventional NRM activities:

> *…the system description and system assessment component was there, usually the conventional way of problem assessment is not able to capture any but a key problem, or the key constraint of the area or– the system. So, that – I mean, a good [advantage of] RAPTA is it is really able to capture the whole system and to identify the most important constraints.*

System Assessment revealed eye-opening thresholds

State-transition models were used in the system assessment component. These were helpful for highlighting where systems can occupy alternative states, and the critical variables that characterise transitions between desirable and undesirable states. In this way, interventions that appeared out of scope could be revealed as crucial for supporting transitions to desirable system states.

For example, one group conducted a system assessment for Northern Shewa, focusing on a Menz sheep system (Figure 2-3). This is a local sheep breed known for good quality lamb and mutton. The group identified the income from Menz sheep as a critical variable for shaping the state of food security. Currently the system is trapped in an undesirable state where households receive only a fraction of the final market value of sheep sold in capital cities, and this is pervasive because there are insufficient capital and levels of social organisation to increase the productivity of and value from Menz sheep.

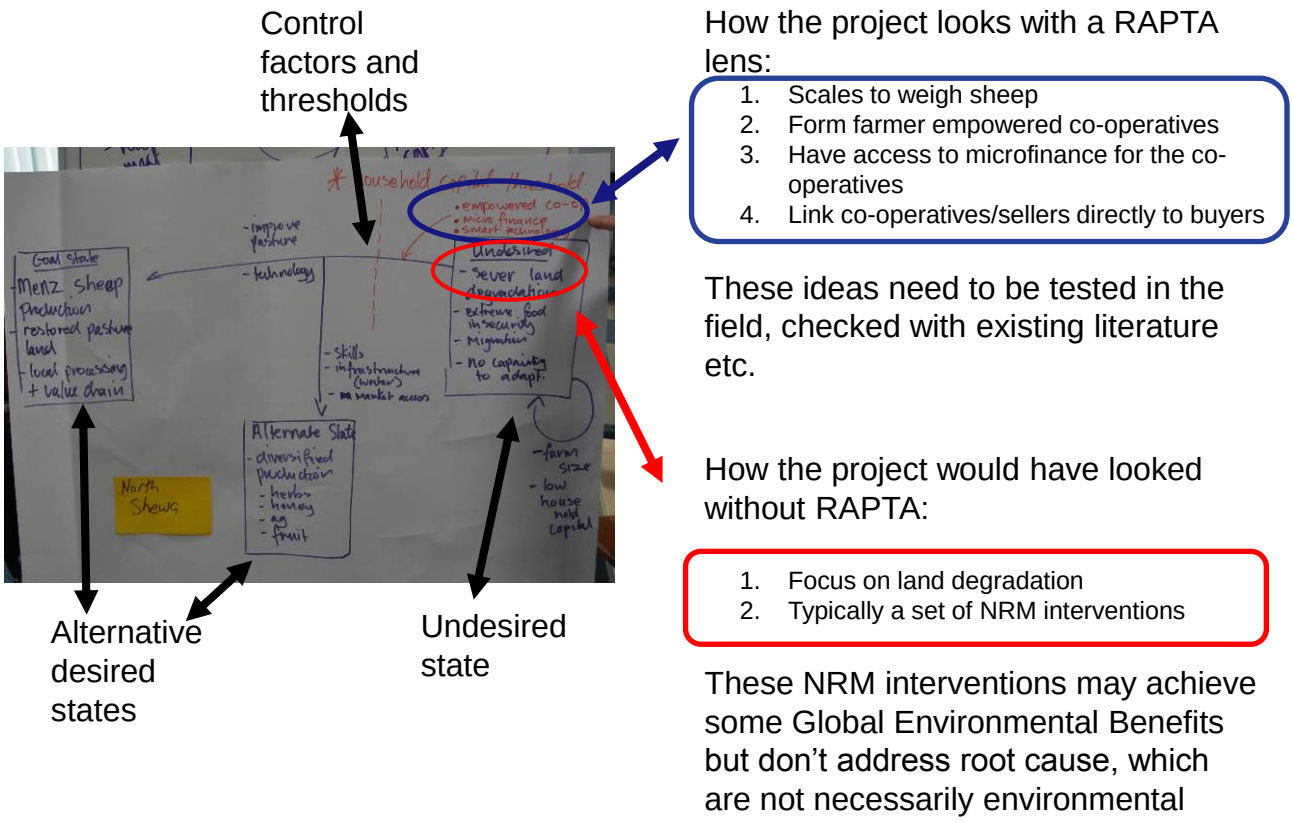

Figure 2-3 An example of systems assessment using state-transition model from a workshop group exercise in Northern Shewa (O'Connell et al. 2016)

The systems assessment allowed them to identify a critical threshold in household capital that needs to be crossed to transition to a more productive state, and that the first steps lie outside usual NRM interventions:

- form farmer empowered cooperatives
- have access to microfinance for the cooperatives
- link cooperatives/sellers directly to buyers.

Participants suggested ways in which NRM outcomes (more productive and sustainable Menz sheep farming) could be achieved through interventions that are not direct NRM activities. This proposal needs further checking and field tests, but it represents a significant shift in thinking because previously imagined interventions were limited to activities that directly, rather than indirectly, addressed land degradation.

Options and Pathways triggered discussion on the necessity and challenges of transformation

There was insufficient time to complete the Options and Pathways component, especially because it requires detailed preparation of data and evidence to generate options, identify priorities and sequence actions according to pathways. Instead, this component was introduced to participants by discussing

generic nation-scale pathways. In particular, participants reflected on the nature and magnitude of change required to achieve stated food security goals. These discussions heightened awareness that focusing on the natural resource system alone may be inadequate to reach food security goals. In particular, participants recognised that with increasing population, reduced farm size per capita and other system drivers, other livelihood options could secure welcome alternative sources of income (e.g. tourism, industry). Such activities would represent transformational change for households, with the potential for improved access to food and generation of environmental benefits by taking pressure off natural resources. The North Shewa example (Figure 2-3) is an example off the breakthroughs in thinking for many participants because they could see how the ideas of critical thresholds could underpin key points of intervention, and how to sequence actions and decisions to target these.

Learning is central to the success of intervention into complex problems

Discussions on the *Learning* component were brief, again limited by time. Monitoring, assessment, reflection and knowledge management were all discussed. The Theory of Change was a valuable vehicle for ongoing learning because it was continuously revised and refined as a living document in all components of RAPTA in project design. The Theory of Change helped participants to generate hypotheses and assumptions that could be tested and identify suitable indicators for monitoring and learning.

The workshops themselves embedded learning and monitoring practices, with participants providing regular feedback throughout the workshop in a variety of ways. Participant feedback reflected two different levels of learning:

1. **Corrective adjustments** (participants already knew something and the workshops brought about a slight adjustment to that knowledge):

> *I use the approach scenario planning most of the time, but RAPTA provides a different way of understanding problems….as I said, the system description, system assessment components of the RAPTA and even a bit deeper than the other approach. …And I gained some level of knowledge from it.*

2. **Reframing of assumptions and strategies.** For example, prior to these workshop activities, there was an implicit assumption among workshop participants that increasing food production is the way to improve food security. Workshop activities led to significant reframing in the perspectives of participants, and they expanded their view of interventions to include more diverse ways to access and utilise improved nutrition. As a result, participants also wanted to see more organisational learning and a reframing of the GEF view on its role and project design.

> *GEF needs to give more time and more budget to the design process, and also allow a lot of flexibility in the way projects evolve so they can learn and adapt*.
>
> *GEF to consider itself as part of the system and respond to feedbacks to enable change on the ground.*
>
> *It could be sensible to apply RAPTA for project identification and designing. Because RAPTA provided the platform to involve broader stakeholder more accurately, sharpens the ToC, gives options and pathways, and gives polished system description and assessment and leverage the learning process.*

We are interested in recognising and fostering these kinds of learning, as well as the less common but very powerful learning that occurs when there are significant transformations in paradigms, values and rules (Figure 2-4). This third kind of learning is less likely in a one-off workshop session, but precursors to it were apparent. For example, participants found their eyes opened to new possibilities in discussion on the need for transformation:

> *Our current adaptation approach will not work for a long time! Wow!! It just opened my eyes about adaptation.*

Participants saw potential benefit in the GEF and agencies learning and adjusting their own operations profoundly:

> *GEF and the agencies should be more open minded and let the system guide their thinking … [and] consider themselves as part of the system and respond to feedback to enable change on the ground.*

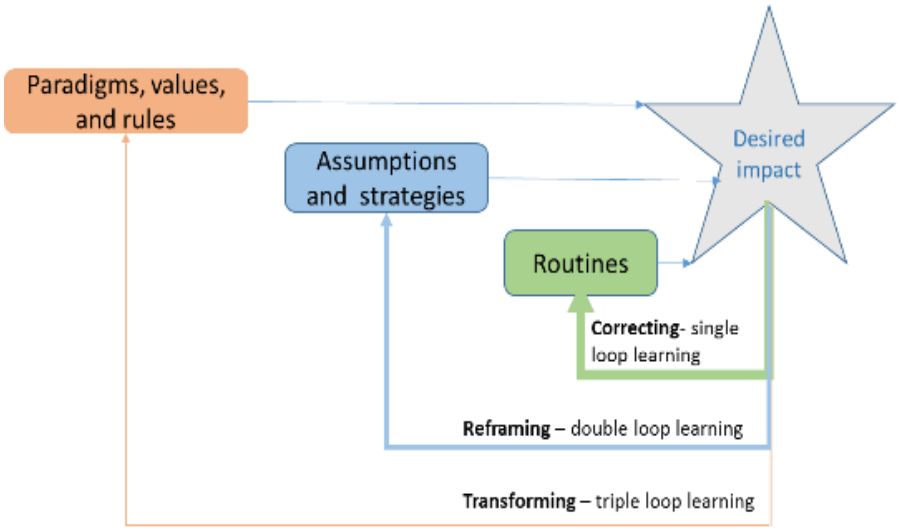

Figure 2-4 Multi-loop learning (source: Maru et al. 2017b in prep)

The *Learning* component in RAPTA is intended to trigger these three learning loops at individual, organisation and societal levels. Such learning is necessary if significant changes in perspectives, policies and practices are to come about. These early signs of at least double loop learning are promising. They are discussed further in Part II.

2.2 Local pilot: Telecho community

2.2.1 Background and activities

At a local village level, RAPTA has been piloted with the Telecho community in the Welmera district, Ormia region, Ethiopia. This pilot was built on a discussion initiated during a 'Multi-actor Dialogue on Resilience Thinking, Assessment and Mainstreaming' run in November 2015 by SwedBio, MELCA and UNDP. Yiheyis Maru from CSIRO was invited to participate in that discussion and give a presentation on RAPTA.

The dialogue brought together a wide variety of actors from policy, practice and science who are working on resilience at different levels. The aim was to explore key concepts and principles, multiple approaches for assessing resilience, and to identify specific steps in integrating social-ecological resilience principles and resilience thinking into development and biodiversity planning frameworks (Dialogue Final Agenda and Background Note 2015).

The dialogue had participants from across the globe working at different scales, including leaders and elders from the Telecho community, Oromia State and Abraha We Atsibaha community in Tigray State, Ethiopia. The program had a field trip to Telecho community that complemented the thinking, assessment and mainstreaming of presentations and discussions in Addis Ababa with a reflection on the practical, emotional and relational aspects needed to achieve desired goals. In the Dialogue, the villagers understood and shared their 'lived experience' about what resilience means. They had used 3D participatory mapping (facilitated by Million Belay, at that stage with MELCA) to learn about the past and current state of their agro-ecosystems and guide several collective and individual landscape rehabilitation efforts (see the 3D participatory mapping the communities did in 2010 https://vimeo.com/22123738). It was evident in the

field trip how the 3D participatory mapping had improved understanding of livelihood and landscape issues, and significant additional progress has been made since then.

The initial informal exchange with leaders of the communities, MELCA, SwedBio and SRC at the Dialogue was to build on the momentum, relationships and trust that already exists with these communities and to explore a potential partnership in piloting RAPTA-based community planning for sustainable and resilient landscapes and livelihoods. This was further discussed in formal and informal meetings with Stockholm Resilience Centre (SRC) leaders in March 2016 in Stockholm, and led to a proposal to pilot RAPTA and a Multi-Evidence Based (MEB) approach with the Telecho community. The leader of MELCA discussed with Telecho community elders and leaders the idea of piloting RAPTA to assist with participatory community project design. They agreed and funding for running the pilot was approved from the SRC–CSIRO contract.

The objectives of the local RAPTA pilot were:

- To assist with community-based planning for sustainable landscapes and livelihoods improvement that will assist community action and articulate needs for external support
- To build capacity among community members in design, implementation and assessment for resilience, adaptation and transformation
- To provide opportunities to
    - reflect and learn from implementing integrated RAPTA and MEB at a local scale
    - contribute to a synthesis of learning from pilots in different contexts and at different scales
    - further adapt and refine RAPTA for application at scale.

This section contains results from three RAPTA workshops with the Telecho community: a RAPTA familiarisation workshop, a project design workshop applying RAPTA, and a workshop to explore options and pathways.

Table 2.2 RAPTA-based input, activities and summary results for the Telecho community pilot

Activity/date	Participants	Output
Meeting with facilitator and interpreters	MELCA director as support facilitator; two (a man and a woman) and a note taker	Familiarity with RAPTA concepts and steps Common terminology for interpretation
RAPTA Familiarisation workshop **23 and 24 May 2016**	16 elders, leaders including women and youth	Familiarity with RAPTA concepts and steps Decision to continue with RAPTA pilot
Data gathering **In between workshop** **August/Sept 2016**	Workshop coordinator and interpreter with help from local experts	Evidence base for project design workshop
Meeting with interpreters and technical experts **6 Sept 2016**	Workshop coordinator, two interpreters and three experts	Familiarisation with RAPTA steps and concepts and making sure consistent interpretations
RAPTA-based project design workshop **7–8 Sept 2016**	21 participants – elders, leaders including women youth and local technical experts	Completed four RAPTA steps in detail and reflected on expectations

Activity/date	Participants	Output
Debrief with key leaders and experts **9 Sept 2016**	13 participants	Discussed contested issue, reflection and feedback and next steps
Meeting with District authorities and department heads **9 Sept 2016**	Representatives from the district administration crop, livestock and natural resources departments	Enlisted their support and involvement on next steps
Option and pathways workshop **19–20 Jan 2017**	28 participants – elders, leaders including women youth and local technical experts and traders	Completed *options and pathways* and *learning* steps in detail and reflected on expectations
Learning step and video recording with key leaders and experts **22 Jan 2017**	14 participants	Completed Learning step discussed reflection and feedback and next steps Viveka Mellegård (SRC) and video crew interviewed Yiheyis on RAPTA and its application with Telecho community
Meeting with District authorities and department heads **23 Jan 2017**	Nine representatives from the district administration, crop, livestock and natural resources, cooperatives departments	Reinforced their commitment for their support and involvement on next steps

2.2.2 Summary of local-level project design process and results

In the local-level Ethiopia pilot at Telecho (Maru et al., 2017b), the use of RAPTA was more comprehensive and took place over three workshops over a nine month period. This process led to

- a shared understanding of possible alternative futures, in an inclusive process with women, men, youth and experts (e.g. see Figure 2-6, Figure 2-7, Figure 2-8)
- identified some critical thresholds in soil acidity, nutrient cycling, capital and market linkages that warrant monitoring because they will influence the future state of the system
- enabled the community to plan in a structured way why change might be needed, what needed to change, and how these changes might be achieved (e.g. see Table 2.5)
- revealed unresolved questions and contested issues, and enabled them to be articulated more clearly and discussed in a structured and safe manner (e.g. see Table 2.6)
- provided clarity about where the community could start with moving towards their desired outcomes, by knowing what to do, how to sequence their actions, and what to monitor in order to learn and adjust. Three distinct but complementary pathways to transition to a more food-secure system were constructed (see Figure 2-11):
    1. Improving the productivity and resilience of rain-fed agriculture with interventions to reduce significant losses in the integrated soils-crop and livestock system and establishing cooperatives and networks to markets.
    2. Expanding small-scale irrigation and specialisation in horticulture, bee-keeping, poultry, dairy, feedlots and linking in to market and value chains through strong cooperatives.

3. Negotiating decent jobs and career paths for landless and youth in emerging industries in surrounding urban centres.

- priority areas for structured learning, continuous monitoring and reflection were decided: governance and communication; capacity building; and networks and value chains

As well as a concrete plan to move forward, it was clear that the process of applying RAPTA helped to build capacity, as shown by stakeholder feedback shown in the next sections.

We are currently working with MELCA and SRC to explore potential donors for a project proposal built on the systems understanding and on options and pathways articulated in the RAPTA workshops.

2.2.3 Details and stakeholder feedback from Workshop 1: RAPTA familiarisation

Participants were satisfied with the familiarisation and decided to use RAPTA to design a community project

The first workshop on RAPTA familiarisation assisted community elders and leaders to make a decision on whether RAPTA is useful and relevant for them, and if they would like to continue to use it with broader participation of community members in designing a community project.

The workshop facilitators delivered a step-by-step familiarisation of the RAPTA process with examples and group exercises on *Scoping*, *Stakeholder Engagement and Governance*, *System Description*, *System Assessment* and *Theory of Change*. After the *Scoping* and *System Description* components, participants wanted to work on their own systems and move from familiarisation to actually deliberating on their own issues.

Scoping assisted with identifying issues of concern

On the second day of the workshop participants decided to make the focus of the workshop on *improving soils, crop and livestock key elements of farming* – their major source of livelihood. Participants reasoned that wide ranging and chronic food insecurity is so far not an issue for the majority of households in their village but could be in the future with increasing impacts of climate change, degrading soils and loss of productivity of crops and livestock.

> *Yes, there are some landless people that may struggle to feed themselves but it is not a wide spread problem now, but it could be if the climate continues to change, soil is eroded, weeds, pest and diseases continue to affect our crops and our livestock.*

Systems description detailed and clarified the issues of concern and their causal relations

The discussion on scoping, while productive, was not detailed enough for developing a preliminary theory of change. RAPTA is designed to be used flexibly, and the facilitators decided to switch the order and undertake a systems description and systems assessment first before developing a theory of change.

Participants worked in groups to describe their systems. Figure 2-5 is a visual representation of the systems they are concerned about, showing key issues and links between their soils, plants and animals.

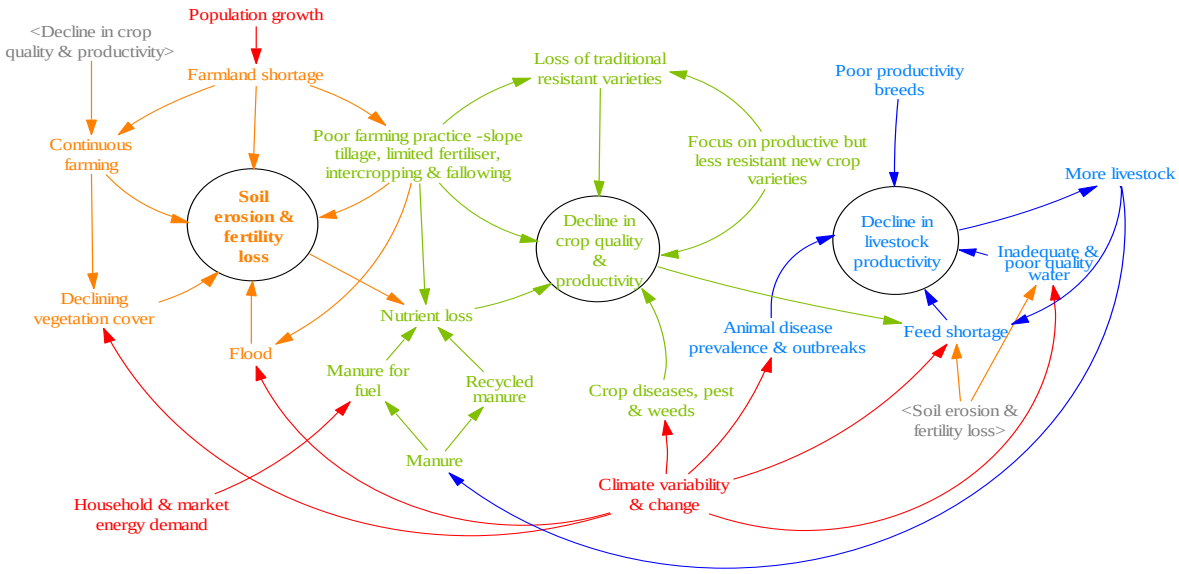

Figure 2-5 Influence diagram from workshop exercise showing drivers (red), soil erosion/fertility loss cluster (orange), crop quality/productivity loss cluster (green); blue variables are livestock productivity loss cluster (blue)

Systems assessment revealed the need for not only productive, but also resilient soil, crop and livestock systems

For systems assessment a simple state-transition model was used to introduce current and desired states, key influencing variables and feedback loops, drivers, and the question of 'resilience of what to what' and thresholds.

Participants discussed in groups and produced pictorial representations of the current and desired states and the key variables that needed to change. An example from the women's group is given in Figure 2-6.

Figure 2-6 Example of current and desired states, and variables that need to change

Soil nutrients, land size, seed variety, animal health and capital were identified as critical variables for system state changes.

Preliminary Theory of Change revealed the need to think about transformation

The *Theory of Change* component was introduced to participants using an example emphasising the need to have a shared understanding on desired outcomes and asking what needs to change or be maintained to achieve these outcomes. Informed by results of the preceding exercises, participants articulated the

desired goal as *improving the resilience and productivity of integrated soils, crops and livestock farming system for sustainable livelihood and wellbeing.*

Participants conducted an initial exercise in groups to answer what may need to change and/or be maintained to achieve the desired goal and develop a preliminary broad Theory of Change (Table 2.3).

Table 2.3 Preliminary Theory of Change for Telecho community

Outcome: Soil-crop-livestock productivity improvement for resilient and sustainable livelihoods and landscapes		
Type and level of change	Men	Women
Maintain the current system by enhancing its resilience	Improve the resilience of soils, crop and livestock to enhance productivity in the face of changing climate, population growth and shrinking land sizes	Manage the resilience of the land and agriculture to increase productivity
Modify and adapt part or whole of the current system	Introduce and expand new ways of producing irrigated fruits and vegetables, animal fattening, poultry production and collective storage and marketing of produce at favourable prices	Cooperative livestock fattening, milk and poultry production
Transform part or whole of the system to something different	Be a marketplace for a variety of farm produce as it is close to Addis Ababa and Holeta – the capital of one of the zones of Oromia State	Cooperative wheat flour production factory and wood and metal workshops

Participants expressed their satisfaction with the familiarisation workshop and agreed on a time to have the next RAPTA-based project design workshop.

2.2.4 Details and stakeholder feedback from Workshop 2: Understanding the system and what needs to change

The second RAPTA workshop built on the results of the familiarisation workshop. It covered most RAPTA steps in depth, specifically *System Description*, *System Assessment* and *Theory of Change* for participatory project design. It involved more community members, a total of 21 participants including youth and a group of technical experts from crop, livestock and natural resource management departments working in the village.

Expectations – most expectations were about what participants would like to see in the project

Participants were assigned to groups: youth, women, men and technical experts working in the village expressed their expectations from the RAPTA workshop. The youth group primarily focused on what they would like to learn from the RAPTA process including:

- how to organise and run workshops
- ways in which RAPTA could address the issues raised by the community, and
- how RAPTA could help ensure women's participation in the implementation of the development project.

Youth expressed their satisfaction with the workshop:

> *We believe that this project if implemented will bring significant change in our lives. This is because it is being designed involving us all and with a depth of understanding of our situation.*

The remaining three groups' expectations were mainly on what activities and results they would like to see in the project focus areas: soils, crops and livestock. As the workshop progressed these participants introduced these activities and results into the different steps of project design.

Scoping

The facilitator introduced RAPTA steps and held a quick discussion on scoping and the goal or ultimate outcome defined in the familiarisation workshop to new participants and asked if there were any changes they would like to see in restating it. There were no edits or changes suggested for the goal.

Stakeholder Engagement and Governance

The stakeholder engagement was handled through coordinators of MELCA, a local NGO trusted by the community. The importance of multi-stakeholder engagement was discussed and participants confirmed the representativeness of elders and leaders and the women and youth involved. The workshops progressively involved more community members and technical experts allowing the community to articulate their needs and desired goals among themselves unhindered by different views and formal agendas. Outcomes of the two workshops were then discussed with district authorities creating an opportunity for a bottom-up approach.

Project governance was introduced but postponed until the next workshop (January 2017) where it was expected that clarity on who the other stakeholders might be, for example relevant government agencies and potential donors who may partner with the community to carry out the project.

Systems Description added new key variables – acidity of soils and land use change

The system description developed in the familiarisation workshop was introduced and participants discussed it in groups. Participants described the causes of the state and trends in the core system components: soils, plants and animals in much more detail. An example from a group discussion is given in Table 2.4. Figure 2-7 shows the group work done to produce Table 2.4.

Table 2.4 Example of system description of crops developed in a men's group discussion

Type	Area	Trend	Causes
Wheat	550	↑	Provision of improved varieties
Sorghum	100	↓	Increasing soil acidity
Beans	50	↓	Disease
Potato	100	↑	It resists acidic soils
Oil seeds	20	↓	No access to improved varieties
Teff	20	↓	Salty soil
Other crops	10	↓	Declining fertility of the soils

Figure 2-7 Detailed soil-crop livestock system description from men group

The system assessment emphasised critical thresholds including soil acidity, nutrient cycling, capital and market linkages

Participants were asked to assess the state of the current system and the state they would like to see in 5 to 10 years. They were also asked to assess likely outcomes if the current state of the system and trends were to continue, or a worst-case scenario as shown in Figure 2-8.

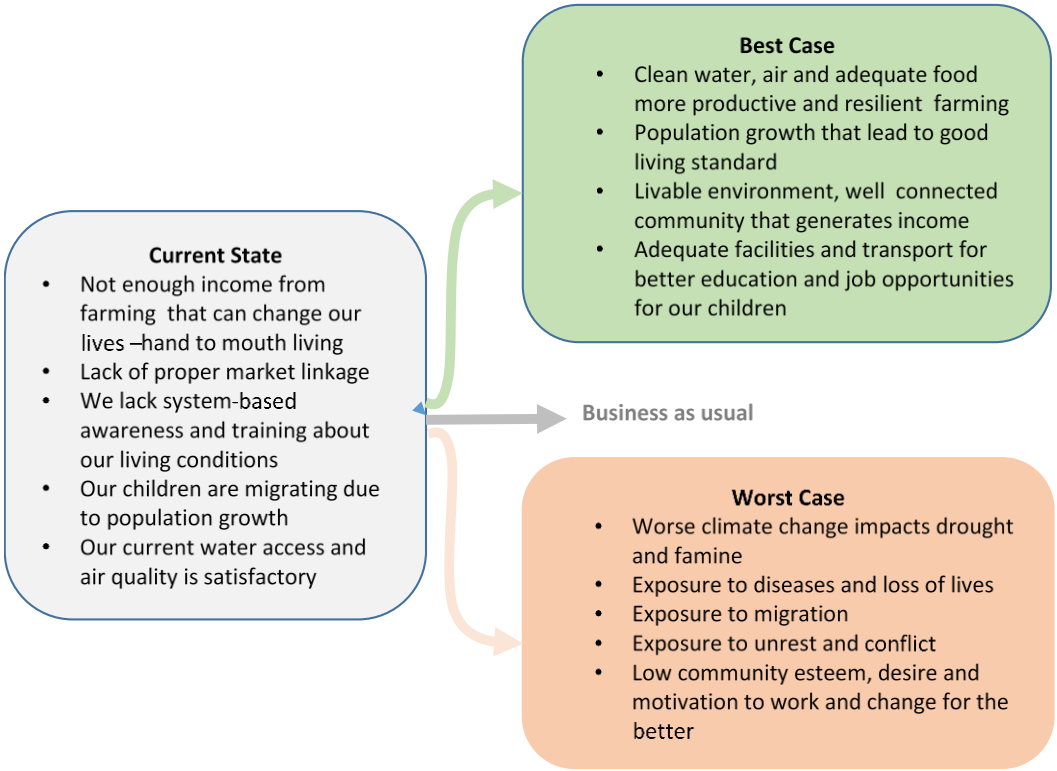

Figure 2-8 Women's group scenarios: current state, worst and best case

Participants were asked to identify critical variables and interactions for changing the current state of the system to a desired state of the system. One of the participants reflected:

> *Today I have learnt how problems are causally linked and how we can bring effective solutions if we understand the root causes of the interconnected problems*

Theory of Change exercise maps the necessary inputs, activities outputs to achieve the desired outcomes

A backward mapping of a theory of change was then introduced using the preliminary work done during Workshop 1. Participants worked in groups to outline the theory of change, synthesised in Table 2.5.

Table 2.5 Theory of Change from Telecho workshop backward mapping exercise

	Soil	Crop	Animal
Input	Lime Tree seedlings Natural and chemical fertilisers Trained human power, animal dung Skills, training, fund, materials	Improved and alternative local disease-resistance seed varieties Weed killers Pesticides and insecticides Professional assistance Training Experience sharing fund	Improved varieties Timely health care Providing medicine Providing adequate grazing land Professional support and training Adequate clean water, feed and shelter Health clinic, trained personnel
Activities	Treating acidic soils Mixing fertiliser with soils Creating awareness Making terraces Producing seedlings Seed planting and care Compost preparation Soil and water protection and conservation Family planning	Sowing in lines Using fertilisers appropriately Weeding in time Maximising use of local varieties and improved varieties Professional assistance and training Modern farming systems Experience sharing among communities	Using improved and productive varieties of animals Having access to veterinary services Having enough animal feed Having enough and clean water
Outcome	Increasing soil fertility Reducing soil erosion Increasing forest coverage of land Fertile and resilient soil	Disease-resistant crops Productive and resilient plants	Productive and healthy animals
Goal	***Resilient and productive integrated soils, crops and livestock farming system for sustainable livelihood and wellbeing.***		
Challenges	Low priority and focus Limited care for seedlings Limited knowledge Financial constraints Ownership of large sized lands by few individuals No use of compost • Contract farming that does not give incentive for composing • Long distance from homes to farm lands and difficult terrain • Increasing population	High price inputs Limited financial capacity Low quality pesticides Very few options and limited supply of improved varieties Disappearing local varieties Limited knowledge and distance of the farm lands from our homes Spread of diseases Climate change	High initial cost of improved breeds Financial constraints Low quality varieties Limited access to market Limited provision of animal feed and water Limited access to necessary materials, finance Absence of veterinary institutions nearby

Options and Pathways and Learning

Discussion on *Options and Pathways* and *Learning* was scheduled to be undertaken in a workshop in January 2017. Individual written feedback was invited and there was a plenary session for comments and suggestions as part of the learning process.

> *We have learned a lot about ourselves through this process. We always wanted to have projects like this which consult us from the very beginning. We need this to continue. We are very happy to see that you are taking this much time in consulting our elders, women and youth.*

2.2.5 Discussion on contested issues, reflection on Workshop 2, and next steps

The participants wanted to discuss some unresolved questions and contested issues that arose in Workshop 2. On 9 September a half day meeting was held with a total of 13 participants (seven men, women and youth participants, three experts, two interpreters and the workshop coordinator). A summary of the results of the discussion is given in Table 2.6.

Table 2.6 summary of unresolved questions and contested issues

Unclarified or contested issues	Response statement from participants s
The state of market linkages of the produce from the village	Stated that all done *ad hoc* individually – noted a lot of potential to self-organise and coordinate for cheaper transport and negotiating prices
Extent and expanding trend in eucalyptus plantation in farm lands and the reasons why	Almost 95% of households grow eucalyptus, farmers reasoned because high demand and good return from selling it for timber. It grows well in acidic soils, needs little care and unlike crops lower risk of failing
Extent of manure used for fuel and for selling on market	Almost all households and some households even children some miss class to collect dung for sale. We know it is useful organic fertiliser but we also need fuel
Farmers views on improved crop varieties and improved breeds	There are limited number of improved varieties but some of them are not suited to our environment and the seed line grows old after few using it for few years
Participants' observations and perceptions on climate change and manifestations of its impacts	We see its impacts on the shortening and change on start and end dates and increasing unreliability of the rainy seasons; on increasing heat and hot days and on decking grain quality and crop productivity and increased animal diseases
Participants' views on nearby factories and specialised farms (e.g. cement factory, greenhouses for cut flower industry)	We are happy that they create job opportunities for our youth, but we are concerned with increasing pollution that they cause

Next steps

Participants discussed the next steps for the RAPTA-based design of the community project. They requested translation to their language as had been done for the summary report from the familiarisation workshop. They recognised continuing with the remaining RAPTA steps as important training for them, and noted that it needs to involve more community members and other government authorities.

District authorities support the project design process and confirm their commitment

A meeting was held with district authorities to describe the purpose and objective of the RAPTA process and report on what has been done so far.

Authorities agreed that they appreciate the planning process and will commit to support it because:

- It is consistent with the Government Growth and Transformation Plan (GTP) II, which focuses on food security and natural resource management
- It involves and is based on the needs and views of the community and addresses critical agricultural and natural resource issues
- It has potential to be a model for other villages in the district.

2.2.6 Details and stakeholder feedback on Workshop 3: Designing Options and Pathways, and consolidating Learning

Figure 2-9 Workshop at Telecho

Workshop process

A third RAPTA workshop was held with the Telecho community in January 2017, with a focus on the *Options & Pathways* and *Learning* components of RAPTA. Discussions built upon a list of activities identified in previous workshops. Participants were given the opportunity to add or remove activities from the list, reflect on whether any of these activities have been implemented before, and if so identify what can be learned from past successes or failures. Participants explored root causes of problems and anticipated challenges associated with undertaking different activities based on past experience.

Participants also undertook an appraisal and prioritisation exercise on the list of activities. Table 2.7 shows a list of criteria used by participants to characterise and order/rank activities. Some criteria were harder to apply than others (e.g. identifying critical thresholds), however the process of thinking through the characteristics of each activity with regard to its contribution in solving the issues was helpful and yielded useful insights. Links or relationships between activities were also identified.

Table 2.7 A list of criteria and an example of appraisal of activities undertaken by a group of participants (numbers indicate ranking, where 1 is the best fit to a criterion)

Activities to address soil loss	Criteria for appraising activities					
	It can solve our basic problems	It can solve many problems	It can provide result on its own	Precondition for other interventions and outcomes	Takes time to achieve results, implement early	It's useful for landless people and women
Planting trees	2	6	5	4	1	3
Taking care of forests	1	5	3	2	6	4
Terracing	2	3	4	1	5	6
Applying lime	3	4	1	2	5	6
Using soil acidity resistant seeds	1	4	5	2	3	6
Making and applying compost	4	5	2	3	1	6
Dung for manure	3	5	1	2	4	6

Figure 2-10 Participants ranking activities according to criteria

The *Learning* component of RAPTA was used to give participants the opportunity to reflect on ways to observe, learn and adapt as activities are planned and implemented. The discussions focused on identifying indicators and measures of success that would be meaningful to the community for evaluating outcomes of activities, and for adapting in response to structured learning.

Having now worked on all the RAPTA components with the Telecho community, key themes that emerged are summarised in the following sections.

Options and pathways

The exercise to appraise, prioritise and sequence proposed interventions led to some useful insights. While activities listed for improving soil conservation and fertility were considered to be important for all community residents, interventions in improving crop productivity and resilience were considered not useful for the landless and those households headed by women. The only exception was small-scale irrigation where these groups may be able rent small plots and grow vegetables and crops mainly for sale. In contrast, most activities listed for improving the productivity and resilience of livestock sector were considered important for this group. In particular, specialisation in small-scale bee-keeping, poultry, dairy and feedlots were suggested as important livelihood opportunities also useful for landless and households headed by women.

All other interventions to establish non-farm livelihood opportunities were ranked as having a significant potential for improving the lives of landless and households headed by women. These interventions also have the potential to reduce pressure on the environment from subdivision of existing land and competition to rent land.

Strengthening and expanding existing family planning was judged to be an important intervention that will address the fundamental problem of high population growth. It needs to be implemented early, as it will take time to see outcomes of reduction of pressure on the environment and wellbeing of communities.

Three distinct but complementary pathways are apparent from the results of the participant exercises:

1. Improving the productivity and resilience of rain-fed agriculture with interventions to reduce significant losses in the integrated soils-crop and livestock system and establishing cooperatives and networks to markets.
2. Expanding small-scale irrigation and specialisation in horticulture, bee-keeping, poultry, dairy, feedlots and linking in to market and value chains through strong cooperatives.
3. Negotiating decent jobs and career paths for landless and youth in emerging industries in surrounding urban centres.

These clusters of three pathways are shown in Figure 2-11. These pathways have been developed in more detail (Maru et al. 2017b), and are described only briefly here.

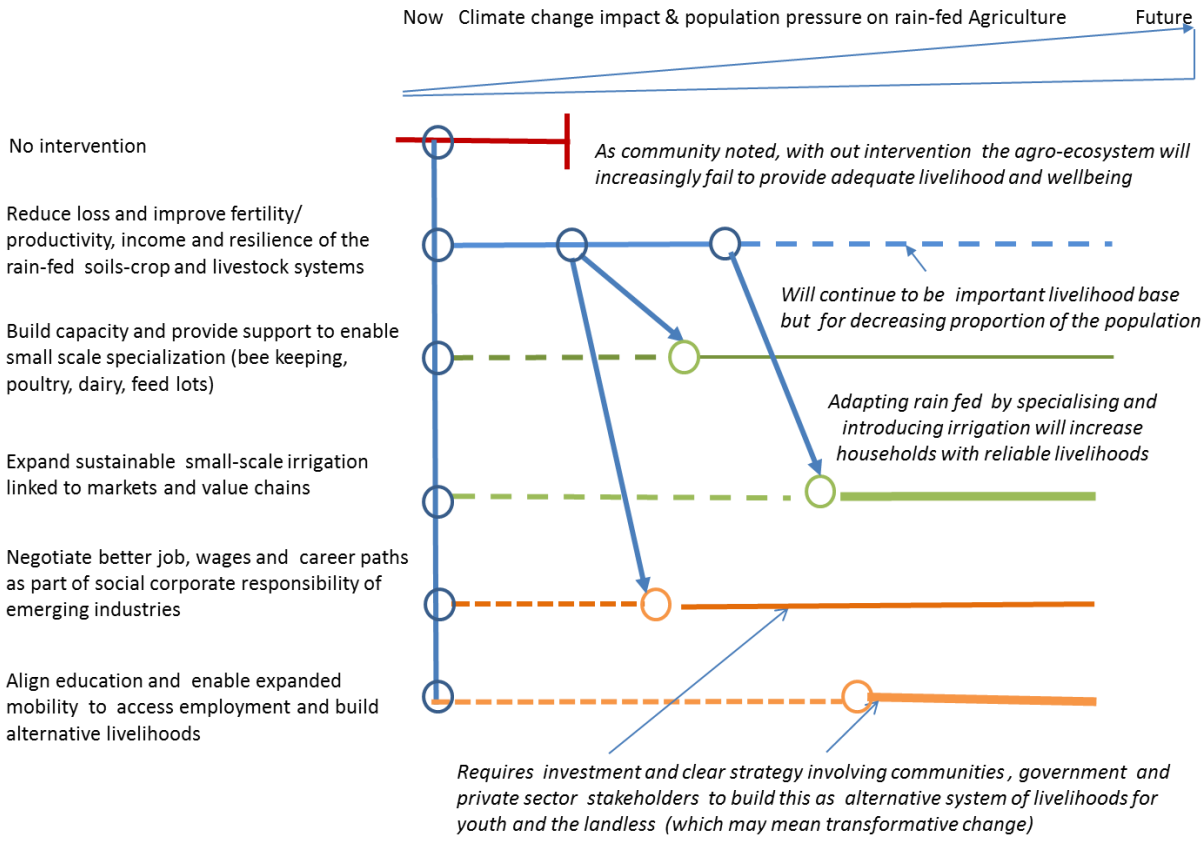

Figure 2-11 Three complementary pathways (improving rain-fed agricualture in blue, expanding small-scale irrgation and specialisation in green and trasfroming to new non-farm livelihoods in orange)

Key Interventions in and challenges to each pathways

1. Productive and resilient rain-fed agro-ecological system

Key interventions clustered under this pathway target loss in soils, crops, and livestock and reliance on middle men. Interventions will include:

- collective action in maintaining and building new stone terraces, soil and plant bands to reduce soil erosion
- reforestation through sustained care of existing forest and planting a diversity of trees for multiple purposes, including native flowering plants to encourage bee keeping.

However, campaign-based collective soil and water conservation and reforestation interventions in the past have suffered from weak follow-up and limited ongoing maintenance work.

Another key intervention is recycling of soil nutrients through halting the consumptive use of manure and other biomass for energy. This will require shifting from current biomass-based energy supply to efficient and alternative energy sources. While a few households have started using efficient stoves and solar lanterns, this is only very partial, and a more complete intervention to shift energy sources is still required.

Acidity in Telecho is probably caused by removal of biomass from the farm, leaching of nitrogen and inappropriate use of nitrogen fertiliser such as urea. The size and severity of land area affected is not known. Farmers only realise there is a problem when there is significant decline in productivity and some types of crops fail to grow. Acidity restricts crop options, and farmers grow acidity resistant crops such as potato or plant eucalypts in highly affected land. These are not sustainable solutions. Treatment of land with lime is a better option, but it requires detailed understanding of the state of the soils. Addressing

acidity in Telecho will need soil acidity investigation assistance from the nearby Holeta Agricultural research institute, guided by a recently-completed nationwide soil mapping exercise.

While there is a local seed bank attempting to recover local traditional seed varieties, having seeds that are both productive and resilient requires collaborative work with nearby research institutions.

Participants noted that variability and change in climate intensified weeds, pests and disease problems. For example, the widespread problem of 'wag' (Septoria leaf blotch – *Septoria tritici*), has a significant impact on wheat production. It requires integrated weed, pest and disease management that involves crop rotation, growing resistant varieties and appropriate use of fungicides. Similarly, diseases such as Foot and Mouth Disease, which cause significant productivity losses, are prevalent and require effective serotype specific vaccines and long-term control strategies.

2. Expanding small-scale irrigation and specialisation

A new small-scale irrigation system that started in 2015 has provided opportunities to produce vegetables and crops for market and improve income and wellbeing of beneficiaries. Irrigation expansion is one of the proposed interventions. However, this will require careful interdisciplinary study involving hydro-ecological, socio-economic, institutional and market studies to ensure sustainable improvement of livelihoods. Specialisation in horticulture, bee-keeping, poultry, dairy, and feedlots will require initial capital (financial, physical and human) and strong networks to market and value chains. While there are endogenous saving associations, their capacity is quite limited. Access to a substantial revolving fund and fair loans will be required to address financial requirements. Human capital requirements included skills in the particular specialisation, in self-organisation, marketing and managing farm as a business.

3. Transforming to new non-farm livelihoods

Of the several non-farm livelihood interventions, the highest priority is to develop an employment strategy for youth and landless in emerging industries. Current national strategies on encouraging foreign and domestic private investment have led to increasing establishment of agribusiness and light to medium industries. While cheap labour and short distance to the capital city are two of several attractions for investment, fostering more corporate social responsibility in these industries to the adjoining communities that supply this labour will require significant effort.

Overarching issues

Effective implementation of many of the interventions proposed will require addressing some overarching issues in governance, networking and capacity that are beyond the scope of individual community members.

Governance and networking issues

Participants had seen previous communal natural resource management activities start off successfully, but there were challenges in continuing to have the collective agency to mobilise ongoing efforts to maintain and build upon what had been achieved together (e.g. long-term maintenance of community-planted trees). Ongoing maintenance can be challenging when there is distributed responsibility and few governance mechanisms or institutions (e.g. by-laws or incentives) to continue self-organising into the long term after the initial project team has gone or the momentum of the campaign is lost. Another example illustrating this theme is there is no incentive for adding compost to land because most people working the land are on short-term contracts, and so if they invest in composting the land they will not receive the benefits of that investment in soil quality.

These are familiar issues of common pool resource management and associated social dilemmas. Creating incentive structures or norms for self-organising and networking could bring a variety of collective benefits. For example, self-organising to negotiate collectively in the market could help reduce income losses where

individuals have little power or capacity to negotiate for better prices. Cross-sectoral dialogue and networking could be used to build better long-term outcomes for young people so that emerging industries exercise their social corporate responsibility and have incentives to invest in skill development and help build long-term career options for surrounding communities.

Critical capital threshold: going beyond subsistence.

When participants were evaluating options against criteria, the criterion requiring knowledge of critical thresholds was difficult to answer. A challenge with thresholds is that often a threshold is discovered only after it has been crossed. Some biophysical thresholds such as soil acidity, land size viable for farming are being crossed. Lack of initial capital to start a small-scale business by the landless to escape poverty and bare subsistence was an important threshold raised by participants multiple times. This was particularly raised in the context of requirements for establishing a successful specialisation such as small dairy, fattening, poultry or bee-keeping ventures. Recent small-scale irrigation-based horticulture and cash crops was shared as an example, where some people in the community have reached a point where they have sufficient capital to make substantial improvements to their dwellings, send their children to high school and lend money to others. The irrigation structure is small-scale and the individual activities that have enabled this are modest simple activities, and do not involve large capital investments such as building a large dam. A similar small-scale approach has to be investigated to transition from biomass to predominantly solar energy supply without requiring a large up-front capital investment. Small activities that enable transition out of poverty and subsistence living are desirable because they do not require large up-front sunk costs that can lock people into one predetermined future path.

Expansion of irrigation was one of the pathways articulated in the workshops for ensuring adaptation to changing climate and towards significant improvement in the livelihood of many households in the community. While, expansion has to take a small-scale approach, any capital investment in irrigation infrastructure has long-term implications and there are many considerations to be addressed – for example, whether there is a sustainable water supply within given climate change projections – to maintain this option into the future. This is an option that could not be adequately explored given the time constraints of the workshop; it requires further evidence and quantitative analysis. The participants understood that the transition to an irrigation system is complex to characterise and it takes planning and investment simply to explore and understand the long-term implications (e.g. long-term hydrological change, salinity risks, appropriate cropping choices, equitable sharing of benefits from the investment), and that this deeper analysis will need to be conducted in the future.

Similarly, gainful employment in emerging industries and education could be linked in highly effective ways. These investments could be structured to build alterative livelihoods for many, providing avenues for young people beyond subsistence agriculture, while simultaneously alleviating pressure on the land. Again, such an endeavour would require further exploration.

Learning

Learning was discussed as central to RAPTA-based design of projects. One output of the third workshop was an early outline of a learning framework that guides structured monitoring and reflection including:

1. examining and assisting with the nature and level of changes required in perspectives, formal and informal rules and practices of individuals, community and organisations to achieve the desired outcomes
2. understanding and monitoring how pathways unfold during project implementation and inform flexibility, adjustments and changes needed to planned interventions and a theory of change to achieved desired outcomes

3. addressing uncertainties and change in context and drivers and unintended consequences of interventions, and
4. recording and managing learning in a way that informs design and implementation of other projects.

Participants discussed the key areas for a structured learning and how to monitor if progress is made in these areas. Three key areas were considered for continuous monitoring and reflection:

- **Governance and communication**. Given the reliance on mobilising stakeholders in a coordinated and cooperative ways, particular attention will need to be paid to ensuring effective governance and communication structures that support and enable these efforts.
- **Capacity building**. The gaps in awareness, knowledge and skill revealed in project planning and implementation are opportunities for tailored training providing by government, experts and supporting non-government and funding agencies. Similarly, there are opportunities to strengthen local saving institutions to increase access to initial capital, loans and technical support for establishing alternative livelihoods. Monitoring will help ensure benefits of such initiatives are realised.
- **Networks and value chains**. Solving many of the issues identified are beyond the capacity of the individual community members. These will require strengthening existing and forming new networks within and outside the community to: undertake sustained collective action on soil, water and forest conservation and development; self-organise for different specialised farming activities and to expand effective irrigation schemes; have collective agency and link with different markets and value chains; and form relationships, negotiate wages and career paths with emerging industries. Participants also deliberated on how to monitor whether each activity in the project is appropriately implemented, and if it is achieving desired outputs and contributing to outcomes.

An overarching vision/narrative of potential

Donor-funded projects are usually discrete, shaped by donor priorities and often with little connection between different projects. One of the aims of working through the RAPTA process with the Telecho community was to work collectively to build some shared system understanding: what dynamics shape the current system, and what changes are needed or not needed and are possible? What are the options and pathways forward? Such system understanding and articulation of pathways facilitated by the RAPTA workshops can help the community to guide support needed from donors and connect donor-funded projects to contribute to a long-term overarching vision.

The RAPTA workshops gave people an opportunity to reflect on possibilities for improved livelihoods and ecosystems. When many community members are tied up with individual survival it is rare to have time to reflect on the wider system and its potential. When a lot of effort is devoted to bare subsistence, the possibilities for change are remote and many give up trying in the face of such odds. What is needed for change is often beyond the capacity of individual households, thus system losses such as soil losses, processes depleting natural capital, burdens of parasites and living with debilitating diseases become normal and accepted. The participants recommended many times that others in the community would benefit from participating in such an exercise, and that this awareness of possibilities is a valuable outcome in itself. Participants saw potential in working together, cooperating and networking to address institutional and capacity issues. In this way, the RAPTA process was experienced not simply a project design exercise, but as a learning process to see what is possible. The narratives emerging from this process form the beginnings of a shared vision, and can provide participants with a means to check that isolated donor-funded projects are actually contributing to a larger, long-term vision.

Does building these narratives of potential and possibilities risk fostering false hope and optimism in the community? After all, there is no guarantee that the proposed activities will be implemented, or that the outcomes will be as anticipated. We are aware of this risk, however we have not made false promises. Our RAPTA work has given the community some training, some ways of sharing system understanding, and some strategies for building pathways from where they are. We have made clear that we do not come with funding but that the RAPTA process outputs are helpful to articulate in detail the parts the community can do by themselves and the parts they need support from outside.

We currently working with MELCA and SRC to explore potential donors for a project proposal built on the systems understanding and on options and pathways articulated in the RAPTA workshops.

3 Synthesised learnings and conclusions from Ethiopia pilots

3.1 Comparing top-down and bottom-up pilots

The pilots in Ethiopia provided a platform to compare the challenges and opportunities of using RAPTA in a 'top-down' design of a national-level Global Environment Facility (GEF) project with those of using RAPTA to guide a 'bottom-up' design of a community project in Telecho village. The contrasting characteristics of the pilots are given in Table 3.1.

Table 3.1 Comparison of key characteristics of the Ethiopia pilots

Criteria	GEF Food Security IAP Ethiopia country level	Telecho community
Top-down or bottom-up	'Top-down' –national-level project involving six states/regions and 12 project sites; under an 'umbrella' program covering 12 countries	'Bottom-up' – community level, up to district/woreda level
Goal	Goal and broad impact pathways pre-set by the 'umbrella' GEF Food Security IAP	Emergent goal and impact pathways
Flexibility in design	Structured and established project design	Flexible project design
Funding	Clear steps to funding	No funding or funder identified yet
Partial or full RAPTA	Partial and rapid application of RAPTA: timeframe March – May 2016	Full application of RAPTA: timeframe May 2016 – March 2017
Number of decision makers	Multiple key stakeholders across scales, with different views and pressures to complete project design	Fewer groups of stakeholders. Shared understanding of purpose and goals of project design built gradually and upwards
Language	Easier communication because of English language and project design skills of participants	Challenges in translation of concepts and interpretations
Scalability	High potential for wider impact and scaling up	Local impact and potential for scaling out

Top-down approach needs time and flexibility for new approaches and complementary bottom-up input

The GEF Food Security IAP is a big multi-country program and by necessity may need to be top-down in its approach. It has a domain focus (agro-ecosystems), a goal (resilient and sustainable food security in a way that generates global environmental benefits) and criteria for vetting project proposals (e.g. resilience, addressing climate change etc.) To coordinate and support country-level projects, the IAP program has also an umbrella project with three broad components/impact pathways: 1) Institutional Frameworks for enhancing Food Security; 2) Scaling up the Integrated Approach; and 3) Monitoring and Assessment. These are supported by established project design requirements, project document approval steps and

procedures. Multiple other organisations are involved as implementing agencies and partners, and each has its own processes and requirements for assigning or hiring people for project design and approving travel to project sites, as well as procedures and steps for writing and endorsing project proposals and commitments. Each individual agency's procedures and requirements have purposes and are in place to ensure due process, but together they add up and create complications. In particular, they limit the time and flexibility available to try a new approach and allow extensive local participation.

The UNDP Regional and Country offices in Ethiopia proactively supported the development of the RAPTA interim guidelines. They were the first to voluntarily offer resources and commitment to embed RAPTA into a project design that was already in progress and needing to comply with established approaches. Within what was feasible in terms of time, logistics and funding, the project team has done its best to accommodate RAPTA into the national-level design process and to inform field visits to regions and project locations. However, the overall time and resources available were not enough to fully implement RAPTA, including at regional and local levels, nor to create the flexibility required for an extensive RAPTA-facilitated bottom-up input.

Based on our broad experience of the authorship team[4] with taking adaptation and livelihoods planning approaches into sustainable development projects, we consider that the following approach would be more effective for programs which might necessarily be top-down, but also allow the trialling of new approaches such as RAPTA and accommodate complementary, robust bottom-up inputs:

- At program level
    - use of RAPTA much earlier in the design of Food Security IAP program, rather than at the 'child project' project design stage
    - check that requirements put in place to support and coordinate efforts are not restrictive and to ensure that there is enough flexibility to accommodate local input and fit-for-context variations
    - look into ways to harmonise and streamline steps, requirements and approaches to increase effective time available for trialling new approaches. Support and recognition of proactive individuals and organisations may also reduce pressures when weaving new and established processes together and promoting effective trialling of novel tools.
- At project design stage
    - 'train the trainer' workshops to train a project design team with RAPTA
    - at least three sets of multi-stakeholder workshops, at three different levels (national, regional and local) (i.e. nine workshops in all) each taking two to three days. This whole process would require approximately 6 months to one year, depending on intensity of work
    - review of previous work, collection and analysis of evidence prior to first workshop, between workshops and after the final workshop

[4] E.g. see projects and experience listed here:

Enabling Adaptation Pathways team https://research.csiro.au/eap/

Food Systems innovation http://foodsystemsinnovation.org.au/about

Research for Development http://foodsystemsinnovation.org.au/about

- ongoing discussions between key participants and the project team throughout the process, and support from the RAPTA facilitator.

Bottom-up approaches have to build networks for support and partnership and effective scaling

The Telecho RAPTA pilot was bottom-up in the sense that it built participatory assessment of resilience, adaptation and transformation needs by drawing in more village and district level stakeholders to design a community project. This was done through three workshops over a longer time frame than the top-down national-level pilot process. The community comprises the key stakeholders, there were comparatively fewer agencies involved and less restrictive requirements for approvals. The pilot was funded by SRC GRAID, SRC and CSIRO, but there is no specific donor lined up to fund an emerging proposal for a project. The funding situation is both an opportunity for the community to identify what they can do for themselves, as well as to clearly articulate their needs for external support underpinned by a sound design process; but it could also be a challenge to secure funding for implementation. One of the comments shared by a development practitioner in the region is that 'funding will almost always be available for a well-designed project'. Such an assertion warrants further attention and testing. Regardless, there will be more work needed to secure funding of the project, including establishing relationships with potential supporters, alignment with other initiatives in the village and with donor requirements, and capacity building for effective implementation.

Community members are happy about the bottom-up approach to the pilot:

> *What I liked about RAPTA is it actively involved the community in a way that is respectful of culture.*
>
> *RAPTA has helped us to understand that the community is the source of solutions to its own problem.*
>
> *RAPTA familiarisation should go beyond Telecho to other communities as it provides people with significant change in perspective and practice.*

While committing themselves to do their part, community members are also pragmatic in noting the need for external support to undertake the project:

> *There are things that we will do ourselves but to achieve our goals we will need financial support.*
>
> *Technical and material support will be important to put in practice what we have learnt.*

This may be an area where programs that promote resilience, adaptation or transformation may need to consider funding projects that are developed with approaches such as RAPTA which explicitly embed these concepts into project design. Programs that promote resilience may, in their funding allocation choices, benefit from evaluating and selecting explicitly for projects that demonstrate how resilience has been embedded into project design. For example, the STAP has developed a resilience screening tool that was informed by RAPTA for this purpose.

3.2 Enabling large cross-scale impact

RAPTA is designed to ensure dynamics at multiple scales, and interactions between scales, are recognised as integral to system analysis and essential for project design. As participants described and assessed their system of interest they were encouraged to consider drivers from higher scales and dynamics within lower scales and between scales (e.g. participants considered industrialisation as a driver for migration of youth). Resilience, adaptation and transformation at times need to be managed at different scales in the system. For example, adaptation from dominant pastoralism to agro-pastoralism and/or transformation to a

tourism-based livelihood system in response to increasing intensity and frequency of drought at a local scale may be required for resilient food security at the regional scale.

Enabling impact at a large scale is a crucial part of the theory of change of using RAPTA as an approach. There are two sets of interconnected theories of change involved to enable impact at a large scale:

- a theory of change built by RAPTA developers on how to increase the use of RAPTA. It takes the form of 'scaling up', in which RAPTA is embedded into programs, policies and conventions, and 'scaling out', in which RAPTA is adopted and adapted horizontally across different projects, communities and nations (Figure 4-1, Section 4.2)
- theories of change based on multiple applications of RAPTA in various domains, and involves the impacts of the interventions that RAPTA is used to design (e.g. Figure 2-1)

Achieving large-scale impact in both cases is not an easy task and it requires resources, practical demonstration of utility and champions.

> *Scaling-up good practices to achieve wider impact is a great challenge, albeit not new, and RAPTA can help in this process that involves understanding systems and the best pathways.*
>
> *RAPTA provides the concepts required for good project design, but needs to be tested further in practice. Until this is done, it will be difficult to build the trust required in the development community to ensure its widespread adoption.*

The ground work in developing RAPTA interim guidelines funded by GEF STAP, the country-level pilot funded by UNDP and GRAID, and the presentation of RAPTA in different high-level national and international forums have all provided opportunities to increase RAPTA's visibility and potential to be applied at a larger scale. RAPTA has had some influence on formal policies and initiatives as a result (see Section 4.4).

There is a potential opportunity to use RAPTA to assist with carrying out a component of the GEF umbrella program on Food Security IAP

> *Right now I'm looking forward to working with them as we start implementing that program. So it was being designed at the time and we'll start implementing it next year. So when we start doing implementation I will probably be more involved with them because I have one component of the work that we are leading that this community is going to be working with them.*

There was also a partial and light use of RAPTA in the design of Nigeria's GEF Food Security IAP.

The Telecho community pilot went through a largely complete course of RAPTA steps. This will require more time and resources for detailed evidence-gathering and quantitative analysis to test assumptions and costing of detailed options and pathways elicited in the workshops. A positive outcome from an effective demonstration of RAPTA design, including securing funding for its implementation, will make it more likely that RAPTA can be scaled out to other communities.

> *It will be important to share experiences from others where RAPTA has been fully adopted and implemented.*

Building capacity and agency to use RAPTA across decision-making levels and applied across system scales and in different domains and contexts will be critical if RAPTA is to be effective at supporting UN funding agencies and in-country stakeholders achieve their goals and impact. For RAPTA to contribute to large-scale impact will require that users are encouraged and enabled to apply a minimum set of integrated components. It will also require resources for revisions to RAPTA in response to learning in practice; particularly developing versions that are suited to a variety of domains and contexts and accessible to users with different levels of experience and skills.

Part II Learning quickly and early: assessing the utility and impact of applying RAPTA

4 Assessing impact

4.1 Overall impressions of RAPTA have been enthusiastic

On the whole, RAPTA has been enthusiastically endorsed by stakeholders, who identified many things that are working well. RAPTA has provided welcome clarity on practical ways to apply concepts of resilience, adaptation and transformation:

> *The perception of resilience and transformation is changing in the GEF as a result of concrete definitions in the RAPTA guidelines, and in the first study underpinning resilience, adaptation and transformation theory. This change in perception is bringing about increased knowledge and information about these concepts, and hopefully influences GEF project design and implementation.*

> *It's been really useful to have the terminology, the language and the structure of RAPTA in order to apply concepts that I've sort of been picking up gradually over decades and to have a structure in which to apply these ideas.*

> *RAPTA has clearly contributed to greater awareness of possible ways to operationalise resilience across the GEF Partnership, as well as a more focused discussion as to what policy, procedural and operational steps could be taken to do so more systematically moving forward.*

RAPTA provides a logical structure around which stakeholders can have conversations about complex system situations. In so doing, it helps them engage with the complexity rather than seek to ignore or remove it:

> *That was something that I feel is a very valuable component of RAPTA: really working with stakeholders to understand and define the system, so that's something that I certainly gained from RAPTA.*

> *Was RAPTA useful? Definitely!! [It] provided a logical structure around which to have a conversation in what is an extremely complex context, encouraged participants to confront complexity and systemic causes of the current dynamics.*

Even if initial attempts at a theory of change, system description or other components expose problems, or are lacking crucial data or expertise, the act of undertaking the activities shines light on these deficiencies in a nonjudgmental way. The emphasis on learning and iterative adaptation that is core to RAPTA supports future activities to address the problems exposed. RAPTA doesn't seek or provide 'set-and-forget' solutions, but rather enables learning processes for ongoing iterative problem solving:

> *Purposefully planning for potentially multiple outcomes in a project. These can change during the life of a project or over a period of time and it is not failure because we're not in a static environment.*

> *What RAPTA does [is] it goes a couple of steps further on explicitly building in the framework of we need to take change into account so we need to plan for multiple outcomes potentially and be able to adapt to those as we go along.*

In the following sections, we structure the detailed feedback received according to:

- three impact pathways to assess impact and work through whether, and how, we might scale up and out the practical application of resilience, adaptation and transformation (as exemplified by

RAPTA) in order to achieve the goals of stakeholders and investors in sustainable development (Section 4.2)

- understanding what worked, what didn't, and where the opportunities for improvement lie (Section 5).

4.2 A learning framework to evaluate RAPTA

Some of the concepts underpinning RAPTA are well established but have not been combined and applied in the context of designing sustainable development projects. In this sense, it is in the early stages of maturity and in order to demonstrate utility and relevance, needs to be evaluated and be able to evolve based on what we learn about what works, or not. In order to understand and articulate how we expect RAPTA to make a difference, we have proposed a theory of change (also known as impact pathways) for the development and application of the RAPTA process. We will use this theory of change to structure our learning from the experiences applying RAPTA in different settings, collect meaningful feedback from stakeholders, distil key messages and lessons and adapt RAPTA to contribute more effectively to sustainable development goals.

The overall goal of the project team is for the core principles of RAPTA to be used in the design of interventions and investments in development projects so that they demonstrably contribute to achieving sustainable development goals in ways that are procedurally fair, and lead to equitable and effective outcomes for people and nature.

Three pathways to impact are proposed in the theory of change for RAPTA itself, framed in terms of immediate, intermediate and ultimate desired outcomes that we consider are necessary to achieve the long-term goal (see Figure 4-1). The learning framework is set up to monitor the progress towards these outcomes and pathways.

Pathway 1 Improved outcomes and benefits from investments in sustainable development projects: The narrative is that RAPTA is operationalised and flexibly used in design, implementation and adaptive management of interventions, demonstrating improved on-ground outcomes for investment in sustainable development projects.

Pathway 2 Robust resilience, adaptation and transformation approaches mainstreamed into formal rules e.g. global, regional, national conventions, initiatives and policies: Approaches to resilience, adaptation and transformation which are sound, coherent, just, robust, well-tested (whether based on RAPTA or not) are mainstreamed into formal rules such as global, regional, and national conventions, initiatives and policies.

Pathway 3 Adequate capacity and agency for systemic and transformational change towards sustainability goals across all domains and scales: Effective, coordinated, evidence-based decisions for transformational change towards sustainability goals occur across all domains and scales, because the capacity for systemic change has been adequate to underpin these changes.

Figure 4-1 shows the proposed immediate and intermediate (2 to 5 year) and longer term (10 to 20 year) outcomes required to underpin achievement of impacts for these three pathways and these were used to frame the approach for evaluating RAPTA at this early stage in its development. Additional 'meta-indicators' have been broadly proposed (O'Connell et al. 2016, Grigg et al. 2017) for evaluating quality assurance in RAPTA applications and for assessing the maturity of application of the RAPTA process (e.g. 'light' desktop application with only a couple of components through to full, detailed application), but these require further development based on multiple comparative pilots and therefore have not been used in this analysis.

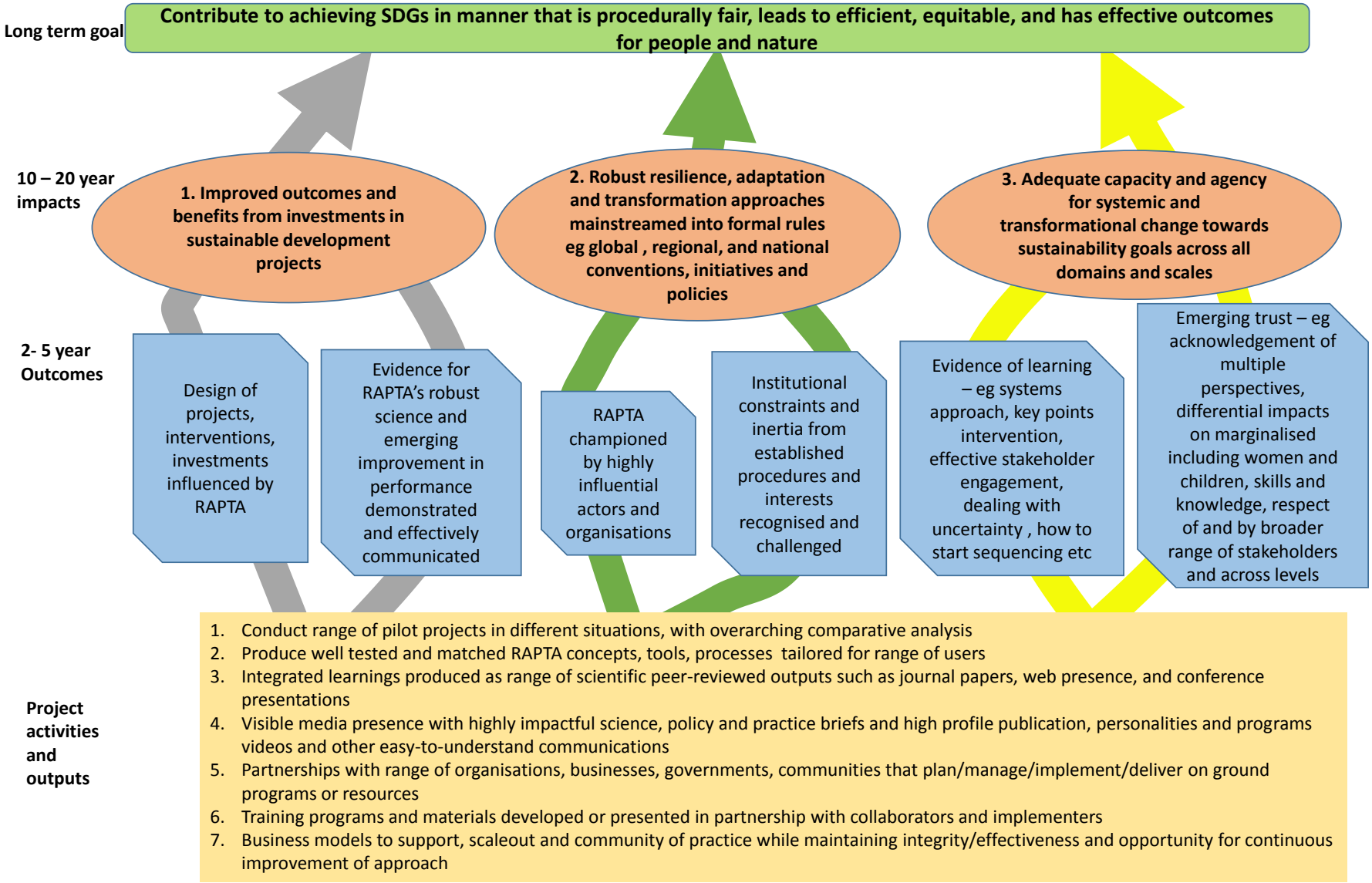

Figure 4-1 A theory of change showing the major pathways by which it is considered that RAPTA can make a contribution

The following sections will report early learnings with respect to these three pathways, using the following sources of information:

- analysis of documents for specific references to RAPTA
- feedback from workshop participants
- for a set of interviews and questionnaires with responses from a range of stakeholders, (the questionnaire is in Appendix A).

Stakeholder workshops, interviews and questionnaires were conducted within ethics protocols approved by the CSIRO Human Ethics Committee. Full details will be published in a peer-reviewed journal articles (Maru et al. (2017a, in prep), Maru et al. (2017b, in prep), O'Connell et al. (2017, in prep)).

The key results and achievements in Section 4.3, Section 4.4 and Section 4.5 are reported according to the three impact pathways. The learning framework is also used to identify the key challenges and lessons learned (Section 5).

4.3 Pathway 1 Improved outcomes and benefits from investments in sustainable development projects

The proposed immediate outcomes for this pathway includes:

- Design of projects, programs, policies and other specific interventions and investments is influenced by RAPTA, improving the likelihood of effective outcomes and benefits from investments.

While the intermediate and ultimate outcomes include:

- Evidence that the practice of using RAPTA for design of projects does indeed lead to improved on-ground outcomes and benefits of the investments, and that this is evaluated and communicated.

Drawing from the interviews, the evidence for starting to achieve these early outcomes is beginning to emerge as discussed in the following sections.

4.3.1 RAPTA enabled system approaches to problem analysis and project design

The GEF Food Security IAP project provided a good opportunity to test RAPTA because the GEF requires an integrated approach that is much broader than the narrower natural resource management (NRM) focus that has been more typical of GEF projects. When RAPTA was applied to design food security project activities at the country level in Ethiopia, RAPTA input enabled the following:

- The project design team and stakeholders embraced a holistic conceptualisation of food security that recognised food access and nutrition utilisation dimensions beyond food availability through agricultural production.
- Pathways to desirable food security outcomes including activities and outputs that were different from, but complementary to, a narrower natural resource management (NRM) focus, reflecting the shift needed in the IAP projects.
- The project team and stakeholders developed a theory of change with explicit assumptions and level of evidence that reflected a systems understanding of food security in the Ethiopian context. It was recognised by a reviewer as a model for other projects:

> *This section looks solid and it shows that the ProDoc is firmly based on the comprehensive RAPTA work with articulation of assumptions, evidence and links. However, the evidence under the 2nd*

pathway described on page 9 does not seem to fully support the assumptions laid out. Would it be possible to strengthen this? This section is a model for other projects.

When RAPTA was applied at the community level, the following impacts were observed:

- Participants articulated the need for improvements in both productivity and resilience in their integrated soils-crop-livestock systems and livelihoods.
- The system approach operationalised through RAPTA provided different entry points for different stakeholders, and a forum for learning about different perspectives on the system. It brought together a more comprehensive view of problems and opportunities. It also fostered respect for each other's respective knowledge, skills and experience, which is essential for trusting partnerships.
- Welcoming different perspectives allowed reflection on contested issues (e.g. expanding eucalyptus plantations on farm lands). Local technical specialists had concerns about this trend, and were surprised to learn of the reasonable, well-considered explanations for farmer choices.

RAPTA assessment has helped me improve my understanding about the village and its surrounding environment as well [as to] recognise and respect the depth of knowledge held among the community.

These outcomes may not have occurred if project design activities had been set within a narrow NRM framing from associated experts. The practices of respectful listening required to develop a theory of change or system description are helpful for bringing constructive dialogue on contested issues and fostering greater respect for alternative perspectives.

Feedback from stakeholders points to benefits in the RAPTA engagement processes, such as pathways that are informed by assessment of resilience, adaptation and transformation needs, and new perspectives:

I have learnt and what it's given me more confidence in pushing for is a bigger effort upfront to engage stakeholders and understand the system as well as you can. So rather than rushing into what we think we're going to do, let's put more effort into understanding the situation, the context and all first.

RAPTA has increased awareness about the importance to early on identify the most suitable pathway for an intervention and that it, depending on the system assessment, can be adaptation, strengthening of resilience, or transformation.

Stakeholders also pointed to efficiencies in project design as a result of using RAPTA:

This is really going to help us to focus our effort on the useful parts and the realisation that so much effort is currently being wasted or inefficiently applied due to lack of understanding of the issues that are raised in RAPTA, which is terrible really.

RAPTA can save time, resources and expenses.

On the whole, using RAPTA promotes and enables systems thinking, and this has benefits and impacts that are highly valued in many ways by a range of stakeholders:

- Bringing resilience, adaptation and transformation concepts together in a systemic way is consistent with investment priorities:

RAPTA presents an opportunity to systematically address resilience, adaptation pathways and transformation in GEF investments. As such, it is relevant for the GEF's efforts to enhance the sustainability of its investments, and to harness synergies between global environmental benefits and resilient social and economic systems.

- Systems thinking improves project design:

  [The Scientific and Technical Advisory Panel] STAP considers the RAPTA synonymous with systems thinking and resilience thinking. Before the RAPTA, these two concepts were not discussed nearly as much in the context of how to improve GEF projects to make the interventions sustainable.

  I use the RAPTA guidelines to assist the GEF adviser propose ways the project can strengthen the logic of system thinking, and ways to assess whether incremental and/or transformational change may be needed.

  … the best application of RAPTA would be to try to integrate resilience thinking into project designs so that you can try and take into account the connections among different systems components.

- Systems thinking helps people go beyond immediate causes or symptoms:

  RAPTA forces you to dig a little bit deeper … The digging deeper, the probing, and looking beyond the environmental side of it. I think people don't necessarily think that way. You have to force them to think that way. For example they look at the immediate causes of the problem, so land degradation may exist, but it may not be the immediate cause of food insecurity. The immediate cause might be illiteracy, so not knowing what to plant and how to plant. So, rather than trying to deal with land degradation, start by dealing with illiteracy and realise that that can actually pave the way for you to deal with land degradation.

  A good opportunity for RAPTA is it is really able to capture the whole system and to identify the most important constraints. I think in this case, it really has an advantage or opportunity.

  It makes it easier because as I said, it looks at systems, so the integrity of the different components, it's very important, so I think it's easier to manage when we understand the whole system.

- Bridging silos to build cross-sectoral networks and collaborations:

  [the next big challenges are] the SDGs. Implementing and evaluating them are a big challenge for government to see them in an integrated way and break down the silos. … The SDGs are also the opportunities. Because the governments have signed up to it, they are going to have to report on it and it's a big opportunity for RAPTA to be a proof of concept to help them.

  The moment you dig deeper, the moment you widen your horizons, the more partners you bring to the table. I'll give you an example, we brought a lot of the population and health people in to the discussion, which we had never done before … we developed the project with them.

  Projects are typically developed in a vacuum ... without too much thinking of the sort of dynamic that they exist in. And RAPTA actually systematically walks people through that dynamic and demystifies it. We think it's an important step forward in that respect and certainly helped me in my thinking.

  There appears to be a growing awareness that resilience may need to be considered in a broader sense, rather than exclusively as resilience in the face of climate change and natural hazards.

- Including greater diversity of perspectives:

  It helps me to understand project design in different ways and from different perspectives.

It has a strong component of multi-stakeholder engagement and governance. This is important because global change can only be addressed if there are strong governance arrangements at the local level.

4.3.2 Concepts of resilience, adaptation and transformation were embedded in project design in practical ways

RAPTA placed resilience, adaptation and transformation on a continuum contributing to interconnected broad pathways for achieving sustainability goals within the project. Framed this way, the concepts encourage reflection on the nature and level of change needed and provide a strong basis for why resilience, adaptation and transformation are integral to project design. They are not goals, but system attributes and processes that inform project design, implementation and assessment. This was an essential contribution picked up in many interviews.

One of the things that RAPTA has done, really, is bring in the issue of resilience, adaptation and transformation into a common framework.

By bringing the concepts together in an assessment framework, we have a better chance now of understanding how you can design a project that truly is focused on addressing both environment and development benefits into one that is looking at the system and long term with layers that goes beyond just the primary purpose for which we finance which is to global environmental benefits.

4.3.3 Comparison with business as usual

RAPTA – a new lens and process for designing interventions

It is not possible to make a strict comparison with outcomes from business-as-usual approaches because both pilots were opportunistic and because the projects designed using RAPTA are not yet implemented. It was clear that the RAPTA-based project design for the GEF project in Ethiopia was substantially different to 'business as usual' because we had the early version of the proposal (prior to the RAPTA process) to compare to the final proposal submitted to the GEF (after going through a RAPTA process) (section 2.1). This was supported strongly by some of the stakeholder feedback – some see that RAPTA provides a new lens for designing interventions that guide and supports users to consider the need for resilience, adaptation and transformation in a holistic way.

What it's done is it's helped – it's basically provided a new lens for us.

Pilot participants, at international, national and local levels, have noted that RAPTA builds on aspects of conventional project design but introduces some welcome new and unique elements:

The RAPTA manual covers many issues and many GEF agencies already have their own policies and guidelines for e.g. stakeholder participation, knowledge management, and M&A. There is a need to better link RAPTA to these existing guidelines in the agencies and to focus more on what is new and unique with RAPTA, such as the development of the theory of change, systems thinking and assessment and identification of options and pathways. Resilience indicators for the Theory of Change are also missing.

Some of the concepts in RAPTA are well established in research communities, and RAPTA has integrated them into an approach for planning practice that is different to business as usual:

I think it's really RAPTA just takes a more holistic vision of resilience and I think integrating all these components and take the engagement, the understanding of the system I think are the really unique contribution of RAPTA, and also really brings, I think, out of the academic community this body of knowledge that really hadn't been utilised in project planning thus far, so

> *I think it's not necessarily a novel way of looking at things in terms of an academic context, but I think it really is a novel way of looking at things, project planning for the World Bank and the way decisions are made at present.*

A participant also noted RAPTA elements have been known but somehow hidden. Putting them together as they are in RAPTA provides an assessment approach that is unique and yet familiar because it is so locally grounded:

> *In my view a short fitting description of RAPTA is unique, brief, clear and attractive assessment approach, contents of which somehow have been hidden but have been already within our community.*
>
> *Unique: RAPTA is unique because it is inclusive of different groups of community: educated, uneducated, elders, adults, youth, women and girls*
>
> *Brief: because the assessment was not conducted by an individual but the methods it used involved different sectors of the community that enabled gathering evidence in a short time*
>
> *Clear: because it allowed participants to express their thoughts and views extensively using their own language*
>
> *Attractive: because it assists with assessment of community wide entrenched socio-economic problems which is done with lower budget than that spend on other studies and project design approaches*

RAPTA provides tools to identify needs for, as well as operationalise resilience, adaptation and transformation

RAPTA juxtaposes resilience, adaptation and transformation as a continuum of concepts which, when operationalised, point to the magnitude and nature of change required to achieve sustainability goals.

> *So far, it is the only tool that I have come across that combines resilience, adaptation and transformation in project design. As the GEF looks towards becoming more innovative and responding to global change, the RAPTA is a great tool to explore and refine to address countries' responses.*

RAPTA may be one of the few tools that can assist with a growing recognition of the need for intentional transformation in several sectors, livelihoods and socio-ecological systems

> *... RAPTA translated quite easily into thinking process, going through the constraints, the opportunities, drivers et cetera. It's not a million miles away from other things that exist already. But, it had that useful additional transformational element.*

4.4 Pathway 2 Robust resilience, adaptation and transformation approaches mainstreamed into formal rules e.g. global, regional, national conventions, initiatives and policies

The immediate desired outcomes for this pathway include:

- RAPTA championed by highly influential actors and organisations
- institutional constraints and inertia from established procedures and interests recognised and challenged.

The analysis of interviews and feedback, as well as the formal documentation we have scanned, shows some evidence for these early outcomes.

4.4.1 RAPTA has influenced formal policies and initiatives

Within the Global Environment Facility (GEF), RAPTA has informed a screening tool for assessing 'multi-focal area' (cross-domain) projects, and evaluating whether concepts of resilience, adaptation and transformation have been applied meaningfully and are reflected appropriately in project design. RAPTA has been applied in the project design phase of the Ethiopia and Nigeria sub-project ('child projects') of the Food Security IAP, and has been proposed to inform the cross-cutting integration component of the Food Security IAP, which will monitor and assess the effectiveness of the project in achieving its aim to enhance resilience of food security in Sub-Saharan Africa.

In its August 2015 report to the Committee on Science and Technology (CST) on the implementation of its work plan, the Science Policy Interface (SPI) of the United Nations Convention to Combat Desertification (UNCCD) described RAPTA, and recommended its application under Proposal 5.[5]

This report was supplemented by the information document 'Monitoring the contribution of sustainable land use and management to climate change adaptation/mitigation and to the safeguarding of biodiversity and ecosystem services', ICCD/COP(12)/CST/INF.1[6] which showcased RAPTA as a practical application of resilience assessment.

The CST endorsed the SPI report, and in response, RAPTA was acknowledged in decision 21/COP.12 at the UNCCD 12th Conference of the parties, October 2015. The report of the 12th session of the COP stated that, in respect to the SPI work program, the STAP should continue to further pilot and develop resilience-based assessment frameworks.[7]

RAPTA has informed the development of the conceptual framework for land degradation neutrality (LDN), now being finalised by the SPI, and is recommended as a tool to undertake the resilience assessment component in the preliminary assessments that comprise the first stage of implementation of the LDN framework.[8]

Within UNDP, both the UNDP Ethiopia country office and the UNDP GEF regional office are looking for opportunities to use RAPTA in designing new projects. At an international level there is a Memorandum of Understanding in progress with UNDP to collaborate around RAPTA for co-design, implementation assessment and learning of UNDP programs and RAPTA familiarisation training to build capacity of relevant officers, consultants and in-country partners.

At a national level in Ethiopia, Ministers have expressed interest in knowing more about RAPTA and how it may help with assessing the Pastoral Livelihoods Resilience program run by the Ministry of Livestock and Fisheries Development and broader collaboration on climate change mitigation and adaptation efforts with the centre under the Ministry of Environment, Forestry and Climate Change.

Within Australia both the Department of Foreign Affairs and Trade (DFAT) and the Australian Centre for International Agricultural Research (ACIAR) have requested briefings and presentations on RAPTA to inform their strategies for ongoing investments in international development projects.

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[5] From: Refinement of the UNCCD monitoring and evaluation framework in view of the post-2015 development agenda: strategic objectives 1, 2 and 3, document ICCD/COP(12)/CST/3 available at http://www.unccd.int/Lists/OfficialDocuments/cop12/cst3eng.pdf

[6] available at http://www.unccd.int/Lists/OfficialDocuments/cop12/cstINF1eng.pdf

[7] From Report of the Conference of the Parties on its twelfth session, held in Ankara from 12 to 23 October 2015 Part two: Action taken by the Conference of the Parties at its twelfth session Addendum Document ICCD/COP(12)/20/Add.1 available at http://www.unccd.int/Lists/OfficialDocuments/cop12/20add1eng.pdf

[8] Reference still in preparation. A policy brief about it is here: http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/10_2016_spi_pb_multipage_eng.pdf

4.5 Pathway 3 Adequate capacity and agency for systemic and transformational change towards sustainability goals across all domains and scales

The proposed immediate and intermediate outcomes for this pathway include:

- Evidence of learning – e.g. systems approach, key points intervention, effective stakeholder engagement, dealing with uncertainty, how to start sequencing etc.
- Emerging trust – e.g. acknowledgement of multiple perspectives, differential impacts on marginalised including women and children, skills and knowledge, respect of and by broader range of stakeholders and across levels.

Early evidence for all three of these outcomes is shown in the analysis of stakeholder feedback as shown below.

4.5.1 RAPTA is building capacity and agency for systems change

The pilot projects have seen individuals recognise the benefits of system perspectives and different learning approaches. As a result, they have taken efforts to improve their own skills and capacity for adopting systems description, systems assessment and adaptive learning approaches. They spoke of several benefits of doing so, including experiencing helpful shifts in their perceptions on food security, increased awareness of key variables and their thresholds, finding alternative pathways not previously considered and opening up dialogue on potential system transformation.

Some of these individuals became champions for these steps and tools from RAPTA, and individual change agents of this kind are vital if RAPTA is to be usefully scaled up and out within and across organisations.

> *I see the potential of this, RAPTA, for project design. But I also see the potential of RAPTA for the process assessing the project performance. … in future, if I have some projects, I want to apply the RAPTA for project design.*

RAPTA presentations at international meetings and within organisations working at international levels such as UNDP, GEF and UNEP have also generated support from key decision makers essential for scaling up its use and impact.

While individual RAPTA champions are important for scaling out RAPTA tools, a network of champions in and across organisations operating at different scales will be needed if project design is to be reframed to better contribute to long-term systemic change. At the moment interest in RAPTA is growing and we would like to grow a community of practice that implements RAPTA flexibly in different settings, preserving its core principles and components while also learning and shaping refinements and improvements to RAPTA.

There are many other relevant methods, tools and frameworks, and we intend to work with stakeholders to contribute to a community of practice where RAPTA informs and is informed by a broader suite of tools and methods.

4.5.2 Using RAPTA-facilitated dialogue on transformational change

The inclusion and emphasis on transformation in RAPTA was welcomed:

> *[Other frameworks] are quite static and they don't deal with transformation and change particularly well. So, I think in a sense it's helped in that, in terms of the knowledge, or the way of interpreting change and transformation.*

Including transformation as one of the considerations in the design of projects initiated questions and discussion identifying parts of the system that may need to be transformed to achieve the desired goals. Using RAPTA supported a dialogue between stakeholders on the need to consider transformation seriously, and to identify precursors or steps that enable transformation.

> *So, it wasn't just about building resilience, but as you know, it's also got that element of transformation, which is, I think, a useful discussion to have in primary meetings and stakeholder consultation.*

Participants understood the need for transformation, especially where food production systems will continue to decline in productivity given increasing impacts of climate change, population growth, and diminishing farm sizes.

It was noted that transformation requires high-level political will, policy support, resource commitment and longer timeframes than conventional short-term projects. However, if transformation of part or whole of a system is required to achieve desired goals, short-term projects can lay the groundwork and create the conditions now so that transformation becomes a realisable option in the future.

4.5.3 Uncertainty was readily acknowledged and accommodated by adopting a learning stance, and adaptive planning

Using RAPTA enabled robust project design that does not rely upon, nor set up expectations of, certainty in systems that are changing rapidly. This is achieved by requiring and supporting continuous learning to test pathways, monitor and make active adaptive change in response to emerging needs, opportunities and unintended consequences. This learning stance is evident in many ways. One of the key steps to dealing with uncertainty is in the identification of flexible options and pathways, where a project explicitly identifies alternative pathways and decision triggers as part of project design. This enables change from one pathway to another as conditions unfold during project implementation. It requires monitoring, reflection and flexibility to change along the course of the project, and is supported by activities in the RAPTA learning component.

> *If it's a learning process then it fits very well into the way project design can unfold and we don't get locked into something that becomes obsolete.*
>
> *We purposely built a learning process to think more comprehensively about knowledge management.*
>
> *The learning part is fantastic.*

5 Learning about what worked, and what can be improved

Learning is central to effective design and implementation of RAPTA-based interventions. Learning is also fundamental for the development and evolution of RAPTA as an approach. The feedback from stakeholders we have gathered so far has allowed a rapid thematic analysis which underpins the following overview of key challenges and lessons learned, and it will guide future revisions to the RAPTA guidelines.

5.1 Challenges and opportunities identified by users of RAPTA

Two categories of challenges are apparent in the feedback we received from stakeholders who engaged with RAPTA through a range of means including RAPTA interim guideline testing meetings, RAPTA presentations, RAPTA training and piloting workshops with stakeholders and partners from different organisations and working at different scales[9]. The first category of challenges is related to the problem domain that the stakeholders are working to address, and where they see potential for RAPTA to make a contribution. The second category of challenges relates to applying RAPTA within particular operational circumstances, for example communicating RAPTA to others, or implementing RAPTA in a project with time and budget constraints.

5.1.1 Applying RAPTA to complex problems (e.g. food security)

Development projects, by definition, take place in areas that face many and complex challenges. Here we refer to specific challenges that were identified by stakeholders.

Working with rapid change, and enabling transformation

A key strength of the RAPTA framework has been its recognition of transformation as a vital part of resilience thinking to be considered in project design and implementation. It puts to rest some stakeholders' preconceptions that resilience is about 'staying the same', and it places transformational change on the agenda in stakeholder engagement activities. This has been welcomed with enthusiasm, and stakeholder feedback so far makes it clear that this is an area for which there is growing interest. The experience, skills and tools we can bring to bear on enabling transformational change are still limited, however, and developing creative ways to achieve it represents the leading edge of our research.

Projects are in settings experiencing transformations in rapidly changing social-ecological systems. The explicit recognition of transformation in RAPTA is viewed as a welcome, and unique, characteristic:

> *RAPTA translated quite easily into a thinking process, going through the constraints, the opportunities, drivers et cetera. It's not a million miles away from other things that exist already but it had that useful additional transformational element. ...It's also about enabling those transformations and that bit of it I like very much.*

Nonetheless, transformation is an area that would benefit from further development in RAPTA. As noted by one interviewee:

[9] These included: representatives from GEF/UNDP; international and local NGOs; consultants working in-country; national, district, and local government representatives; and community members.

> *The big issue is that we've got to understand these transformations as big, structural changes taking place globally. Understanding that transformation from a structural perspective is so important. And so, we have to find alternative approaches and think about this is a more nuanced complex way. So, I think in a sense, RAPTA can help absorb some of that.*

One way of further testing RAPTA's effectiveness in enhancing understanding of, and helping identify potential actions within, systems undergoing transformation is to apply it to problem domains where there is evidence of links to large-scale or significant transformation. An example was provided by one interviewee who suggested RAPTA be applied to further our understanding of migration, which was seen as one of the social forces influencing transformations in our current social-ecological systems:

> *Doing a RAPTA exercise specifically on migration in different contexts could be very helpful because that would help understand transformational issues. The ideas involved in transformation can be very helpful in explaining what's happening [in relation to migration] and in understanding what the limits are to preventing it.*

Working with high-level sustainability goals (e.g. SDGs) requires working across sectors and scale

Stakeholders spoke of the challenges of working with high-level sustainability goals that span multiple sectors and scales and cannot be adequately addressed by relying on specialist expertise residing in disconnected silos. RAPTA was seen as offering a way to overcome some of these challenges associated with such high-level goals. As noted by one interviewee in relation to the SDGs:

> *Poverty, inequality, environmental issues, jobs, industry, consumption… all those things are linked. But I think RAPTA as a framework is very useful at framing these problems in a way that is integrated and helping countries not to get overwhelmed.*

Another challenging high-level goal stakeholders saw potential for RAPTA to contribute to was Land Degradation Neutrality (LDN)[10]:

> *LDN is a grand idea, but making it work is an even grander challenge. It requires that planners consider not only what they want to do on the landscape in a single location to remedy degradation and increase adaptive capacity, etc., but also all other locations where there may be future gains or losses. This is only possible if we understand the potential of the landscape and resilience is core to that. RAPTA represents a major practical step forward and improving on an excellent start would be of tremendous benefit.*

While we recognise the potential to use RAPTA to contribute to the SDGs, LDN, and other high-level sustainability goals, the challenge will be to tailor RAPTA in ways that can best support processes aimed at targeting these high-end goals without spinning off multiple, potentially fragmented versions of RAPTA. Availability of sufficient resources (human and financial) to enable the further refinement of a high-level 'generic' RAPTA with the development of fit-for-purpose RAPTAs (e.g. fit for specific SDGs, or fit for a particular organisation's needs) that sit under the 'umbrella' RAPTA would help mitigate such a challenge.

Sector- and mandate-driven project design approaches reach their limits when used on problems that span sectors, and stakeholders recognise the potential for RAPTA to be an alternative approach that addresses these limits:

> *RAPTA is a new paradigm which is challenging our current sector-based approach to everything.*

[10] Land Degradation Neutrality is a concept used in the UNCCD

While there is wide recognition of the potential for cross-sectoral approaches, there are few incentives to work closely, especially when time frames are short and there is potential realignment of focus and resources. This pressure leading to inadvertent exclusion of sectors is then carried down to different scales.

It was suggested that RAPTA could be used to develop examples of how to integrate in inclusive ways to build genuine partnerships.

> *Such an exercise could already add to the project development if data about the pilot areas is made available and some stakeholders from the pilot sites are part of such an exercise.*

Working with social structure, gender, power and inequality issues

The multi-stakeholder engagement and governance component in RAPTA is intended to be suitable for addressing issues of social structure, power and inequality during project design and implementation. However, questions were raised by a few stakeholders over how RAPTA could be used to acknowledge and address asymmetrical power and gender dynamics and other realities of the political economy. There were suggestions that RAPTA, like many other approaches, assumes a power-neutral space, and in this way RAPTA was perceived by some as distanced from important on-ground political realities.

Naming and confronting such realities is core to academic critical theory and participatory critical systems practice, but caution is necessary to avoid fuelling adversarial interactions while still bringing about transformational change. A complex example often raised in the political economy of Ethiopia is the question of land tenure arrangements, and whether land should be privatised to promote prosperity, or remain in public hands to ensure security from distress sales. There is strong market and policy-leaning logic in support of each position. In these types of contested topics, RAPTA is not be used to take sides but to promote dialogue and deliberation informed by evidence, values and principles.

Clearly it would be useful for users of RAPTA to bring more processes and tools suitable for addressing inequalities and power issues that manifest in project design and implementations.

Questions of gender, power and inequality are crucial in sustainable development projects:

> *If you're talking about resilience and/or transformations, gender and power relations are so fundamental to outcomes. And, it's not just about women, obviously. It's not just about the outcomes for women and girl children. It's also about what happens for everyone as a result of inequalities.*

There are, however, significant practical challenges in addressing these issues even if RAPTA is used, through its multi-stakeholder engagement process, to identify tools to address structural inequalities:

> *The RAPTA guidance has been useful for thinking about gender and marginalised groups, however this guidance is yet to be enacted.*

> *Yes, with Ethiopia we did a lot more of a deeper gender analysis this time round than we've ever done before. So using the RAPTA helped us to look more deeply. Especially because women tend to have more different views to men on certain issues. We understand that men tend to try and speak for the women but we tried to make sure that we had an opportunity to talk to the women separately.*

One interviewee spoke of the challenges of frameworks including RAPTA in addressing power issues:

> *So, I've learned that it's got useful things to say about transformation, but it's also – it's got its own constraints, but other frameworks do too, because they work within an assumed power-neutral space, which [in reality] isn't very power neutral*

The interviewee also noted that there are challenges in finding ways to enable and include:

> *Understanding notions of power and the challenges of power relations in enabling or disabling transformations, and balancing where resilience capacities can lie, or may not lie.*

Further attention to rendering RAPTA more gender- and power-sensitive in practice is needed. Careful consideration of how to do that in ways that are cognisant of and respectful of organisational and local socio-cultural norms will be critical.

Working through tensions and contested issues, and making a place for emotion

RAPTA has been designed to foster understanding of systemic causes of problems and dialogue on transformation when that is a pathway for achieving desired outcomes. Issues arise when there are contested views on adapting or transforming practices that are considered sacrosanct. Power asymmetries and other structural inequalities can also hinder transformation. For example, whether land remains public or becomes privatised is contentious in Ethiopia, and there are policy or market-leaning arguments that support each position. A RAPTA-based approach is not to take sides, but to facilitate dialogue informed by evidence. On issues such as these, it is critical that RAPTA also brings into the processes and deliberations the fundamental values and principles underpinning normative goals. It will often be the case that the evidence is uncertain, incomplete or absent and therefore ambiguous and contested, and so decisions will need to be deliberated informed by agreed normative values and goals.

5.1.2 Challenges in applying RAPTA

Applying RAPTA in the context of pre-existing goals, processes and protocols: agencies have their own methods, tools and standards

The RAPTA framework and guidelines add to a space that is already full of tools, methods and approaches used by agencies for designing and implementing development projects:

> *Many of the agencies, as you can imagine, will tell you that they have been developing their own tools that they are applying and so they don't really need a new tool, and so it's just been very problematic from that standpoint ... Each agency has its own agenda, and they have their own tools, they have their own methodologies and they have their own standards which they impose on the projects that they are responsible for. One of the biggest challenges we have is getting the agencies to take into account this tool which clearly doesn't necessarily dovetail with how they've done things over the years.*

Complex and interlinked problems such as food insecurity and environmental degradation are ideally addressed through projects designed with local people for a local context. However, in reality, they are often designed by international and national agencies that have sectoral/ domain mandates with predetermined goals and established processes and protocols. Funding is also often available for short-term projects. Users of RAPTA are encouraged to work counter to these constraints initially, beginning with the local system to understand its context-specific problems and opportunities, and identify potential adaptive impact pathways. Following this, the constraints of mandate, resources, and protocols of agencies are brought in, to identify which parts of the preferred adaptive impact pathway they can fund and implement in the near term. It provides a clearer imperative for developing partnerships to progress pathways that lie outside the limitations of resource and mandate.

The GEF Food Security IAP is a complex multi-country project with many processes and requirements from several agencies. RAPTA processes were an addition to these existing requirements. The imposition of yet more processes on agencies responsible for project design and implementation can be unwelcome. It brings a risk of rules and processes being complied with, but with the overall purpose being lost. It also limits the flexibility of the project design and its potential to make the most of what RAPTA has to offer. We learned from the contrast apparent between our two pilot projects. The Food Security IAP project was a unique opportunity to introduce RAPTA at a national scale. Nevertheless, existing project design requirements were considerable, and the steps and components of RAPTA needed to be tailored to fit in. The community-level project at Telecho was less constrained. There were fewer requirements and existing

processes to comply with, which meant there was less pressure on those who organised it and more flexibility and time to organise the project design. It meant that the flexibility inherent in RAPTA was used to serve the needs of the community.

RAPTA has unique attributes that are increasingly in demand, but there are costs and limits to agencies' willingness and capacity to learn and adopt new tools, even if they recognise potential benefits:

> *Those agencies very often have their own internal approaches or methods that may or may not already embed some of this thinking. And we've also noticed that professionals in the work they do, they might have been doing it for many years and they've got a particular approach. So getting folks to shift the needle a little bit and change direction a little bit and change direction in their thinking a little bit is actually a lot harder than we thought it would be.*

Some modules of RAPTA address aspects of project design for which tools are already available. RAPTA is not intended to substitute for these, but rather provide a framework in which existing tools and methods can be applied in a coordinated way, complemented by the unique elements of RAPTA. Highlighting and strengthening the capacity for RAPTA to accommodate, complement and enhance, or get more value from, existing tools would be helpful:

> *More efforts are needed to identify how [RAPTA] complements other project development tools and manuals already in use in the GEF agencies.*

Using RAPTA in depth takes time, but even a light use achieves benefits

The RAPTA process requires multi-stakeholder involvement throughout a set of components, each comprising several steps. We recommend that RAPTA is run through several cycles of increasing thoroughness, and all this takes time. Some stakeholders saw this as a disadvantage of using RAPTA. The GEF is unusual in allowing several months for project design, which is more generous than many other funding organisations. Our view is that whatever method an agency uses, it must accept that sustainable and beneficial projects are unlikely to be generated by superficial and hurried design processes, which may result in projects that do not achieve the desired outcomes.

Interview and survey respondents spoke of challenges in accommodating the time requirements to use RAPTA well. There are many components to work through, with many steps in each component. If RAPTA is being used effectively, it will be highly participatory in all components, and will involve questioning and testing participants' preconceptions, all of which requires time.

Overcoming this time-poor constraint is challenging. Benefits of time investment in RAPTA can be difficult to articulate in advance, particularly in a busy world, as noted by this interviewee:

> *Convincing busy people to allocate sufficient time to learn it well enough to be able to use it usefully*.

This is compounded by resource and time limits set by agency programs:

> *RAPTA takes a lot of time to engage, develop, test and revisit. There are not many programs that give you that kind of time, and RAPTA needs time.*

There is, however, a need to reflect on time poverty. It seems it is a system-generated trap that affects not only high-level decision makers but also many stakeholders at different levels. This time-poverty trap frustrates robust design and implementation of interventions that could have provided a better chance of successfully addressing complex problems than those that are hurriedly designed. There is benefit in looking for ways to streamline and make RAPTA process efficient but not to a level where it loses its core values such as adequate multi-stakeholder engagement, a systems perspective, challenging assumptions, identifying pathways and learning.

For RAPTA to be applied well and be useful, building social relations and trust are critical

Many of the questions raised and issues explored through the RAPTA process are difficult and require that stakeholders engaging with it feel that they can speak openly and share their perspectives. Equally important is that participants come in with an open mind:

> *You need to keep an open mind. Sometimes the answers you get are very different from what you expect.*

A lot of effort was put into designing the various components and steps of RAPTA, as well as into cross-cutting aspects such as facilitation and engagement. Additional thought into how RAPTA can best contribute towards the creation of an enabling environment for building trust, willingness to share differences in perspectives and contentious issues, and collective learning is important.

Challenges in translating complexity and systems thinking into actions

'Systems thinking' and raising awareness of the complexity of social-ecological systems and problems are recognised as a strength of RAPTA. However, moving from conceptualising and characterising systems to defining concrete actions that can lead to real-world improvements remains challenging. As one interviewee reflected:

> *RAPTA already points to greater systems thinking as one area where change may be needed. Translating this into practice is a major challenge, particularly given our current institutional architecture at the international and national levels.*

There are numerous bottlenecks to bridging this conceptual-to-practical divide. One is that while RAPTA is good at identifying types of data that are useful for painting a broader, more integrated systems perspective, it is not yet well tried at helping stakeholders prioritise which data are needed, for what purpose, and when:

> *RAPTA helped identify the broad data sources required, however it didn't specify the key or critical data sources required*.

Another bottleneck that RAPTA may help with is the challenge of integrating and distilling the vast amount of data and knowledge that exists to pull together into succinct and usable key messages and insights:

> *We have all this data, we have existing data and of course we have data growing at the incredible rate, but we're not necessarily getting information out of it. … how do we integrate this information in ways that are useful, which I think frameworks like RAPTA are one way that that can be done, where you're bringing in information from different sources be they traditional spatial GIS data sets, be they local knowledge, whatever the source may be.*

A mechanism or toolkit is needed for relatively rapid integration and distillation; however, there is a challenge in finding tools that do not oversimplify:

> *The big challenge, is trying to avoid people over-simplifying change. It's the complexity and the challenge, the nuances or changes and transformations that are so important.*

It was surprising to see little mention of 'uncertainty' in stakeholder interview and questionnaire responses. In complex systems there is always uncertainty, and this can confound action. RAPTA has been designed to enable decisions in spite of the uncertainty. The principles and processes for supporting decision-making under uncertainty are widely known and using RAPTA can guide their consistent and structured implementation.

Communication challenges

There also are challenges in communicating what RAPTA is about and how it adds value to existing approaches as noted by the following feedback we received during our interviews:

'Many struggle to understand in what ways the framework adds value to existing approaches to identify and manage risks, and to design projects and programs with a view to achieving sustainable outcomes.'

These challenges are found across a range of settings, from the policy level e.g.

> *The largest constraint at the policy level with something like RAPTA is explaining what it is and how it works* to local stakeholders involved in a RAPTA process (e.g. *'Farmers don't know they need it, and so there will be farmers who want a bit of help with making this decision but they will not be prepared to allocate the time it takes to learn it properly'*).

The development of RAPTA familiarisation and short course material is one response to this. Farmers in Telecho who participated in RAPTA workshops have suggested that more RAPTA familiarisation sessions would be beneficial to others in the community:

> *RAPTA familiarisation should go beyond Telecho to other communities as it provides people with significant change in perspective and practice.*

As a result, there is an appetite for a more diverse suite of communication products to help address these communication challenges. Some specific suggestions were made:

> *It would be nice to have a two-page, very simple, infographic brief that you can share in meetings that could easily be translated into other languages that can be an essential entry point for people to understand what you're trying to achieve. And, the distinctions between the different kind of elements of RAPTA and how it fits together.*
>
> *New, dynamic, creative ways of expressing what's in the guidelines (e.g. video – like a TED talk or a two-minute video – or social media).*

Language and translation

Delivering RAPTA in a language that stakeholders understand is crucial for effective engagement and outcomes. However, interpreting and translating RAPTA concepts and steps is challenging for various reasons:

- Finding appropriate terms that accurately capture concepts such as resilience, adaptation pathways and transformation, for example, in Amharic and Oromiffa with the Telecho community, took time and long meetings before the actual workshop. For some of the concepts, such as 'thresholds', there was no direct translation and so examples had to be used to communicate meaning by analogy.
- Visual presentations and a lot of group discussion assisted by interpreters have been used to help with better communication. This had time implications, and on one occasion a plenary discussion in Amharic was not clear to a few of the young participants.
- Participants in Telecho appreciated receiving a translated summary of RAPTA familiarisation material in their language and there is a lot more to do to report on the two project design workshops. However, this adds to time and resourcing challenges.

5.2 Challenges identified by developers of RAPTA

The CSIRO team and our key collaborators from UNDP, SRC, STAP, and GEF also identified a range of challenges that emerged during the development of the RAPTA concepts, framework and tools and subsequent trialling with stakeholders.

Balancing flexibility and integrity: a multiplicity of concepts and approaches

RAPTA pulls together a vast range of closely aligned concepts and approaches (e.g. adaptation, transformation, resilience, theory of change, etc.). The unique contribution to what is an already crowded field is not the invention of a new concept or approach, but rather the ways in which it links and articulates coherence across disparate ideas, tools, and processes that, many agencies are already acquainted with or are actually using.

While the familiarity of many of these ideas and alignment with existing approaches is a strength of RAPTA, the challenge we encountered in developing the components and steps of RAPTA was selecting and coming to a consensus on the definitions of the concepts being used and supporting tools and processes, and their sequencing. This was not a trivial or easy process. For example, there are a wide range of understandings of what a theory of change comprises and an equally diverse set of approaches and tools for running a *Theory of Change* process. We faced this challenge for almost every concept, tool, and process underpinning RAPTA.

The above challenges point to reasons why RAPTA has been designed to be flexible: it needs to work in different settings, complement and interact with existing agency frameworks and tools, and deliver useful outcomes in circumstances where there are inadequate time and resources and where there may be highly contested topics. RAPTA is a generic framework that is agnostic in that it can accommodate tools and methods from many alternative bodies of theory and practice. Its unique strengths are the way it puts concepts of resilience, adaptation pathways, and transformation into practice within familiar processes for project design, brings a systems outlook to problems and opportunities, and introduces processes for identifying and assessing options and pathways. Leading practice in project design are included in many of RAPTA's components: scoping, multi-stakeholder engagement, theory of change and learning activities. Existing practices for these activities are readily accommodated within RAPTA, with systems perspectives and modifications specific to resilience, adaptation and transformation. Similarly, not all components are necessary in every application of RAPTA, and the ordering of components and steps within components should also be adapted to suit the application context.

Such flexibility brings other challenges. At what stage does flexibility compromise integrity? It raises the challenge of identifying core requirements for a piece of work to be judged as an effective application of RAPTA. We can do more to establish quality standards for evaluating applications of RAPTA and so bring a balance between flexibility and integrity.

Compounding this challenge is our stance to NOT select or prescribe a 'perfect' or 'fixed' set of RAPTA tools and processes. It is not possible, nor desirable given the complexity and uncertainty of the problems being tackled and diversity of contexts and stakeholders. In its current (early-phase) form, RAPTA comprises a set of 'best-known' approaches, methods, and steps that are intended to be adjusted, refined, and/or replaced over time drawing on insights and lessons learned gained from applications with different stakeholders, different problem domains, and different contexts. While this plurality and flexibility is necessary and can be viewed as an asset, it can also be viewed as a challenge because it does not provide a precise and simple 'recipe' for those starting out; some expertise is required to match the particular tools that can be drawn on within each component, with the problem and the resources at hand.

More effectively include and integrate diverse lines of evidence

Current applications of RAPTA rely on direct involvement by stakeholders who bring their knowledge and experience to the project design process. The primary vehicle for doing so is workshops. Stakeholder agreement or buy-in is not a sufficient indicator of the quality of underlying evidence, and evidence from other sources may well contradict what stakeholders believe. Project interventions rely on several assumptions about relationships between system elements and pathways to impact. These assumptions warrant testing or checking throughout project design and implementation. These checks and balances

require a strong learning component. Ideally, the learning component interacts with all other components, ensuring that the theory of change is tested for plausibility of assumptions, that the system description and assessment are consistent with multiple sources of knowledge, and that chosen options and pathways reflect a sound evidence-based assessment of trade-offs between possible courses of action. This becomes particularly important when embarking on unconventional interventions. For example, applying RAPTA in the Food Security IAP project saw the emergence of a shared narrative that suggests taking pressure off the environment by engaging with livelihood strategies less dependent on natural resources. The effectiveness of this narrative in different contexts needs ongoing testing using multiple sources of evidence.

Opportunities to trial and improve RAPTA

As mentioned above, RAPTA was designed to have a built in 'apply-learn-refine/adapt' approach. Thus, opportunities to apply RAPTA were deemed by RAPTA developers as critical to trialling and improving RAPTA. Piloting RAPTA in different contexts with a range of stakeholders is essential to ensure RAPTA evolves so it can better match agencies' and other groups' interests, needs, and contexts. Every time RAPTA is applied will require adjustments to the way it is delivered, and the learning component in RAPTA is there to provide guidance on how to capture the learning on why things were done in a certain way. In our trials of RAPTA in Ethiopia we had to make adjustments to the way we delivered, according to different levels of opportunity, to trial all the steps of RAPTA (see Sections 2.1 and 2.2 for details).

Over time there will hopefully be an evidence base from which we can provide some well-informed guidelines or principles informing how best to apply certain processes informed by context. There are many barriers to reaching this point, however, particularly related to the previously identified challenges under which several potential users of RAPTA are operating.

Fitting RAPTA in existing project structures and processes

Some applications of RAPTA are embedded in a predefined project, constrained by existing project structure and processes which sometimes leave little room to move. At times one ends up with a situation akin to 'fitting a square peg in a round hole' whereby parts of RAPTA are cut out, specific tools are replaced by ones used in the project, and/or the whole-of-RAPTA is reshaped to fit in existing project structures and processes. As previously noted, this is not necessarily a negative or undesirable thing because RAPTA needs to be flexible and responsive to such needs and constraints. However, the challenge is how to respond to existing project requirements without changing RAPTA so substantially that RAPTA's unique contributions and strengths (e.g. integrative thinking, systems understanding, focus on transformation, etc.) become lost.

Broadening applicability of RAPTA beyond current focus on food security and land degradation

RAPTA was initially developed with a focus on food security and land degradation, the key problem domains of relevance to the case studies and our collaborators in Ethiopia under the GEF IAP program. RAPTA has the potential to be relevant for a broader set of global social-ecological challenges (e.g. fisheries decline/collapse; biosecurity-human health risks; etc.). However, more work needs to be done to demonstrate the applicability of RAPTA to other problem domains. One of the next steps for RAPTA developers is to consider how to translate the existing food-security focused version of RAPTA into versions that are aligned with and better speak to other global challenges. There are a number of things that need to be thought through, including what challenges and problem domains to focus on and which collaborators are best placed to help revise and pilot RAPTA.

Challenges associated with training courses and materials

Course materials are best developed using direct experience gained from application. Limited applications of RAPTA to date have limited the availability of field-tested course material. This challenge has been addressed through the development of fictitious case studies for course participants to work with. These

examples are well informed by relevant domain knowledge of relevant systems; however, they have not come from application of RAPTA to these systems. The pilot projects in Ethiopia are being used to develop course material that is more directly grounded in applications of RAPTA. However, the fictitious cases should not be replaced entirely with real ones because they are written to span all the key aspects of RAPTA, and very few real cases are likely to do this. More importantly, they can address politically fraught issues that all societies face, such as corruption, ethnic conflict, violence or exploitation without initiating denial and anger from a country or community in which these things are happening.

Meta-indicators are needed for effective reporting

O'Connell et al. (2016) proposed the development of meta-indicators intended to be able to report on the progress, quality and outcomes of RAPTA applications in ways that could be collated in meaningful ways for aggregate reporting purposes (e.g. nation-level reporting). These have not been developed further and yet are needed for aggregate reporting. As one comment noted, RAPTA

> *'Needs meta-indicators of resilience and how well RAPTA has been applied (for reporting).'*

Further pilot case studies and consultation with a wide range of agencies is required to define effective and useful meta-indicators (see Grigg et al. 2017), and this work is yet to be done.

'Leaving the academic nest'

Some stakeholders perceived RAPTA as an academic exercise, particularly before witnessing it in use. We experienced wariness by some when they were considering whether to use RAPTA, and there were assumptions that RAPTA is for conducting research instead of designing and implementing project interventions. This is a valuable signal to us that we must do more to ensure that RAPTA is useful and practical, and to communicate RAPTA more effectively for diverse non-academic audiences.

Our experiences developing, applying and presenting RAPTA have been valuable opportunities to learn, adapt and improve, supported by a formal learning framework and multiple ways for stakeholders to provide feedback to us.

5.3 Critical reflections

We have welcomed the honest and thoughtful feedback and critique that so many have given us over the course of RAPTA development and application. In addition to providing practical guidance and advice, it has given us much helpful food for thought and sparked our own critical reflections on the system we operate within.

We notice a system-generated impatience or time trap. Our stakeholders (and us) feel like we are all operating in time-poor environments with limited opportunities to take the time needed to engage thoughtfully, and inclusively, to navigate complex problems to create sustainable long-term outcomes. We see considerable impatience to design complex projects in a hurry, citing lack of time and resources as causes. Timelines are often set by financial reporting requirements of agencies, and represent a systemic issue. The RAPTA framework, and the *Theory of Change* component within it, could be used to recognise and understand such constructed constraints and work out pathways to changed decision-making contexts.

Short-term projects are the primary vehicles for all our work, even though we are deeply engaged with systems whose dynamics unfold on much longer time scales. We are adept at making the most of such projects, treating them as building blocks that together build a path within a broader strategy. Nevertheless we can't help but wonder if there are more effective ways that would allow more reliable, continuous engagement on the time scales required.

We recognise that feedback responses are opinions and on some matters we will have differing views, while benefiting from learning more about others' perceptions. Some responses in the interviews and questionnaires stated that it is too early to be able to provide feedback on RAPTA. While this is certainly true for evaluating long-term impacts of RAPTA, the learning posture we need to take requires early, frequent feedback. This mode of operating served us well, with rich responses from stakeholders allowing us to learn valuable lessons that would have eluded us had we not asked for feedback this early.

Contradictory details in the feedback also make for interesting comparisons. We've learned that it is valuable for RAPTA to be flexible, and easily adapted to fit in with all manner of different project and context requirements. On the other hand, we've also heard calls to simplify and offer a minimal RAPTA that does not hamper users with superfluous details, and yet different users benefit from a different minimal set. We've also heard that one of RAPTA's strengths is its ability to accommodate system complexity and include system properties that are often overlooked. On the other hand, users want easy, clear guidelines on how to use tools with minimal expert help. These comments point to the challenges in meeting a spectrum of needs, from providing sufficient detail to meet all requirements (e.g. examples of how RAPTA can be used to address questions of power and gender) to providing simple messages that are readily understood with minimal effort. Many would like something quick and brief, but once they start using it in earnest they inevitably need more detailed and specific guidance. This needs a staged approach with multiple products and training opportunities suiting different levels of experience.

RAPTA places a high value on thinking, and in doing so carries an implicit assumption that logic is the primary means underpinning the development of pathways to achieve high-level goals. We know, however, that development doesn't come by logic alone. Emotions and relationships move people to change, and relationships are bound by trust, respect and care for one another. In Ethiopia, the word 'resilience' itself holds tremendous emotion behind it, it is core to a sense of identity and is not simply a technical term. Similarly, transformational change in currently undesirable social-ecological systems requires courage. If we try to make these concepts sterile of emotion we are losing an opportunity to engage a powerful force for good. It is awkward territory for researchers because emotions are private and very context-dependent. Emotional expression in one context may be inappropriate in another, making it difficult to document and work with. Furthermore, emotional expression opens the potential for manipulation and could make stakeholders more vulnerable. It is an area that requires our attention. We aspire to learn how to listen to and reflect the emotions that motivate stakeholders to set out along an adaptive pathway better prepared for an uncertain future. It is likely that the most effective means for doing so will involve greater collaborations with the arts. For example, an Australian drama company, Boho Interactive, has taken inspiration from work at the Stockholm Resilience Centre to develop an interactive theatre production in which audiences work together to manage a social-ecological system.[11]

[11] See http://www.bohointeractive.com/productions/best-festival-ever-how-to-manage-a-disaster/

Part III Looking ahead

6 Conclusions and next steps

The focus on learning, on testing assumptions and improving the knowledge base is one of the features that sets RAPTA apart from traditional approaches to project design and implementation. RAPTA does this iteratively, as understanding and competence grow. It builds in learning at every stage and uses the increasing understanding to refine the project plans and develop the capacity of stakeholders to manage for adaptive and successful implementation, in the face of unforeseen changes.

It is this focus that will break the cycle of business-as-usual investment that does little to fundamentally change the dynamics of complex and entrenched problems. The philosophy embedded in RAPTA is that a deliberate and structured approach multi-loop of learning (correcting routines; reframing assumptions and strategies; transforming paradigms, values and rules) needs to be adopted, to address many complex problems and seize opportunities for sustainable improvement of social-ecological systems. Through this process, stakeholders systematically fill critical knowledge gaps and test assumptions over time, while still achieving their project objectives.

Knowing full well that there are no 'off-the-shelf' solutions to the complex problems that we face globally, we have embedded this philosophy into the way that RAPTA is used to design and manage projects (and through that, actual systems), as well as how RAPTA itself is applied and evolves from here.

Further work is required to address the specific opportunities and challenges identified, through the following priorities for use of RAPTA:

1. **For the Ethiopian GEF Food Security IAP project**: Continue the application of RAPTA in the implementation phase of Ethiopian national-level pilot (as per the learning framework for this project), with a strong emphasis on testing the assumptions with evidence and modifying the theory of change if necessary. Seek further opportunities to establish and strengthen the *Options and Pathways* planning for the regions, as well as the monitoring required to assess the progress towards the intermediate and longer-term outcomes and benefits which underpin the Food Security IAP goal.
2. **For other GEF Food Security IAP projects**: Support the further application of RAPTA, including training and familiarisation courses, and adaptively improving the design of projects in the other GEF Food Security-IAP projects which are about to start the implementation phase. This could include articulation of detailed implementation options and pathways and application in monitoring, learning and assessment activities.
3. **Community level (Telecho) pilot**: Seek funding partnerships for implementing the project designed during this pilot, while maintaining support for building the capacity of the community.
4. **Pilot the RAPTA approach in a wide range of case study situations across different problem domains**: RAPTA can be used in a range of problem domains – for example for resilient cities, disaster resilience, adaptation planning, health, and water and energy security and with a range of different investors and stakeholders.
5. **Work with a range of stakeholders including investors, implementing agencies, different levels of government, NGOs, industries and communities** to apply and tailor RAPTA (or other configurations of resilience, adaptation and transformation planning as appropriate). It is clear that in order to make these core concepts operational and accessible, the language and process must complement and build on existing approaches that various stakeholders might use. The version 1 RAPTA Guidelines (O'Connell et al. 2016) were configured to complement the GEF context, language, and

process. It can be easily adapted for other contexts and users. This will help to build capacity for systemic transformation for a wide range of stakeholders, as well as improve the likelihood of success of the investments in achieving the desired goals (an assumption which itself requires monitoring and evaluation)

6. **Synthesise and effectively communicate the learnings from comparative case studies, as well as the evaluation of capacity for systemic change** to broad and varied audiences to encourage reframing assumptions, strategies and transforming paradigms essential for systemic change where needed.
7. **Use RAPTA to engage early on in high-level investment initiatives, policies and programs.** Several social-ecological systems will require transformative change to be on resilient (desirable) and sustainable paths. While important to demonstrate impact at local project level, RAPTA would offer better value if it is also used early on in informing investment initiatives, and policies, as well as in designing programs, which then makes it easier to support changes required at different local, national and regional scales.
8. **Improve, refine, evaluate and adapt the RAPTA approach** in response to learning.

Achieving these eight priority areas will require a strong commitment to building knowledge systems and a learning culture. An immediate need that will continue to put this learning stance in practice is to revise RAPTA version 1 informed by the piloting done so far and through establishing multiple pilots in different problem domains. This requires adequate resourcing, partnerships, and expertise at all stages of design and implementation. We look forward to developing these opportunities further and welcome discussion about future partnerships and participation.

In this first opportunity to pilot RAPTA, we have reviewed and reflected and in Table 6.1 summarise the key gaps, limitations and opportunities associated with RAPTA, and offer an initial set of possible next steps for improvements in any future revised version of RAPTA guidelines. It is fitting that these represent a broad set of options, not all of which can be realised. Whichever steps are taken from here will be developed in partnership with potential users and funders.

Table 6.1 Summary of opportunities, gaps, limitations, and potential next steps

Opportunities, gaps, limitations	Potential next steps	Comments
RAPTA has received strong endorsement from a range of stakeholders during the pilot phase	Build on the strengths identified – systems thinking, understanding key points of intervention; what needs to change and where to start sequencing options and pathways; how to involve multiple stakeholders effectively etc.	Need further pilots in a range of problem domains with greater depth of analysis; improve the tools and guidelines; synthesise the learnings; continue to build capacity more broadly; evaluate the outcomes more thoroughly; and address the gaps and limitations listed below
RAPTA is not very visible beyond immediate users and we could do more to contribute usefully to a wider audience of practitioners. Some perceived RAPTA as too academic and research-oriented, especially before they had the opportunity to use it.	Develop a wider set of communication products that cater to different needs (e.g. short guidelines for making progress under tight time and resource constraints; flyers and infographics for awareness raising.) Engage with forums and online discussions in which we initiate and contribute to discussions on the core challenges in this area.	The content for these communication products and activities is summarised in this report and academic journal manuscripts. We are open to working with our existing partners and communication specialists to communicate this content in ways that are relevant and responsive to audience needs.

Opportunities, gaps, limitations	Potential next steps	Comments
It takes time to use RAPTA to its full extent, and this is particularly problematic in time-poor contexts. Some aspects of time poverty have systemic roots that warrant further attention.	Growing experience with RAPTA will inform ways in which it can be streamlined and more time-efficient (e.g. reducing duplication, bringing in more effective tools from elsewhere). The RAPTA framework, and the theory of change within it, could be used to recognise and understand the systemic influences that limit users' time, and work on pathways to changed decision-making contexts that allow more time.	The first of these steps – use RAPTA in streamlined and time-efficient ways – has already been demonstrated in this project, so readily achievable and responsive to stakeholder needs. The second of these steps – confronting systemic time constraints – is more difficult and would require partners prepared to engage with this challenge.
More clarity is needed on how RAPTA can be used: a) within existing project design and implementation processes in agencies; b) in different problem domain areas.	Develop case studies demonstrating the flexibility of RAPTA and the way in which it can be tailored to specific projects and draw on different tools and types of knowledge. This flexibility is explained in the guidelines, but more could be done to demonstrate it in practice without compromising integrity. Case studies could also be developed for different problem domain areas (e.g. biodiversity, energy, urban, health, education).	Desktop case studies have been developed in the training material (e.g. Abel 2016), and for initial development and testing of RAPTA. The Ethiopia pilot projects have provided material that will allow more detailed case studies to be documented (papers in preparation). A light desktop version of RAPTA is being used in a separate project to make a system assessment of water quality in rivers in Pakistan (work in progress). Stakeholder feedback reflected a strong interest in worked examples.
The full RAPTA process has still not been tested in its entirety across levels of decisions making and scales of intervention. At the same time, there are a growing number of international programs seeking integrated approaches to program design, e.g. to address SDGs.	Actively engage with agencies and initiatives who are driving the growing demand for integrated approaches (e.g. GEF, GRP, GRAID, GCF, UNDP) in order to identify new projects for more piloting of RAPTA in project design and implementation.	Examples of these activities include the current development of a Memorandum of Understanding between CSIRO and UNDP, and ongoing discussions with UNDP about opportunities to pilot RAPTA in other areas (e.g. health).
Next version of RAPTA guidelines.	The theory of change and associated learning framework are in place and work so far has generated a set of potential revisions to the guidelines.	The guidelines were commissioned by STAP GEF and further versions will require consultation with them before proceeding.
There are specific aspects of RAPTA that warrant strengthening: • Addressing structural inequalities • How to incorporate Gender more explicitly • Enabling transformation • Engaging emotions • Meta-indicators	Use any future RAPTA trials to test and strengthen these elements of RAPTA. Seek funding to further research activities that would address these needs.	The areas of enabling transformation and engaging emotions are likely to benefit from greater involvement from the arts.

Appendix A Stakeholder questionnaire/interview questions

Piloting the Resilience, Adaptation Pathways and Transformation Assessment (RAPTA)

Learning with RAPTA collaborators and partners: donor and other organisations (UNDP, GEF, STAP, MELCA, national government departments)

Purpose of seeking feedback and insights from you

We would be very pleased if you could participate in our impact analysis for RAPTA. This exercise is funded by SRC GRAID program. We seek to understand whether the Resilience, Adaptation Pathways and Transformation Assessment (RAPTA) approach has been useful to a range of users. We are interviewing many people in a range of organisations and roles who have had some exposure to the approach. We will ask a little bit about your role in order to provide context. Mainly, we are exploring if, and how, it may have helped with project design and implementation, but also more generally with networking, learning and knowledge, changes in perspective on the problem or solutions, or in practise.

We will use the information provided (which will not be identifiable as any individual) to write articles, briefs, and presentations now and into the future about the utility and impact of RAPTA and other resilience or adaptation based approaches. We will also use the information to improve the RAPTA approach in future. This goes in tandem with the Ethiopian pilot case study, and we hope that the information will be as useful to a range of agencies dealing with sustainable development, resilience, adaptation and transformation.

We know that it is likely that RAPTA will need a 'version 2' after piloting, and although we do not have a particular plan or funding mechanism to do this yet, we hope that this impact analysis will inform any revisions.

We provide here the questions we would like to explore either as a questionnaire or an interview.

The question set allows for answers as brief or as detailed as you choose. Depending on the familiarity with RAPTA, some respondents may only be able to answer some of them. If you have provided relevant information in a previous question, feel free to cross-reference the question rather than repeat the information. Please be brief with the earlier questions (dot points will do) and try to reach the end, rather than getting overwhelmed with detail at the start.

Thank you for your participation.

Yiheyis Maru and Deborah O'Connell

CSIRO

Questions

Context questions

1. What is your main role in your organisation? Is there any part of the role focused on program or project design, implementation and/or evaluation; investment strategy; or other activities where

RAPTA may be pertinent or could be useful? (a short statement will suffice, not a lot of detail required)

2. How did you come across RAPTA?
3. In relation to RAPTA, what has been your role? (both formal, such as being the formal point of contact for CSIRO, and informal, e.g. helping broker relationships)
4. What is your level of familiarity with RAPTA? (0 = have not been exposed; 1 = have read or heard about it; 2 = have attended a training or familiarisation workshop; 3 = have been thinking about how to use it; 4 = have been using it in a simple or 'light' way; 5 = have been using it extensively)
5. If you have used or are thinking of using RAPTA, what is the application? (a short statement will suffice; please tell us what stage in the adaptive planning / decision-making cycle the RAPTA is being applied)

Reflections on RAPTA

6. Did any significant constraints or challenges emerge as you or your organisation engaged with or applied RAPTA? Any opportunities? Did anything help or make it easier?
7. How did you or your organisation manage and navigate those challenges? How have you or your organisation taken advantage of any opportunities that emerged?
8. Has RAPTA changed your and/or others' (for example, others you work with, your organisation) a) level of knowledge or information, b) perspectives or opinions, and/or c) practices? If yes, how so? (Please provide concrete examples; these can be positive or negative changes; they may include changes around knowledge about the problems programs and projects are trying to address; perspectives about the status quo of sustainable development; ability to make decisions around project design; etc.)
9. Why do you think the changes you mentioned above happened? (For example, was it something about the RAPTA Guidelines or the way RAPTA workshops were run? Were there things beyond RAPTA – something about your organisation or the broader social-political context, etc. – that also played a role?)
10. In what ways, and why, has RAPTA helped and/or hindered your ability to:
    a. Pursue the goals of your organisation and meet your own organisational requirements?
    b. Influence or shape the way projects are designed and implemented?
    c. Build networks and collaborations with individual and/or groups? (please provide information about who)
    d. Build trust with others? (please provide information about who)
    e. Get access to and use resources? (e.g. data, information, tools and funds)
    f. Enhance your knowledge and understanding about the problems and opportunities to address them?
    g. Address gender issues and marginalised groups?
11. If RAPTA has helped you build networks, collaborations and trust with others, has anything emerged from those connections and interactions (e.g. enhanced your understanding of the issue; improved communication; led to other projects; provided access to resources; changed the way you do things at work)?
12. What are the most valuable lessons you learned from engaging with RAPTA?

RAPTA moving forward

13. Do you think it is worth continuing to use RAPTA? Why?
14. If you had to list the top three aspects of RAPTA that you like, what would they be? (please answer 'nothing', if you did not like anything about RAPTA)
15. If you had to list the top three aspects of RAPTA in most need of being improved, what would they be?
16. What were your expectations of RAPTA before engaging with it? Were your expectations met? If yes, how so? If not, why not?
17. Thinking into the near future in your domain of work, what do you think are going to be the next greatest challenges? Opportunities? Do you think the RAPTA approach can help? If yes, how? What can GEF or others do to help either overcome the challenges and/or make the most of those opportunities?
18. What else would you need to enable you to be more effective in your role?
19. Is there anything else you would like to share with us, feedback, or anything that I have missed?

Shortened forms

ACDI	African Climate and Development Institute, University of Cape Town
ACIAR	Australian Centre for International Agricultural Research
ASSAR	Adaptation at Scale in Semi-arid Regions
CiP	Cataloguing-in-publication
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
CST	Committee on Science and Technology
DFAT	Department of Foreign Affairs and Trade (Australia)
DPI	Department of Primary Industries (NSW, Australia)
GEF	Global Environment Facility
GRAID	Guidance for Resilience in the Anthropocene: Investments for Development
GRP	Global Resilience Partnership
IAP	Integrated Approach Pilot
M&A	Monitoring and assessment
M&E	Monitoring and evaluation
MEB	Multi-Evidence Based
MELCA	Movement for Ecological Learning and Community Action
NGO	Non-governmental organisation
NRM	Natural resource management
ODI	Overseas Development Institute
PIF	Project Identification Form
RAPTA	Resilience, Adaptation Pathways and Transformation Assessment
SDG	Sustainable Development Goals
SES	Social-ecological systems
SIDA	Swedish International Development Cooperation Agency
SRC	Stockholm Resilience Centre
STAP	Scientific and Technical Advisory Panel
ToC	Theory of Change
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme

References

Abel (2016) The Resilience, Adaptation and Transformation Assessment Framework: a Short Course.

Butler et al. (2017, in prep) Mainstreaming climate change into developing countries' planning via participatory adaptation pathways: lessons from the ground.

Garrity D, Dixon J, Boffa J-M (2012) Understanding African Farming Systems: Science and Policy Implications. Australian Centre for International Agricultural Research, Australian Government, Canberra.

Grigg N, Abel N, O'Connell D, Walker B (2015) Resilience assessment desktop case studies in Thailand and Niger. CSIRO, Australia

Grigg et al. (2017, in prep) 'Metrics' for resilience, adaptation and transformation: towards a meaningful learning approach, in UNEP (in prep) Metrics for Adaptation: Perspectives and Practical Experience.

Kolb, D. A. (2014) Experiential learning: Experience as the source of learning and development. FT press.

Maru Y.T., O'Connell D (2016) Embedding resilience, adaptation and transformation into the design of the Food Security Integrated Approach Pilot Project in Ethiopia using the RAPTA approach. Report of the Project Design Workshops held on 7 to 11 March 2016 in Addis Ababa, Ethiopia. CSIRO Land and Water, Alice Springs, Australia.

Maru Y, O'Connell D, et al. (2017a, in prep) Design of interventions for food security and sustainable livelihoods in Ethiopia: a comparative case study using the Resilience, Adaptation Pathways and Transformation Assessment (RAPTA) approach.

Maru Y, O'Connell D, et al. (2017b, in prep) Multi-loop learning from RAPTA-based project design for food security and sustainable livelihoods in Ethiopia.

O'Connell D, Abel N, Grigg N, Maru Y, Butler J, Cowie A, Stone-Jovicich S, Walker B, Wise R, Ruhweza A, Pearson L, Ryan P, Stafford Smith M (2016) Designing projects in a rapidly changing world: Guidelines for embedding resilience, adaptation and transformation into sustainable development projects. (Version 1.0). Global Environment Facility, Washington, D.C.

O'Connell et al. (2017, in prep) Using RAPTA for design of sustainable development projects: does it make a difference?

The Development Assistance Committee (2016) Systems analysis to support the operationalization of the Swedish Development Cooperation Strategy for Ethiopia, Workshop report, 11–13 May 2016, Addis Ababa.

Walker B, Abel N, O'Connell D, Grigg N (2016) A Resilience Approach to Conservation And Development: Working Paper Version 1.5. CSIRO, Australia.

Walker B, and Salt D (2006) Resilience Thinking: Sustaining Ecosystems and People in a Changing World. Island Press

Walker B, Salt D (2012) Resilience Practice: Building Capacity to Absorb Disturbance and Maintain Function. Island Press.

Wise RM, Fazey, I, Stafford Smith M, Park SE, Eakin HC, Archer Van Garderen ERM, Campbell B (2014) Reconceptualising adaptation to climate change as part of pathways of change and response. Global Environmental Change 28:325-336. http://dx.doi.org/10.1016/j.gloenvcha.2013.12.002

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