# Identifying the Implicit Guiding Principles of the Collaborative Crop Research Program: Expanding Principles-Focused, Developmental Evaluation

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## Dedication

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## Abstract

The purpose of this research was to expand the theoretical and practical knowledge base for facilitating principles-focused, developmental evaluation. In particular, the research identified an analytical process that evaluation professionals can use to identify the implicit guiding principles of a program. The research focused on the Collaborative Crop Research Program (CCRP) from the McKnight Foundation. The researcher employed a multiple case study and cross-case analysis. All three cases focused on separate program developments to identify the implicit guiding principles of the CCRP that gave shape to the CCRP's evaluation process called the Integrated Monitoring, Evaluation, and Planning (IMEP), CCRP's guiding framework for agriculture research, Agroecological Intensification (AEI), and a CCRP capacity building initiative known as the Multi Environmental Trial Initiative (METI). Each case study used document review and qualitative interviews as the sources of data and identified the guiding principles that helped each program component emerge and develop. The cross-case analysis confirmed the 16 guiding principles of the CCRP and explored how the use of each principle varied across the three cases. The implications for identifying the implicit principles of a program are discussed.

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## List of Key Terms

**The Andes**. A regional grant portfolio of the CCRP comprised of research projects from Bolivia, Ecuador, and Peru.

**Agroecological Intensification (AEI).** The second of three case studies. The Collaborative Crop Research Program's conceptual framework for agriculture research and development**.**

**The Collaborative Crop Research Program (CCRP).** The international agriculture research and development program of the McKnight Foundation.

**East Africa**. A regional grant portfolio of the CCRP comprised of research projects from Ethiopia, Kenya, and Uganda.

**Guiding principle.** A fundamental proposition that serves as the foundation for a system of belief or behavior or for a chain of reasoning.

**Integrated Monitoring, Evaluation, and Planning (IMEP).** The first of three case studies. The evaluation system of the CCRP.

**Multi Environmental Trial Initiative (METI).** The third of three case studies. A capacity building initiative from the CCRP focused on training researchers to produce more context relevant research results.

**Southern Africa.** A regional grant portfolio of the CCRP comprised of research projects from Malawi, Mozambique, and Tanzania.

**West Africa.** A regional grant portfolio of the CCRP comprised of research projects from Burkina Faso, Mali, and Niger.

## List of Acronyms

| | |
|---|---|
| AC | Advisory Committee |
| AEA | American Evaluation Association |
| AEI | Agroecological Intensification |
| AEIx | Agroecological Intensification Exchange |
| BMGF | Bill and Melinda Gates Foundation |
| CCRP | The Collaborative Crop Research Program |
| CoP | Community of Practice |
| EAf | Eastern Africa |
| FRN | Farmer Research Network |
| IMEP | Integrated Monitoring, Evaluation, and Planning |
| LM | Leadership Team Meeting |
| LS | Liaison Scientist |
| LT | Leadership Team Member |
| METI | Multi Environmental Trial Initiative |
| M&E | Monitoring and Evaluation |
| RR | Regional Representative |
| RR | Regional Representative |
| RT | Regional Team |
| RFT | Randomized Field Trial |
| SAf | Southern Africa |
| SLII | Sustainable Legume Intensification Initiative |

| | |
|---|---|
| ToC | Theory of Change |
| WAf | West Africa |

# Chapter 1: Introduction

## Background of the Problem

Shadish, Cook, and Leviton (1991) traced the development of the modern field of evaluation to the 1960s. The field emerged alongside the social programs initiated and developed under Presidents Kennedy, Johnson, and Nixon. Many of the programs were a part of the Great Society initiative, and their intent was to improve education, health, criminal justice, etc. to prevent Americans from experiencing the negative effects of poverty. Since the 1960s, the purpose of the field of evaluation has been to identify "*feasible practices that evaluators can use to construct knowledge of the value of social programs that can be used to ameliorate the social problems to which programs are relevant"* (Shadish et al., 1991, p. 36, emphasis in original). Within this view of evaluation was the assumption that the value of social programs was not just about how well a program worked; it was also about discovering whether and how evaluative results could be used (Shadish et al., 1991).

Christie (2007) has argued that evaluation use is one of the most researched issues in the field of evaluation. The significant body of research has been explored by Cousins and Leithwood (1986) and Johnson et al. (2009) in two separate literature reviews. However, in the last several years, four bodies of work emerged that have expanded the contemporary theory about evaluation use. Hargreaves and Podems (2012) argued that the common thread in the new way of thinking about evaluation was the incorporation of systems thinking and complexity concepts. The bodies of work that Hargreaves and Podems referenced include *Evaluation in the Face of Uncertainty* by Morell (2010)*, Systems Concepts in Action* by Williams and Hummelbrunner (2011),

*Purposeful Program Theory* by Funnell and Rogers (2011), and *Developmental Evaluation* by Patton (2011).

Patton's *Developmental Evaluation* (2011) offered a new framework for thinking about how evaluation use can be informed by complexity theory. The new framing grew out of Patton's previous work. Patton has been a significant theoretical contributor to the field's theories on use (Alkin & Christie, 2004); his previous work on evaluation use included four editions of *Utilization Focused Evaluation* (2000) and his more recent book *Essentials of Utilization Focused Evaluation* (2012). Patton's central contribution has been to argue that the evaluation professional should play a key role in identifying the primary intended users (PIU's) and primary intended uses. Once these were identified, the evaluation should be shaped to meet their needs and outcomes (Alkin & Christie, 2004). Parallel to his contribution to the debate and research on evaluation use, Patton (1997, 2011) developed and coined the term *developmental evaluation*. Developmental evaluation was built on the same emphasis on the primary intended user, but focused on the PIU's guiding principles. In developmental evaluation, the user was typically engaged in systems change or complex initiatives that spanned multiple levels and contexts and/or significant social innovation.

Developmental evaluation placed the evaluation professional inside the program management and design team. Developmental evaluation utilized the skills of "…asking evaluative questions, applying evaluation logic, and gathering real-time data to inform ongoing decision making and adaptations" (Patton, 2011, p. 1). The distinction of this approach of evaluation compared to others was the position of the evaluation professional in relationship to the program managers and design teams. The developmental evaluation

approach usually positioned the evaluation professional inside the decision-making team to help reflect and make decisions during the program development process. As the next section will make clear, Patton's developmental evaluation contribution to evaluation use is enhanced with an understanding of systems thinking and complexity concepts.

**Systems Thinking and Complexity Concepts**

Systems thinking and complexity concepts are at the foundation of developmental evaluation. Patton used Zimmerman, Lindberg, and Plesks' (1998) frameworks to position developmental evaluation as an approach that is responsive to complex situations. Zimmerman et al.'s (1998) framework distinguished simple, complicated, complex, and chaotic situations along two scaled dimensions: certainty/predictability and agreement/conflict. The dimensions of certainty and predictability had to do with how certain decision makers were that they knew how to solve a problem. Programs that operated using clear cause and effect variables to solve a well-understood problem were close to certainty. Programs that were not clear about what the outcomes would be or how to get there were far from certainty. The second dimension of the framework was the degree to which stakeholders agreed. Agreement was scaled in the same fashion as certainty, from close to agreement to far from agreement.

These dimensions, put together in a framework, helped distinguish situations as simple, complicated, complex, or chaotic. According to Zimmerman's framework, distinguishing the four situations had to do with the degree of certainty and agreement there was about a situation. Simple situations were characterized by being close to certainty about the nature of the problem, the intervention, the predictability of outcomes, and the proximity of agreement about what to do. Complicated situations were close to

certainty about an intervention's outcomes, but far from agreement about what to do or vice versa. However, complex situations were characterized by being both far from agreement and certainty. This means the technical solutions were not agreed on, nor were outcomes predictable. Chaos was the outer limits of agreement and certainty. This was where stakeholders were in intense conflict and extremely uncertain about what to do. The concepts and frameworks are mapped out in Figure 1. Distinguishing from simple, complicated, complex, and chaotic situations.

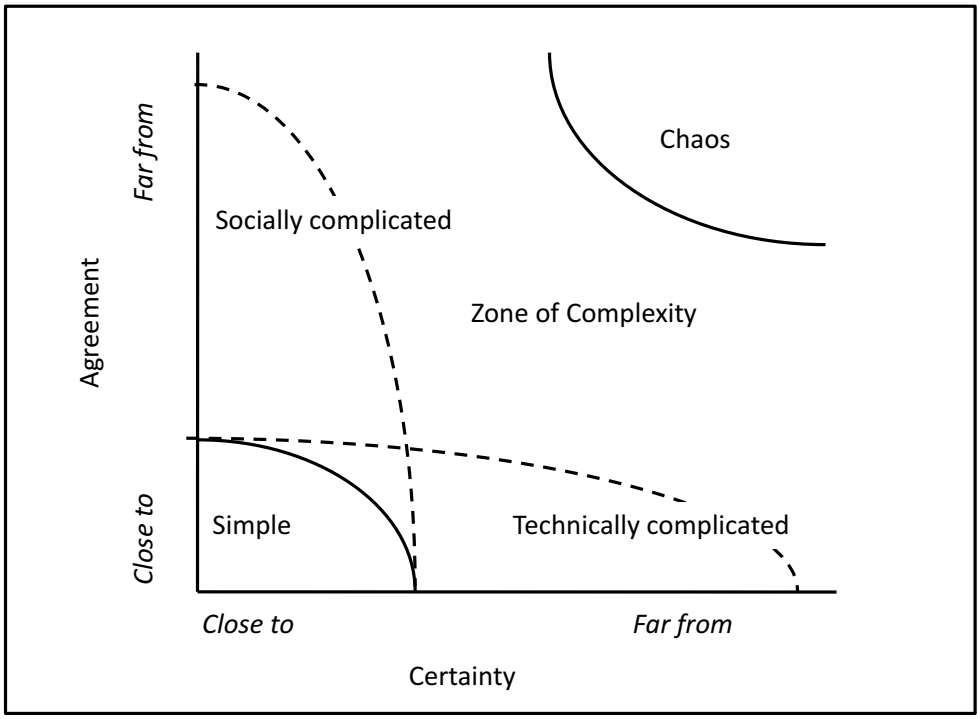


*Figure 1*. Distinguishing from simple, complicated, complex, and chaotic situations (Patton, 2011).

**Complexity as Sensitizing Concept for Evaluation**

Patton argued that the usefulness of these concepts was that they served as sensitizing concepts (2011). The sensitizing concept was an idea developed by Blumer

(1954) to provide balance to the popular and overused research terms known as operational definitions. Blumer argued that sensitizing concepts did not serve social theory development as precise operational definitions. Operational definitions were usually neat, clear, and mathematically measurable constructs. They did not leave room for ambiguity. Rather, a sensitizing concept gave "…the user a general sense of reference and guidance in approaching empirical instances" (Blumer, 1954, p. 7). For example, sensitizing concepts such as culture did not provide prescripted or clean constructs. To a certain extent, they were immeasurable just like the construct of culture. However, no one could imagine any kind of evaluative inquiry without considering the construct of culture. The point was that just because something was hard to measure did not mean it did not exist. Complexity concepts, like culture, were useful and needed. Through *Developmental Evaluation*, Patton has pushed the edge of the field by embracing complexity as a sensitizing concept and conceptualizing the role of the evaluation professional.

In *Developmental Evaluation*, Patton (2011) additionally used concepts of complexity to set up the tension between two approaches of evaluation: best practice evaluation, and principles-focused, developmental evaluation. Patton argued that best practice evaluation worked best in simple situations. Best practices functioned like a recipe approach to evaluation. Recipes worked best in simple situations where there was little variability and a high degree of predictability. Recipes, like best practices, were prescriptive and specific. They also required a high degree of fidelity. They left little room for judgment or adaptation on the behalf of the implementing program. The intended use of best practices was to replicate or adopt a model that was successful.

On the contrary, guiding principles provided guidance in complex situations. They had to be interpreted and applied in context. In simple situations, best practices prescribed action. In complex situations, principles guided action and decision-making (Patton, 2011). The intended use was to guide action and decision-making in situations where the path was not clear and outcomes were not predictable, i.e., where disagreement and certainty were high. According to Patton, the role of the evaluation professional in this evaluation setting was to work with decision makers and design teams and assist them "…in identifying, applying, and adapting effective principles" (Patton, 2011, p. 167).

## Statement of the Problem

Patton formally introduced the model of principles-focused, developmental evaluation to the field in the 2011 book *Developmental Evaluation*. As a consequence, the approach is in a relatively infantile stage. There is still a lot to be learned about what guiding principles look like, how principles are identified, and how to evaluate their effectiveness against what criteria. Within the field of evaluation's core literature base, there is almost no complementary literature that supports Patton's proposal for principles-focused, developmental evaluation. For instance, the *American Journal of Evaluation*, the multidisciplinary journal of the American Evaluation Association (AEA), has yet to publish one article on principles-focused, developmental evaluation.

Some complementary work has been done in this area, and it is just now just making its way into the published arena. For example, Murphy (2014) won the Michael Scriven Dissertation Award for Outstanding Contribution to Evaluation Theory, Method, or Practice (Coryn, 2014). Murphy conducted dissertation research on principles-focused,

developmental evaluation. The study used individual case studies of youth experiencing homelessness to explore how and whether the principles used by a collaboration of youth homelessness service providers manifested in each case. Murphy has subsequently written a chapter on the dissertation experience and published it in *Developmental Evaluation Exemplars* (Patton, McKegg, & Wehipeihana, 2016). In the same book, Patton introduced the topic of developmental evaluation and pointed to the evolution and interest of principles-focused evaluation as the most significant development in developmental evaluation since 2011.

Yet there is not a sufficient body of literature that supports evaluation professionals in using existing evaluation methods to identify, adapt, or evaluate the effectiveness of guiding principles. The problem this research will address in the field of evaluation is narrowly focused on the identification of principles. How do evaluation professionals in a developmental evaluation situation help decision makers and design teams identify principles? Both Murphy (2014) and the Paris Declaration (2005) identified principles on the front end of the intervention. In both cases, the process included using years of professional experience to identify the principles. Murphy's research provided an example of an evaluation professional using reflective practice to identify the principles that would guide a youth homelessness collaboration. But what if that option is not available? In particular, what if the model has been developing for several years before the evaluator and staff explicitly identify the principles?

When *a priori* reflective practice is not available, evaluation professionals need another option for identifying the principles of a program or systems change effort that has been in or remains in development. Murphy's (2014) dissertation project provided

insight into a possibility. Murphy used case studies of youth who were homeless to identify how and whether the youth experienced the principles agreed on by the collaboration. Murphy also examined what impact those principles had on the lives of young people. During the cross-case analysis, Murphy identified additional principles that were not identified by the collaboration's stakeholders. This research built on the potential of using the case approach for identifying principles. Drawing from the methodological lessons of Murphy's research, this research proposed that a multiple, cross-case study could be an analytical approach to discovering the principles of a program, using the time-tested qualitative methods of evaluation.

However, this research differed in two significant ways. The first difference was that the unit of analysis was different. Murphy's research focused on individual cases of youth who were experiencing homelessness. This study focused on a program and three different program developments. The second difference was the age of the program. In Murphy's research, the homelessness providers were at the beginning stages of forming a collaboration. In this research, the program had been in existence since the late 1980s. While the program had existed for at least 25 years, it had been undergoing significant developments. Program developments in complex initiatives were what Patton (2011) called "fork in the road" moments. They were where guiding principles were most salient. Therefore, the study focused on three "fork in the road" moments that have helped define the Collaborative Crop Research Program (CCRP).

**Context for this Study**

The study was conducted in the context of the Collaborative Crop Research Program (CCRP). The CCRP is an agriculture research and development program funded

by the International Program area at the McKnight Foundation in Minneapolis, MN. The CCRP was simultaneously a grant-making arm of the McKnight Foundation and an operational program that provided capacity building through non-grant assistance, research methods support, and communities of practice (CoPs). The non-grant assistance was designed to strengthen the research and development capacities of CCRP's grantees and their institutions. The CCRP focused its grant and non-grant resources on agriculture and development research projects in four sites: the Andes, East and Horn of Africa (EHAf), Southern Africa (SAf), and West Africa (WAf).

In 2008, the McKnight Foundation entered a partnership with the Bill and Melinda Gates Foundation. The partnership doubled the amount of grant and non-grant resources in the CCRP. The five-year budget went from $25 million to $50 million. The influx of resources required the CCRP to adapt its grant making and non-grant assistance model. Since 2008, the leadership team of the CCRP has evolved the program. The evolution's decisions represented a series of critical incidences, or "fork in the road" moments, for the CCRP. The evolutions gave a refined definition of CCRP's programming approach. Patton's logic was that guiding principles were what guided program development in complexity. If this was true, then examining and cross-examining how a program developed could be an analytical approach that professional evaluators could use to help their clients identify the principles of an initiative engaging a complex system.

**Research Questions**

The primary purpose of this research was to add to the body of literature on the significant and emerging approach within developmental evaluation known as principles-

focused, developmental evaluation. In particular, the research demonstrated how a multiple case study approach could be used to identify the principles of an existing program that works in complexity. The research questions that guided this inquiry are below:

1. What are the principles that have guided the development of the CCRP?
2. How do the principles compare and contrast across CCRP's program developments?

**Significance of this Study**

This study was significant for three reasons. First, principles-focused, developmental evaluation was a new approach within the field of evaluation. This research expanded on the limited literature base of the principles-focused approach to evaluation. The answers to the research questions addressed how evaluation professionals engaged in developmental evaluation could identify the implicit principles that guided the strategies, actions, and practices of programs working in complexity.

Second, the study contributed to the debate in the evaluation and policy literature on evidence-based programs and policy-making. The potential of collecting evidence against principles that are "…interpreted, applied, and adapted situationally in context" (Patton, 2011, p. 168) is that the approach offered an alternative theory to the conventional approach to collecting evidence on the effectiveness of practice. The approach changed the evaluand and what got brought to scale. It also contributed to an important debate cited by Donaldson (2009) about what constituted credible evidence in the 21st century.

Third, knowing or not knowing what principles decision makers used to guide decision-making in complexity has consequences. One set of consequences would be that the actions of a program do not match the principles people thought were guiding its actions. Schön (1997) noted this tension by calling it the gap between the intended theory and theory in use. Robert McNamara (1997) captured the extreme version of actions not matching principles. While McNamara's example about the Vietnam Conflict was hyperbolic, it highlighted the importance of knowing what principles were guiding decision-making.

> We of the Kennedy and Johnson administrations who participated in the decisions on Vietnam acted according to what we thought were the principles and traditions of this nation. We made our decisions in light of those values. Yet we were wrong, terribly wrong. We owe it to future generations to explain why (McNamara, 1997, p. xx).

This quotation came from the preface of McNamara's memoir *In reflection*. In it, McNamara underscored the real and disastrous consequences of actions that do not reflect the principles decision makers intend to use. McNamara's actions and the actions of his colleagues reflected an implicit and unrealized set of principles, a set that did not reflect the principles and traditions of this nation. Giving decision makers an analytical tool that can help identify their principles will give decision makers the opportunity to face what principles did or did not guide their decision making. If decision makers do not know what their principles are, then they might unknowingly assume they are on one path when they are actually on another.

The remaining chapters include a literature review, a discussion of my research methods, the case studies and cross-case analysis, followed by a discussion, implications, and conclusion chapter.

# Chapter 2: Literature Review

## Overview

Kelly (2011) argued that the purpose of a literature review was to provide the historical background and justification for a proposed study. This literature review accomplishes this purpose by exploring the historical and current context of the debate between the best practice and principles-focused, developmental evaluation. It also clarifies important terminologies in the study. The review was structured to compare the relevant theories that are implicit and explicit in the contrasting approaches to evaluation, contrasting the theories that support both the best practice and principles-focused, developmental evaluation using Shadish et al.'s framework for evaluation theory (1991). It situates the methodological problem proposed in this study in the theoretical tensions between the contrasting evaluation approaches.

## Historical Background and Context

Patton positioned the best practice and principles-focused, developmental evaluation as contrasting approaches to evaluation that are situated in the historical context of the field. The formal field of evaluation as it is known today emerged alongside the Great Society programs in the United States during the 1960s. The first wave of evaluation professionals came from various social science professions (Shadish et al., 1991). Most early professionals had little experience with direct policy development or modification. As a result, they made optimistic assumptions about the ability of social science to identify the source of social problems and solutions. They naively assumed that solutions implemented could be evaluated in ways that gave clear results, that powerful stakeholders would accept evaluative findings and implement them,

and that modified or new program strategies would greatly ameliorate social problems (Schuman, 1967; Shadish et al., 1991). In addition, evaluators in the early years of evaluation thought evaluations should and could be value free and objective (Scriven, 1983). However, today it is widely accepted that it is impossible to make decisions without values influencing everything from evaluative criteria to weights and instruments (Shadish et al., 1991; Alkin & Christi, 2004). As a result, the debates about the multiple components of evaluation theory have evolved.

Looking at the field's early theories about knowledge construction, it appeared that the earliest evaluators were not well versed in ontology and epistemology. In the 1960s, the field had largely been influenced by logical positivism even though that theoretical perspective had been rejected by philosophers of science 20 years' prior (Shadish et al., 1991). However, the debates about epistemology have eroded the confidence of evaluation professionals to construct knowledge with absolute certainty and have created a more methodologically diverse field. With their emphasis on logical positivism and experimental methods, the early theories of practice were limited to following the questions, sampling, data collection procedures, and analysis strategies of the experimental method. The field is now so diverse that evaluation professionals have to manage many complex decisions about their practice when developing questions, deciding the sample strategy, data collection, and analysis strategies (Shadish et al., 1991).

Shadish et al. (1991) depicted a field that after 30 years had become more tolerant in dealing with the various theoretical aspects of an evaluation, including theories on social programming, use, valuing, knowledge construction, and practice. Donaldson

(2009) argued this shift in the field of evaluation had waylaid Campbell's utopian vision of an experimenting society. However, what has emerged, post-Campbell, in the contemporary debate is a utopian view of creating an evidenced-based society. This has occurred within the context of evaluation not only being utilized by federal or centralized governments, but by all types of organizations, sizes, and shapes. While there is agreement that evidence-based solutions are highly preferable over solutions without evidence, there are still significant disagreements over what is considered credible evidence (Donaldson, 2009). Furthermore, Patton (2011) argued that what was considered credible evidence differed across simple, complicated, and complex situations.

The tensions inherent in Patton's framing of the best practice vs. principles-focused, developmental evaluation placed the debate about these approaches in the center the debate that Donaldson (2009) framed about what constituted credible evidence. However, the debate was not just about what marked evidence as credible. It was more fundamental than that. It was about determining the most credible unit of analysis to be evaluated: the practice, or the principle. Patton has argued for changing the evaluand from a model or set of practices to a principle or set of principles (Patton, 2015). The debate was also centered on the credibility of the value tied to the judgment of the evaluand: best or effective. As noted, this debate between the approaches was situated in the historical and current debates in the field.

## Defining Guiding Principles

At the outset of this research project, one of the challenges was that principles were not defined in the literature. In *Developmental Evaluation*, Patton (2011) did not provide a definition for a principle. Rather, he treated the idea as a sensitizing concept. Instead of prescribing a definition of an effective principle's objective characteristics, Patton defined what guiding principles were through comparative illustration and examples. In this way, Patton treated the definition of guiding principles as a sensitizing concept (Blumer, 1954).

To do this, Patton used various actions that were expressed as best practices or guiding principles. When cooking, for example, a best practice calls for a specific measurement (1/4 of a teaspoon) of salt, where an effective principle would call for the cook to "season to taste." (Patton, 2011, p. 168). When teaching children to read, a best practice would read, "Every primary school-age child should read at least 15 minutes a day" (p. 168), compared to an effective principle, "Children should read regularly and consistently based on their interests and ability" (p. 168). When exercising, a best practice would say, "Engage in 30 minutes of aerobic exercise every day" (p. 168); an effective principle would say, "Create a regular exercise regime that is sustainable to meet your fitness and health goals given your age and lifestyle" (p. 168). As Patton advanced principles-focused, developmental evaluation, he defined a principle as "a fundamental proposition that serves as the foundation for a system of belief or behavior or for a chain of reasoning" (Patton, 2016, p. 22).

Throughout the rest of this chapter, I focus on these two theories or 'approaches' as a way to develop the theory of a principles-focused, developmental evaluation. Patton

(2011) relied heavily on the distinction between best practices and principles-focused, developmental evaluation to define and position the principles-focused approach. I have taken it one step further. I have articulated the theory of the two approaches as a way to develop and distinguish the principles-focused approach to evaluation.

**Guiding Principles as Sensitizing Concepts**

A close examination of Blumer's description of sensitizing concepts revealed that guiding principles were themselves sensitizing concepts.

> Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look. The hundreds of our concepts—like culture, institutions, social structure, mores, and personality—are not definitive concepts but are sensitizing in nature. They lack precise reference and have no bench marks, which allow a clean-cut identification of a specific instance and of its content. Instead, they rest on a general sense of what is relevant. There can scarcely be any dispute over this characterization. (1954, p. 7)

Blumer argued that even though sensitizing concepts "…are grounded on sense instead of on explicit objective traits, [they] can be formulated and communicated" (1954, p. 8). Guiding principles as sensitizing concepts should be formulated and communicated in a way that illustrates their meaning to the experiences of evaluation professionals and program decision makers. Principles, as sensitizing concepts, enable people engaged in evaluation to move from the concept to the specific instance rather than forcing the specific instance into the framework (Blumer, 1954). In other words, we are not able to rely on fixed definitions because of the variation of instances from situation to situation. Blumer argued that the variation from instance to instance is why we need general guides and cannot rely on fixed definitions (1954).

This argument paralleled Patton's (2011) argument that in complex situations, evaluation should be targeted at identifying guiding principles rather than best practices.

Patton argued that best practices like operational definitions were defined too tightly for situations where there was enough variation that technical and social solutions are far from predictable. Guiding principles could guide evaluation professionals and program decision makers as they navigated new, challenging, and changing situations. The role of the evaluation professional was to provide conceptual continuity in describing guiding principles and supporting contextual adaptation and understanding.

One might interpret Blumer's argument for the use of sensitizing concepts as a rejection of empirical observation or evaluation. However, Blumer argued that sensitizing concepts can and should be tested, improved, and refined. "Their validity can be assayed through careful study of empirical instances which they are presumed to cover" (p. 8). Again, parallel to Blumer's argument, Patton argued that principles should focus on the contextual adaptations and interpretations, assessing the effects of the principles and feeding information back to program decision makers. This is the process that occurred in Murphy's (2014) research. Murphy used case studies of youth who were homeless to examine the principles and facilitate reflexive meaning-making with the decision makers. Through this process, the principles were tested, improved, and refined.

This dissertation intends to contribute to expanding the methodology of identifying the principles of an evaluation. But before the methodology of identifying principles can be explored, it is important to situate and contrast the opposing approaches of best practices and principles-focused, developmental evaluation in their respective theories of evaluation. The next section will explore the theories of evaluation that support the contrasting approaches to evaluation.

## Evaluation Theories

Shadish et al. (1991) were the first attempt to create a comprehensive collection of evaluation theories. In their first and second chapters, the authors argued that a good evaluation theory would have five components: a theory of social programming, a theory of knowledge, a theory of value, a theory of use, and a theory of practice. However, the authors argued that most evaluation theorists never actually explicated their theories. As a result, few theorists fully addressed all of these areas in their prescribed approaches. The purpose of *Foundations of Program Evaluation* (Shadish et al., 1991) was to set the stage for broader theoretical development of the field. They did this by reconstructing the theories of major thinkers in the field according to their five components. In his presidential strand at AEA, Cook (2013) said that he viewed this book as an invitation to others to extend the work on evaluation theory.

In the spirit of Shadish et al.'s (1991) original intent, this section of the literature review constructs the theories of the contrasting approaches according to Shadish et al.'s prescription of what constituted good evaluation theory (i.e., the theory of social programming, knowledge, value, use, and practice). The theory of social programming for each approach addressed the nature of social programs. This included how programs were structured, how programs functioned, how they related to other institutions, and their processes for improvement. The theory of knowledge was concerned with how knowledge was constructed about the evaluand. It was concerned both with the philosophical assumptions about knowledge and the methodological implications for producing evidence. The value component of evaluation theory was concerned about the role of values in the process of the evaluation and the use of values in making a judgment

about an evaluand. The theory of use was how results, findings, or the process of the evaluation are used. It also dealt with how evaluation professionals could facilitate and promote use. The theory of practice was concerned with the work evaluation professionals did in their practice. It was the theory that dealt with how to relate to stakeholders, how to develop evaluation questions, and the various day-to-day decisions that were made about any given situation. The following sections draw from relevant evaluation literature in an attempt to develop the theories behind the contrasting approaches. Each section explores how Shadish et al. (1991) qualified good theory for each component, then describes the theory related to that component for both evaluation approaches.

## Theory of Social Programming

Evaluation practitioners believed that evaluation could be used to ameliorate social problems by incrementally improving, terminating, or replacing them with better alternatives. If programs were unable to be developed, improved, or replaced, then the field could not serve its purpose. Therefore, a theory of evaluation must address how it handled improving social programming. Shadish et al. (1991) argued that the social programming component of an evaluation theory should address how programs were internally structured (inputs), the external context of programs, and how social change occurred (outputs).

**The best practices component of social programming.** The best practice theory of evaluation viewed the change of social programs as a top-down process. Best practices were disseminated either within or outside an organizational setting. This occurred after practices were evaluated through experimental, quasi-experimental, or meta-analysis

designs (Patton, 2015). Patton argued that the best practices theory of program change emphasized the need for programs to maintain fidelity to the practice or practices being adopted to improve a social program. Ensuring fidelity to the practice had implications for the internal structure of the program. It reduced the degree of adaptation and innovation that was allowed by program staff. The best practice approach as a top-down theory for changing social programs had fidelity implications for inputs and activities, which were important aspects of the internal structure identified by Shadish et al. (1991). Program stakeholders in this theory trusted the validated best practices and adopted them. Best practices, in theory, were supposed to work in any setting regardless of context (Patton, 2011). Therefore, the external constraints of this approach did very little to shape the program. Rather, the program was a replication of a model that had been validated in another setting (Patton, 2011).

**The principles-focused, developmental evaluation component of social programming.** Patton (2011) argued that principles-focused, developmental evaluation combined a top-down approach and a bottom-up approach in its theory of social programming. The top-down approach had to do with disseminating a validated set of best practices. The bottom-up process of social and program change involved a participatory approach and empowerment evaluation. Patton cited King (2005) and Fetterman and Wandersman (2005) as examples of evaluators who use the bottom-up approach. Participatory approaches utilized program staff and key stakeholder engagement to facilitate change from the bottom up. Empowerment evaluation used evaluation concepts, methods, and techniques to increase self-determination of a

program's beneficiaries. This involved utilizing and leveraging the knowledge and experience the program staff and even participants brought to the table.

The social programming component of how programs and social problems change was the interaction between the top-down and bottom-up approaches in the principles-focused, developmental evaluation approach (Patton, 2011). This approach disseminated guiding principles within the internal structure of a program. The internal structure of program staff and inputs interacted with the external context. The internal structure adapted the principles as it made decisions about how to respond to the external constraints and context. Patton argued that the principles-focused, developmental evaluation approach should be used under conditions of complexity when little was understood about the situation, when complex interdependent factors were relevant, where the system experiencing the intervention was highly adaptive, and when there was high disagreement among stakeholders about what to do (Patton, 2011). The emphasis in this approach was that there was a continuous feedback loop between the internal structure, the external context, and the principles. It is through this interaction and reflection on principles that programs made adaptations as they learned about how their principles put into use were influencing the social problem.

**Theory of Knowledge Creation**

To adopt best practices or adapt guiding principles requires creating knowledge about them. This section deals with theories of knowledge construction in each approach. Comparing the two approaches already reveals subtle differences in how the two approaches construct knowledge. How knowledge is constructed is tied to how it is disseminated and used for improving social programs. While it may seem irrelevant to

discuss, the theories of knowledge construction are important. The knowledge constructed by evaluations affects how billions of dollars are spent on social programs each year (Patton, 2011).

The knowledge component of an evaluation theory was defined by what was special about the knowledge and how it was constructed (Shadish et al., 1991). When the field of modern evaluation got its start, few evaluators had knowledge about philosophy of science (Shadish, 1991). Since then, the field has become an active participant in the paradigm wars and is now well versed in the philosophy of science (Patton, 2002). Shadish et al. (1991) posited that a good knowledge construction component of an evaluation theory would include the ontological, epistemological, and methodological assumptions that supported the theory. Guba and Lincoln (1994) called these inquiry paradigms. Before launching into the specific inquiry paradigms of the evaluation approaches, the next section reviews what precisely an inquiry paradigm is.

**Inquiry paradigms.** This section will review the different elements of a paradigm and then review the paradigms that are most prominent in the field of evaluation. There are various ways of arguing the components of a paradigm. This review will focus on Crotty's (1998) perspective, which included ontology, epistemology, theoretical perspective, and methodologies. Ontology was the study of being or what is. It was the study of the structure of reality (Crotty, 1998). Epistemology was concerned with the construction of knowledge, i.e., with the philosophical grounding of knowledge both in determining its legitimacy and adequacy (Crotty, 1998). Crotty argued there was a spectrum of epistemologies, but the most notable epistemologies were objectivism, constructionism, and subjectivism. These epistemologies provided useful distinctions

when contrasting the best practice and principles-focused, developmental evaluation theories of evaluation. Crotty argued that objectivist epistemology held that meaning and reality were separate from any human consciousness. Constructionism rejected this view. It held that there was no objective truth and that all meaning about the world was constructed as a result of human engagement or interaction with it. Meaning, therefore, could not be separated from the human mind. In subjectivist epistemology, meaning was imposed on the object. The object made no contribution to the meaning-making, it was only our minds (Crotty, 1998).

Crotty connected ontology and epistemology to what he called the theoretical perspective: the philosophical stance that connected the epistemology to methodology. This was what others meant when they referred to scientific paradigms (Patton, 2002; Patton, 2011) or inquiry paradigms (Guba, 1978; Lincoln & Guba, 1994). The philosophical paradigms inherently carried a number of assumptions with them. Knowing and stating these assumptions was important for evaluation theory because the assumptions explained and predicted the chosen methodologies (Crotty, 1998). Greene and Caracelli (1997) argued that the paradigms that were most widely used in evaluation were positivism/post-positivism and interpretivism.

*Post-positivism.* Post-positivism was an inquiry paradigm that evolved from logical positivism. Logical positivism was a paradigm that argued that science could provide "… unambiguous and accurate knowledge of the world" (Crotty, 1998, p. 18). Positivism embraced an epistemology of objectivism or realism (Guba & Lincoln, 1994). Crotty argued that positivism distinguished between facts, which were objective, and values, which were subjective. He maintained that positivists assume that reality can be

known and is value free, culture free, and ahistorical. Post-positivism was a paradigm that maintained objectivist ontology. However, post-positivists tempered their defense of their ability to know reality with certainty. Campbell (1984) argued that post-positivism assumed a humbler epistemology. Research outcomes were no longer absolute, but were probabilistic. However, the post-positivist paradigm still placed a higher value on scientific findings than other forms of knowledge (Crotty, 1998).

*Interpretivism.* Interpretivism was an inquiry paradigm or theoretical framework that assumed constructionist ontology. Constructionism assumed that reality was constructed as human consciousness interacted with objects. In this sense, all reality and meaning were constructed, not discovered (Crotty, 1998). Therefore, the interpretivist paradigm was contrary to post-positivism in that post-positivists assumed an ontological realist position. In Crotty's words, interpretivism "…*looks for* culturally derived and historically situated interpretations of the social life-world" (1998, p. 67). Crotty used a baseball analogy to argue that realist and relativist positions can go together. In baseball, strikes were real in that they were defined by how the game was constructed. Strikes were relative in that the rules of the game can be changed. In this sense, objects themselves were what we made of them (Crotty, 1998).

**The best practices component of knowledge construction.** Patton argued that the best practice theory of evaluation tried to identify the practices that worked best, regardless of context (2011). If we used Crotty's view of objectivist epistemology, then it made sense that the best practice theory of evaluation was attempting to make objective, scientifically validated claims. The dominant theoretical perspective in the best practices theory of evaluation was post-positivism.

Patton (2011) argued that the best practice approach was about identifying, replicating, and maintaining fidelity to the practice that works. Patton was referring to the concept of internal validity. Shadish, Cook, and Campbell (2002) argued that validity was the approximate truth of an inference. Internal validity specifically referred to the generalizations made about the causal or cause and effect variables in the study (Campbell & Stanley, 1963). The best practices approach emphasized fidelity to the practice/model because it made inferences that approximated the truth about what was causing the outcome (Shadish, Cook, & Campbell, 2002).

This theory also emphasized external validity or generalizability (Patton, 2011). External validity was "the warrant for asserting that findings of a particular study generalize to other persons, settings, and times" (Shadish et al., 1998, p. 120). The original meaning of external validity was that if findings were true about the sample, then they would also be true about the population it represented. If this was true, the findings could be generalized beyond the sample to the population. This then allowed evaluators to make generalized statements about what practices work best to the broader population when assessing social programs.

The construction of knowledge about best practices preferred experimental, quasi-experimental designs, and meta-analysis (Patton, 2011, Patton, 2015). Mosteller and Boruch (2002) argued that experimental designs, often referred to as randomized field trials (RFT), were the most effective forms of scientific evidence for determining what worked best. RFTs randomly assigned individuals or groups to one or more interventions and control groups. Randomized selection guaranteed that groups did not differ in observed characteristics. This meant there were no observable factors that would

influence the outcomes to be different between the groups receiving different or no treatments. The best practice approach to evaluation argued that this, then, allowed for a valid comparison to be made about different approaches.

Quasi-experimental designs followed a similar protocol in the overall structure of an experiment. The difference, Reichardt argued (2009), was that treatment conditions were not assigned at random. There were multiple design options available within the quasi-experimental approach, including the pre-post, regression discontinuity, interrupted time series, and the non-equivalent group. All of these studies allowed for comparisons, but did not involve random assignments. Quasi-experimental designs, like RFTs, intended to make generalized inferences about a treatment or practice (Reichardt, 2009). Reichardt argued that quasi-experiments could sometimes offer better results than RFTs. However, that view was highly debated among those such as Cook and Payne (2002) within the best practice theory of evaluation.

Glass (1976) called meta-analysis the analysis of analyses. Meta-analysis used statistical analysis from a large body of individual experimental and quasi-experimental research studies. The purpose was to aggregate and synthesize the findings. This enabled policy makers and evaluators to know as much as we have proven (Glass, 1976). To conclude, RFTs, quasi-experimental, and meta-analysis were the preferred methodologies used within the post-positivist inquiry paradigm of the best practice theory of evaluation. The goal of these methodologies in best practice evaluation was to produce causal knowledge that is generalizable about what practices are best in a given field.

**The principles-focused, developmental evaluation component of knowledge construction.** Patton (2011) argued that principles-focused, developmental evaluation

was different from best practices. The best practice theory constructed knowledge about what was best. The principles-focused, developmental evaluation approach constructed knowledge about the variation of principles in action and their consequences. Rather than requiring validation and fidelity, principles-focused, developmental evaluation represented general truths that were adapted in context rather than scaled for adoption. Adoption of a principle assumed subjectivist ontology and constructionist epistemology. The interaction with the principle was how knowledge about the principle was constructed. As constructs, they were real and relative. They had implications and consequences, but could also be reconceptualized, as seen in Murphy (2014).

This evaluation theory fit within the assumptions of the interpretivist/symbolic interactionist theoretical perspective. Blumer (1969) synthesized the symbolic interactionist perspective, a perspective that holds

- "…that human beings act towards things on the basis of the meanings that these things have for them"
- "…that the meaning of such things is derived from, and raises out of, the social interaction that one has with one's fellow"
- "…that these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he counters." (p. 2)

In the case of the principles-focused, developmental evaluation, knowledge about the principles and its consequences happened through an interactive process. According to Patton (2011), it blended the top-down and bottom-up perspectives. Knowledge of and about principles was constructed through interacting with the principles and with others, whether other program managers, outside stakeholders, or beneficiaries. This was the

process of making meaning. According to symbolic interactionism, it was through the making of meaning that program decision makers used knowledge to support action (Blumer, 1969).

The best practice approach to evaluation was primarily concerned with internal and external validity. This approach to evaluation sought to construct knowledge of the causal mechanisms and made generalized inferences about the effectiveness of those mechanisms. The principles-focused, developmental evaluation approach to evaluation was primarily concerned with constructing trustworthy knowledge as evidence of and about principles. Lincoln and Guba (1985) established trustworthy knowledge as knowledge that was credible, transferable, dependable, and confirmable (1985). It is important to note that within the symbolic interactionist perspective, it is hard to separate the construction of knowledge and the use of knowledge since meaning is tied to action (Blumer, 1969) and the value of interpretations is based on their usefulness in understanding the evaluand (Eisner, 1994).

Credibility, transferability, dependability, and confirmability were useful criteria for judging the rigor of knowledge about guiding principles. Credibility was established if the story held together (Eisner, 1994) or if it rang true to those involved in the field, according to Fetterman (1989). Miles and Huberman (1994) argued that credibility was established by developing a convincing argument that converged conclusions from multiple sources of data, identified areas of uncertainty or rival explanations, accurate conclusions by participants, and the accuracy of predictions if made in the research. Creswell and Plan-Clark (2011) argued that developing credibility required rich, thick description and convening the positionality of the evaluator.

The principles-focused, developmental evaluation approach was about identifying and using general principles that were effective in multiple contexts (Patton, 2011). Transferability, as Toma (2011) argued, meant that knowledge about principles should be useful in other contexts. Marshall and Roseman (2011) argued that this was particularly important in applied case research. Findings from case research were intended to inform others. If the evidence-based principle could not be used for program adaptation in other contexts, its status as a general truth would be in question.

Dependability has to do with design of the inquiry (Toma, 2011). The principles-focused, developmental evaluation approach to evaluation was suited for complex environments (Patton, 2011). In this circumstance, dependability of evaluation inquiry and design when constructing knowledge had to do with how well the evaluation accommodated for changes in environment and the study itself (Toma, 2011). Within the symbolic interactionist perspective, the social world was always being constructed (Crotty, 1998). Rigor and dependability were argued through careful recording and explanation of how and why research design changed (Marshall & Roseman, 2011).

Toma (2011) argued that confirmability was the notion that "…the data can be confirmed by someone other than the researcher" (p. 274). To get to confirmability in the principles-focused, developmental evaluation approach, the data must structurally corroborate its findings (Eisner, 1994). To do this, the evaluation professional must have provided a clear chain of evidence that outlined how the evaluation was framed and how data were collected and analyzed. It also included being aware of the evaluation professional's own assumptions and must consider rival explanations (Miles & Huberman, 1994). Morse (1994) argued that member checking can add confirmability to

data. The problem with member checking in the principles-focused, developmental evaluation approach was that, like evaluation connoisseurship (Eisner, 1994), the approach to evaluation was supposed to help program stakeholders develop new understandings for developing a program (Patton, 2011). Therefore, member checking in this approach was not just about confirmation; it was also about formulating new understanding and meaning.

Patton argued that the primary methodology for identifying principles was through synthesizing case studies (Patton, 2015). Stake (2006) argued that multiple case analysis was useful when research questions sought to understand how the phenomena of interest interacted in more than one context, a pre-requisite for principles to be deemed general truths. When the criterion of trustworthiness (Lincoln & Guba, 1985) was applied to case studies that shed light on or identified principles, the act of constructing evaluative knowledge about principles could support continuous adaptation of the program.

Now that the theories of knowledge construction have been addressed, the next section will address how each develops its theory of use.

**Theory of Use**

The social program and knowledge components of evaluation theories came together in the component of evaluation theories of use. The theory of use described the different types of use, the time frames for use, and how a professional evaluator facilitated use within the respective theory. Most importantly, the use component of an evaluation theory helped evaluation professionals identify the important choices that professionals needed to consider when planning for use (Shadish et al., 1991).

**The best practices use component.** The best practice theory of use assumed an instrumental theory of use. Program decision makers made decisions about changing programs based on the results of valid evidence (Shadish et al., 1991). Patton (2011) described this as the top-down version of social change. In this theory of use, program decision makers trusted the judgments made by professional evaluators. Hancock (2003) called this theory the universalist model of going to scale. By "going to scale," Hancock referred to expanding best practices in new contexts or replicating them within existing contexts. This approach provided universal generalizations. It did not deal with local variability. It assumed the practices adequately accounted for heterogeneity. They were then replicated, directly expanded, or adopted in another context. According to Hancock, the scaling process followed a simple set of rules. This approach did not specify a time frame except that use of evaluation occurred once the final results were published and disseminated.

Shadish et al. (1991) argued that a good evaluation also dealt with how to facilitate use. The approach of scaling up best practice assumed that the adoption of best practices was a rational choice and that high-quality evidence should determine use (Mosteller & Boruch, 2002). Patton (2011) described the best practice theory of use as a top-down approach. The first step was to start with a promising intervention. Once the intervention was standardized and stabilized, it could be rigorously tested with experimental methods. Once the testing was complete, a judgment was made, and the results were published and disseminated. They were often disseminated through various databases or knowledge bases that are now available online. It was through the dissemination of the best practices that decisions about adopting the model were made.

Once the model was adopted, the evaluative support was aimed at maintaining its fidelity. It was through this theory of use that the social benefit of improving social programs within the best practice approach to evaluation occurred. In this theory of use, the key decisions about use rested on the quality of evidence. Thus, the priorities of evaluation professionals in this setting were to produce scientifically rigorous evidence for use (Mosteller & Boruch, 2002).

**Principles-focused, developmental evaluation use component.** The principles-focused, developmental evaluation theory of use assumed incremental use (Patton, 2011). Patton argued that this approach to evaluation supported ongoing adaptation within a continuous improvement process. In this approach to evaluation, the evaluation professional worked with stakeholders to make judgments about evaluative findings. The judgments supported decision making about whether to and how to develop the existing program. This process was referred to as the contextualist approach to going to scale (Hancock, 2003). In this process, the practices that were scaled within a setting were dictated by the principles guiding the program's development within the context. The emphasis on adapting practices to contexts emphasized that this approach accounted for local variability. According to the contextualist view of scaling, principles functioned to influence, enable, or inspire adaptation. The role of the professional evaluator in this setting was to work with program teams to continuously develop a program or strategy. To do so, evaluation professionals needed to be aware of when and how decisions about the program were made so that the timing of the professional's work could support the design team's decisions.

To facilitate use, evaluation professionals became a part of the program design team (Patton, 2011). Their role was to help program teams identify principles and collect evidence on the effects and consequences of those principles. Evidence could be used at the outset to design a program to determine the set of principles that would support decision making, as in Murphy (2014). Or, as in this study, evidence on the principles could be collected after a set of principles had been inductively identified by an evaluation professional (M. Q. Patton, personal communication, August 9th, 2013). This theory of use blended the top-down and bottom-up theories of use in evaluation (Patton, 2011). It enabled information about the effects and consequences of the use of principles in multiple contexts to feed into the design team. At the same time, it enabled the design team members to make decisions about how to develop the program. In this sense, to facilitate use, the evaluation professional facilitated the interpretive process between the top-down and bottom-up processes. This was reminiscent of Eisner's (1994) connoisseurship process of evaluation. Evaluation connoisseurship helped program stakeholders interact with the evaluand and understand its variation and nuances in new ways to support judgment and ongoing development.

**Theory of Value**

Most theorists and evaluation theories did not have explicit theories of valuing (Shadish et al., 1991). The authors argued that a good evaluation theory would address how it handled a) meta theory, its justification for valuing; b) prescriptive theory, a theory that promoted a specified set of values; and c) descriptive theory, the theory that illustrated values, but did not promote one value over another. In Shadish et al.'s (1991) view, a complete theory would describe how it handled all three levels of values.

Therefore, an evaluation theory would state which kinds of values it attended to, why, how, and its justification for making judgments based on those values.

**The best practices value component.** The goal of the best practice approach to evaluation was to find what set of practices worked best at solving a specified social problem (Patton, 2011). The preferred methodologies were experimental, quasi-experimental, or meta-analysis (Patton, 2015). As previously argued, this approach ultimately put the responsibility of judgment of the merit, worth, and value of the practices on the evaluation professional (Scriven, 1967). The preferred methodologies were experimental in nature, and the justification for valuing was in the comparative nature of the methodologies. Experimental methods compared a set of practices on a fixed outcome measure with a control group, a planned variation (Yeh, 2000), or alternative treatments. When properly specified, sampled, and controlled, evaluation professionals could use the results of evaluations that used experimental methodologies to justify their judgments about which practices were best (Mosteller & Boruch, 2002; Cook & Payne, 2002).

The assumptions of the post-positivist inquiry paradigm were latent with values about what constituted high-quality evidence (Crotty, 1998). In this sense, the best practices approach to evaluation's prescriptive theory was focused on the values that prioritized experimental methodologies over non-experimental methodologies. The value that this approach prescribed above others was its presumed objectivity. However, this approach, like almost all other approaches to evaluation, was attentive to descriptive values (Shadish et al., 1991). Weiss (1970) argued that all evaluations were political acts. As an approach that is engaged in a political process, this theory of valuing tended to

prioritize the values of stakeholders centralized at the top of the top-down decision making model, whether it be large non-profits, foundations, or governments (Patton, 2011).

**The principles-focused, developmental evaluation values component.** The goal of the principles-focused, developmental evaluation approach was to help decision makers and program staff adapt and develop their program (Patton, 2011). The preferred methodology for conducting evaluations in this approach was through the use of case studies (Patton, 2015). Within this approach, case studies could be used to identify the implicit principles of an existing program. They could also be used to help capture knowledge about the effects and consequences of a set of principles. Since the goal of the approach was adaptation, the evaluation professional in this setting justified its theory of valuing by taking a pragmatist stance. Biesta (2010) argued that within the pragmatic perspective, the only knowledge that could be constructed was about human action and its consequences. Judgment about knowledge of human action and its consequences was ultimately about whether the knowledge was useful (Eisner, 1994). The value of the knowledge or evidence in support of a principle was judged by whether or not it helped a program develop. In this approach, the interpretive work was done together with evaluation professionals and design teams (Patton, 2011).

Similar to the best practice approach to evaluation, this approach to evaluation did not explicitly prescribe a set of values. However, a latent value that was subtly prescribed was utility. The prescription of utility was latent in the methodological choices in the same way that objectivity was latent in the best practice approach. The way knowledge about the evaluation was judged was through the descriptive values of the evaluation's

stakeholders. In similar fashion, this approach attended to the values of the evaluation's stakeholders. However, this approach was different in that the stakeholders were engaged in developing and adapting a program, not making decisions about which model it should replicate (Patton, 2011). Therefore, the values used in this approach were less centralized than the top-down approach, but more centralized than the bottom-up approach.

**Theory of Practice Component**

Shadish et al. (1991) argued that the theory of practice of an evaluation theory should enable professionals to make decisions about which theories to draw from in their practice. This component incorporated the four other components in the theory and provided a synthesized view of the theory. The theory of practice component described when an approach to evaluation should be used, what it is, what its purpose is, the role of the evaluator, the questions it should ask, the evaluation design, and how to best facilitate use.

**The best practice component of practice.** According to Patton's view (2011), the best practice theory was best suited for simple situations. In this context, promising interventions must be identified. They must be standardized and controlled. They needed to be easy to replicate. Local variation and heterogeneity could not be important factors in determining outcomes. The purpose was to compare which intervention or set of practices was most effective at achieving the intended outcome. The evaluation professional's role was to be the outside expert and judge. It was the evaluation professional's responsibility to develop summative questions. These questions were used to develop experimental, quasi-experimental, or meta-analysis designs. The designs were intended to help the evaluation professional judge which intervention best achieved the

intended outcome. According to the top-down model of facilitating use, the evaluation professional's job was twofold. First, he or she promoted the replication of the identified best practice. Two, he or she conducted evaluations on the implementation of the model to ensure fidelity to the intervention. Figure 2 models the sequence of the best practice theory of practice to evaluation.

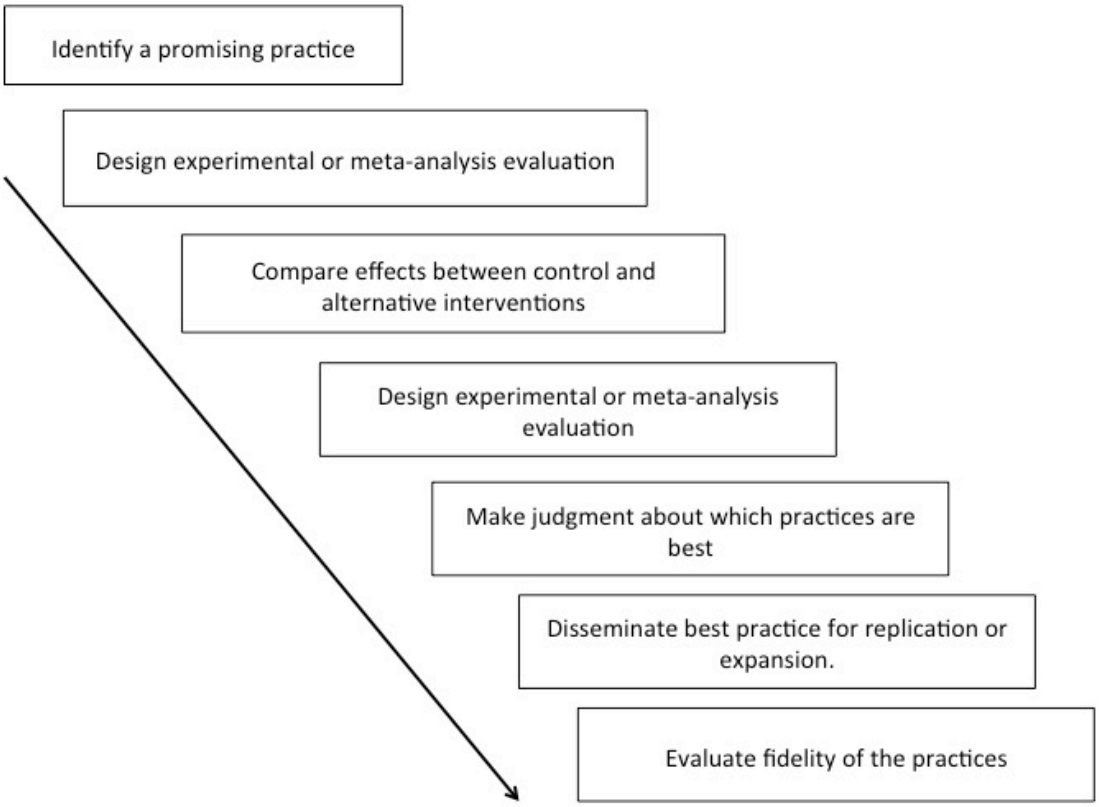


*Figure 2.* The best practice theory of practice adapted from Patton (2011).

**The principles-focused, developmental evaluation component of practice.** According to Patton's view (2011), the principles-focused, developmental evaluation theory was best suited for complicated and complex situations. Rather than prescribing summative judgments like the best practice approach, the purpose of this type of evaluation was to support program stakeholders in their ongoing adaptation and development of their program. This happened through identifying principles or providing

information on the consequences of using principles. This cycle built an evidence-base. The evaluation professional in this setting was part of the design team. He or she worked with the program developers to develop questions intended to support the program's development. The questions were framed to develop understanding about the consequences and effects of the principles and how the adaptation varied in different contexts. The intent was for the evaluation to be useful to the design team so that the evaluation professional could make decisions about methods and analysis with the stakeholders. Patton's view was that the case studies were the best methodology for conducting analysis and developing evidence on principles. As a member of the design team, the evaluation professional in this setting supported use by facilitating reflection for adaptation based on the evidence of the effects of the principles in action. Figure 3 models the sequence of the evidence-based principle theory of practice.

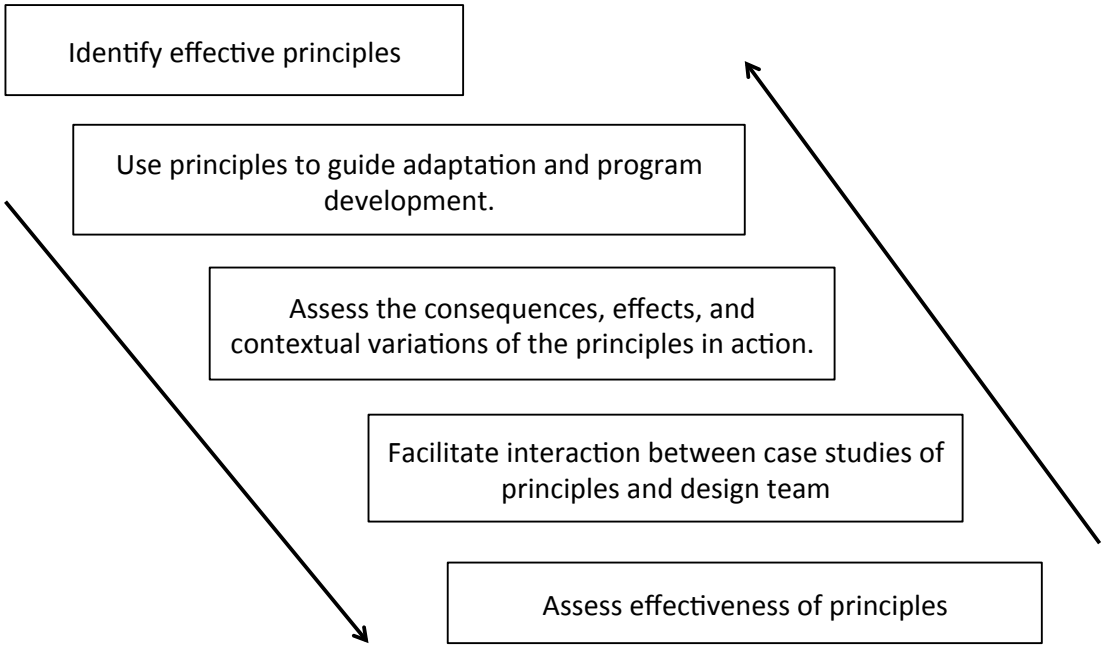


*Figure 3.* The principles-focused, developmental evaluation theory of practice.

## Conclusion

This literature review has explored the historical and theoretical tensions between the best practice and principles-focused, developmental evaluation approach (Patton, 2011). I highlighted the distinction between the two approaches to help developmental evaluation evolve with theoretical grounding Patton reconciled the two approaches and argued that each had its own purpose, which was dependent on the complexity of the situation. The pragmatic perspective was comfortable with Patton's reconciliation. However, it is possible that the ontological assumptions that evaluation professionals made about how complex and knowable the world was may be the source of the disagreement between the two approaches, rather than the complexity of the situations being evaluated (Shadish et al., 1991). Hence, there is likely to be continued disagreement about the applicability of either approach to evaluation, depending on the evaluation professional's or client's ontological assumptions.

Nevertheless, the problems related to the evidence-based principle focused evaluation that were identified in Chapter 1 remain, i.e., how do evaluation professionals identify principles? The proposal in this research is to use a multiple case study methodology. This methodology, as we have seen throughout this chapter, aligns well with the theories of the principles-focused, developmental evaluation. The next chapter will discuss how the methodology was used in this study.

# Chapter 3: Research Methods

## Rationale

This dissertation research used a multiple case study design as outlined by Stake (2006). Patton (2015) has argued that case studies were the preferred methodology both for identifying principles and for constructing evidence on the effectiveness of principles. The cases in my research consisted of three program developments, each an evolution within the CCRP. I structured the analysis of each case and the cross-case analysis to demonstrate which principles helped shape the development of each initiative and, consequently, the CCRP. The tradition of using case studies to uncover the cause of an unfolding event was well established in case research (Yin, 2014).

Scholars have varied in their agreement about whether or not case studies were actually a methodology. Creswell (2013) viewed case studies as a methodology similar to grounded theory, narrative research, or phenomenology. Others have viewed case studies as a decision about what to study, not an explicit method or methodology (Patton, 2002; Flyvbjerg, 2011). While there was debate in the field among Creswell and Patton, Flyvbjerg, and Yin, each of the qualitative scholars agreed that case studies have several advantages and are a justifiable approach to research.

First, as Flyvbjerg (2011) and others have noted, case studies used rich detail and provided more completion, understanding of the variance, and in-depth analysis of the bounded unit than a statistical cross-unit analysis could (Patton, 2002; Stake, 2006; Yin, 2014). Case studies also highlighted factors that influenced the development of the unit of analysis over time. Finally, cases were able to place focus on the context or environment in which the unit of analysis was situated (Flyvbjerg, 2011). The richness of detail, the

exploration of factors that lead to development, and the focus on context are why I chose the case study approach for this dissertation research.

## Case Selection

As previously described, the CCRP was a complex grant-making program of the McKnight Foundation. The CCRP funded agriculture and development research in 12 countries in South America and sub-Saharan Africa. The CCRP was also a capacity-strengthening program. It provided technical, research methods, and evaluation support to the projects it funded.

The units of analysis that I selected as case studies were three separate, but interconnected emergent developments that occurred during a time of CCRP's financial expansion. I selected program developments because Patton (2011) argued that it was the act of making decisions, also known as "fork in the road" moments, where the consequences and effects of principles were most evident.

The cases varied in size and significance. However, they each dealt with different domains of the program. The first case I selected was Integrated Monitoring, Evaluation, and Planning (IMEP), the evaluation framework and process designed by the CCRP leadership team. The second case I selected was Agroecological Intensification (AEI), which became CCRP's guiding framework for its research and capacity building work. The third case I selected was Multi Environmental Trial Initiative (METI), one of many capacity building initiatives that emerged through the Research Methods Support grant.

The rationale for choosing each case was clear. First, in each case, the CCRP dedicated time, financial, and human resources to develop part of the program. Second, each decision was a bounded unit of analysis. They happened at different points during

the program's development and covered specific CCRP content areas. IMEP was related to evaluation, AEI was specific to agriculture systems, and METI was a research design and methodological approach. Third, each decision had implications for the different scales of the program, including the program-level, regional-level, and project-level scales.

The next section of this chapter discusses the design of each case study. Before I discussed these designs, I wanted to explain a decision made as the study progressed. As I explored the CCRP's documentation, I discovered that the CCRP leadership team had developed a pattern of discussing its principles and the concept of principles. I analyzed the historical evolution of the leadership team's documented discourse on principles. This portion of my research provides a basis for triangulating the principles I observed in the three cases. This was not a planned part of my research, but it emerged as a critical component.

## Design

Patton (2015) has argued that research design, particularly qualitative research design, was a never-ending process. This was certainly true for this study. Several aspects of the design did not occur as initially planned. My design's clarity in structure, data collection, and analysis became more salient the further along I went. Throughout this chapter and the remaining chapters, I have tried to provide insight into the design decisions I made throughout the study.

## Data Sources

For each case study, I used three types of qualitative data: document review, interviews, and observations. Below, I describe how and why I used each type of data and how the design evolved from my initial plan.

**Document review.** The CCRP was a prolific entity. The leadership team documented much of its thinking and processes through internal publications and meeting notes at the regional and leadership level. I used document review to help piece together the history or process of each case (Patton, 2002). The CCRP collected rich meeting notes that contained many of the formal discussions about each program's development. When I interviewed the leadership team, I asked them about concepts that were developing in the previous three to five years. The meeting notes provided additional detail about each initiative's development. In most cases, the meeting notes provided detail that leadership team members could not recall in our interviews. I also used document review to identify corroborating evidence (Yin, 2014).

As I mentioned above, I was able to identify where in CCRP's meeting notes the leadership team had previously discussed its guiding principles. These documented discussions helped triangulate my findings. This source of data was particularly significant because it provided credible evidence to support the purpose of this study, i.e. to test and develop a process within the emerging field and practice of developmental evaluation for identifying a program's guiding principles. Rather than using a member check process, I was able to validate my conclusions based on a pattern of discourse the leadership team had already had.

I have included a table of all of the documentation from the CCRP that I used. The documents were internal, so the naming conventions were not consistent. In turn, I created a convention that served the purpose of this work. The names and abbreviations of the documents accurately reflect the content of the documents, but in most, the names given to each document were not the titles that were used on the document.

Table 1

*CCRP's Documentation*

| **Reference Abbreviation and Citation** | **Name of CCRP Document** |
|---|---|
| (CCRP Handbook, 2008) | CCRP Operations Handbook 2008 |
| (LM 1 Notes, 2009) | Leadership Team Meeting 1 Notes 2009 |
| (LM 1 Agenda, 2009) | Leadership Team Meeting 1 Agenda 2009 |
| (IMEP, 2009) | Integrated Monitoring, Evaluation, and Planning Design for IMEP 2009 |
| (LM 2 Notes, 2010) | Leadership Team Meeting 2 Notes 2010 |
| (Nutrition Notes, 2010) | Agriculture and Nutrition Meeting Notes 2010 |
| (LM 3 Notes, 2011) | Leadership Team Meeting 3 Agenda 2011 |
| (AEI Notes, 2011) | Exploring Agroecological Intensification as a Framework for Research and Development for Smallholder Agriculture Meeting Notes 2011 |
| (LM 4 Notes, 2012) | Leadership Team Meeting 4 Notes 2012 |
| (Linking Social and Technical Notes, 2012a) | Framing the Linking Social and Technical Innovation Workshop Meeting Notes 2012 |
| (Linking Social and Technical Notes, 2012b) | The Linking Social and Technical Innovation Workshop Meeting Notes 2012 |
| (Linking Social and Technical Notes, 2012c) | Integrating the Linking Social and Technical Innovation Workshop Meeting Notes 2012 |
| (LM 5 Notes, 2013) | Leadership Team Meeting 5 Notes 2013 |
| (Gates Planning Notes, 2013) | Gates Planning Leadership Team Meeting, 2013 |
| (M&E Plan, 2013) | CCRP Monitoring and Evaluation Plan 2013 |
| (LM 6 Notes, 2014) | Leadership Team Meeting 6 Notes 2014 |
| (FRN Notes, 2014) | FRN Planning Meeting 2014 |
| (LM 7 Notes, 2015) | Leadership Team Meeting 7 Notes 2015 |

**Interviews.** For this study, I used semi-structured qualitative interviews as a data collection method. Arguably, qualitative interviews were one of the most important sources of information for a case study (Yin, 2014). Qualitative interviews allowed me to enter into others' perspectives about situations and objects that were not immediately observable to themselves, including how my respondents thought about, felt, or understood the intentions and purposes of each case. I also used the interviews to piece together events from the document review (Patton, 2002).

In total, I conducted 20 interviews. Fifteen were with members of CCRP's leadership team. Five were with leaders of CCRP's funded research grants in Southern Africa. I used a semi-structured interview protocol for both sets of interviews. All but one leadership team interview was conducted over Skype. Before each interview, I sent the guiding questions to each leadership team member. It gave the members a chance to prepare for the interview (Thomas, 1993). Each interview was digitally recorded and then transcribed.

The five project leadership interviews were conducted in person during the SAf CoP meeting in Mozambique. Unfortunately, the interviews with project leadership did not provide very useful data. What I discovered was that IMEP, AEI, and METI were important concepts for the CCRP leadership team, but, for the project staff I spoke with, each of the program developments was far less significant compared to the value placed on them by the leadership team. In retrospect, it made perfect sense. The CCRP leadership team expanded its approach, doubled the size of its grant making, and needed to find its niche. The leadership team needed IMEP, AEI, and METI to do their work. But research teams, led by Senior Research Scientists, came to the CCRP with their own

research agendas and approaches. They needed CCRP's financial resources. While they all spoke fondly of IMEP, AEI, and METI, they did not provide insight into why and how these programs developed. However, I was able to collect that rich detail and description about why and how IMEP, AEI, and METI developed from leadership team members.

Before I interviewed each member of the leadership team, I committed to protecting their anonymity. In many instances, it was hard to do. However, I did remove all the names from my analysis and assigned each member of the leadership team a number. When I used quotations or made a reference to an interview, I felt it was important to provide the source. For example, leadership team member Keith Miller would be known as (LT 17), had I interviewed myself.

**Observations.** It should be noted that I am a CCRP insider. At the time of this study's submission, I had worked with the CCRP as a graduate assistant for four years and an independent consultant for one. I joined the CCRP as IMEP and AEI were solidifying and METI was just emerging. In my capacity, I was responsible for official note-taking during CCRP's leadership team meetings. My duties in this role started with the fourth leadership team meeting in Faro, Portugal in 2012 and ended in Seville, Spain in 2015. The official record of these meetings was my responsibility.

I say this because much, but not all, of the documentation I relied on to construct the history of the CCRP's principles, IMEP, AEI, and METI came from my role as official note-taker. As I planned my study, I envisioned that observation would be a vital source of data in my design. I soon realized that the observations of the leadership team meetings and CoP meetings that I had proposed were not as useful as I initially thought. The reason was because IMEP, AEI, and METI were mostly stabilized. By the time I

started officially observing the CCRP in a research capacity, the CCRP leadership team was heavily engaged in designing, debating, and experimenting with a newer development, the Farmer Research Network concept.

Where relevant, my observations are referenced in the case studies. However, given that I had observed the CCRP in action for four years prior to my study, my own participation and observation were most helpful with context setting (Creswell, 2013). My participation also helped enormously in the cross-case analysis stage. My participation helped me move beyond the selective perceptions of the interview subjects to include a wider array of possibility than that of my interviews (Patton, 2002). I was able to include my own experiences with IMEP, AEI, and METI to help interpret how they folded into the principles that were prominent in one case, but not the other.

## Case Analysis Process

The qualitative analysis process was distinctly different than quantitative analysis. In quantitative analysis, decisions were made by the researcher. But the analysis usually followed a specific set of procedures, involved mathematical and statistical theory, and was done with software. In qualitative research, decisions were also made by the researcher, but those decisions were inseparable from the analysis that the researcher conducted. In other words, analysis was done in the mind of the qualitative researcher, not with software. Software could help provide structure to qualitative data and analysis, but qualitative analysis was inseparable from the person doing the analysis (Patton, 2015). In the following section, I will describe the general pattern that fit my analysis process.

### Preparation

In preparation for my qualitative interviews, I read through most of the CCRP's program documentation. I used this process to become familiar with the history of the program that I was not a part of and to refresh myself with the history that I was a part of. During this stage of analysis, I coded CCRP's documentation using Nvivo, a qualitative database. During this stage, my coding did not follow a particular pattern or structure. I intentionally started and ended with as much of an open mind and structure as possible. I was trying to learn and expand, not restrict and confine.

**Interview Codes**

Once all of my interviews were conducted and transcribed, I read through each transcript looking for themes or patterns. As I engaged with the data, I realized that I had different types of data: key informant data and general practitioner data. I qualified the key informant data as data that came from leadership team members that were closest to the development of each case. These data provided the greatest detail about the emergence of each case. The general practitioner data came from leadership team members who interfaced with the case, but were not responsible for managing the development. They provided useful data on the general purpose of each program development and how they used each concept.

I also had data that directly referenced a potential principle. In other instances, I had to interpret whether or not the qualitative text fit within the boundaries of the code. The coding was mostly used to organize concepts and perceptions that shared similar conceptual boundaries.

### Writing and Verifying

The writing and verifying stages were the most important for me. When I began the writing stage, I went back to the meeting notes and program documentation. I pulled out the moments from the program documentation that were relevant to my cases and organized them into a structure that would help identify the guiding principles of the CCRP. I looked for debates, discussions, and descriptions of each case. During the writing and verifying stage, there was a constant interaction among my written analysis, my sources of data, and the codes I initially assigned to the text from the interviews and documentation. As I constructed the history of each part of the CCRP, I continuously verified that the inferences I was making could be supported by a qualitative data source. Stake (2006) argued that for every one hour of data collection the case researcher spent, approximately six hours went into reading and writing about the unit of analysis in preparation for the data collection. While there was not necessarily a marker for how long the analysis should take, I would estimate that I spent at least six hours per source making sense of how the data fit within the arch of each case study.

## Cross-Case Analysis

After I compiled the three case studies, I began my cross-case analysis. I defined each potential principle of the CCRP, and identified where, when, and how the CCRP leadership discussed the potential principle and whether or where the principle emerged in each case. If it was not observable, I used my own participation and experience with each of the cases to demonstrate how and whether the particular program development did or did not address the principle.

The following chapter embarks on a journey through the history of the CCRP. IMEP, AEI, and METI were developments of the CCRP. They were nested, as Yin (2014) has described, within a larger unit of analysis. It is with the history of the CCRP that my analysis began.

# Chapter 4: Case Studies and Cross-Case Analysis

## History of the Collaborative Crop Research Program

### Introduction

The focus of the case and cross-case analysis was identifying the guiding principles that helped shape and define the Collaborative Crop Research Program (CCRP). To identify the CCRP's principles, I relied on Patton's definition as "a fundamental proposition that serves as the foundation for a system of belief or behavior or for a chain of reasoning" (Patton, 2016, p. 22). Patton (2011) argued that guiding principles were used to make decisions in complex situations. So, my focus was to identify what propositions appeared in the dialogue and discourse of the CCRP leadership team as it developed each of the three case studies. In particular, I looked for moments where leadership team members had the opportunity to raise questions, critique, or give feedback on each case: Integrated Monitoring, Evaluation, and Planning (IMEP), Agroecological Intensification (AEI), and the Multi Environmental Trial Initiative (METI).

This section of the chapter sets the stage for the Collaborative Crop Research Program, describing its history, the context of the program, and how it has struggled to define its guiding principles. Coming to an agreement about its guiding principles has not been an easy process for CCRP's leadership team. In fact, few program developments have been easy within the CCRP. However, previous attempts to identify CCRP's principles were useful in this project. As I reviewed the leadership team's previous discussions about principles, I realized that the CCRP's previous discussions about its principles would be important for drawing conclusions in the cross-case analysis. These

discussions became a useful source of triangulation. They gave me the ability to compare and contrast the guiding principles generated by the leadership team and the guiding principles I observed in documents, interviews, and participant observation. Unobtrusive sources like this were rare in qualitative research. In this case, these sources strengthened the credibility of the cross-case approach.

It is important to note that the focus of these case studies was to identify the guiding principles that helped shape Integrated Monitoring, Evaluation, and Planning (IMEP), Agroecological Intensification (AEI), and the Multi Environmental Trial Initiative (METI). Because that was the focus, there were pieces and perspectives of the case studies that were left out. Incompleteness is a problem with all types of qualitative work, especially case studies. I was not able to tell the whole story of each case, and there is no doubt that some may disagree with my interpretations of historical events. Nevertheless, hopefully, the quality of the case studies will be evaluated on the analytical process that I described through my analysis. The size of each case varied. IMEP and AEI were both longer than METI. IMEP and AEI were both program developments to themselves. However, METI was a sub-development of the Research Methods Support group and AEI. My intention was to show that this process works for developments large and small.

## The Roots of the CCRP

**Plant biology program.** The CCRP had its roots in the McKnight Foundation's Plant Biology Program. The program was founded in 1983 as a plant research program "to support interdisciplinary research in plant science that could produce breakthroughs leading to greater crop yields" (The McKnight Foundation, 2015, p. 6). The first phase of

the program funded 50 different grants, all channeled to U.S. universities. In the late 1980s and early 1990s, the McKnight Foundation Board put the Plant Biology Program through an evaluation. Through that process, the Board concluded that the program would shift its focus to making "more practical and direct links between plant-based research and the nutritional needs of people in developing countries" (The McKnight Foundation, 2015, p. 6).

**CCRP phase I.** In 1994, the Plant Biology Program became the CCRP with a renewed focus "to make a contribution to the security of food production and human nutrition in less developed countries in Asia, Africa, and Latin America through sustained support of research that is closely and strategically linked to issues of food crop production in those countries" (The McKnight Foundation, 2015, p. 9). The focus of the grants shifted away from U.S.-based university centers and towards collaborations with national research centers outside the U.S., i.e., in Asia and Latin America. The program attempted to invest in a balanced portfolio, funding major global staples such as rice and minor crops like tef and sorghum.

**CCRP phase II**. At some point in the early- to mid-2000s, the CCRP entered a major transition point, prompted by a desire among the Foundation's board members to see results and impacts from the grant making in the program (LT 8). The Board initiated an evaluation process through which a team of consultants was hired to evaluate the program. One of the recommendations from this evaluation was to hire a program director for CCRP. The program director was expected to bring more coherence and to structure the program so that real, on the ground results were palpable (LT 8).

To achieve those objectives, the program went through several changes between the early 2000s and 2008. First, it introduced and began implementing the Community of Practice (CoP) model. The CoP model brought more coherence to the CCRP by funding research projects within specific regions that experienced chronic food insecurity, malnutrition, and poverty. Second, the CCRP shifted its focus away from supporting large international research programs for whom the CCRP's grants were an insignificant portion of their funding (LT 12). Before Phase II, most of the funding went to international research programs or research centers in India and China. The portfolio had little coherence and few discernible impacts besides publications (LT 8). During Phase II, the program started focusing its grant making towards National Agriculture Research Institutes in the Andes, Southern Africa, West Africa, and soon after the East and Horn of Africa through its four regional Communities of Practice.

**The Gates era**. In 2008, the McKnight Foundation entered a partnership with the Bill and Melinda Gates Foundation. The Bill and Melinda Gates Foundation was launching its international agriculture development programs and was experimenting and developing its grant making priorities. One of its strategies was to increase funding to existing agriculture grant making programs as a way to learn and develop its strategies and priorities for agricultural development. The initial partnership lasted five years and doubled the size of the CCRP. Because the McKnight Foundation had doubled the program and had new reporting requirements, it wanted the CCRP to be directed by the Foundation, rather than by an outside institution (LT 8). The structural shift led to the creation of the first International Programs Program Officer at the McKnight Foundation. Shortly after being hired into the Officer role, the Officer was promoted into the

international programs director role. One of the priorities for the program director was to oversee the development of an evaluation system for the program (LT 8 & LT 11).

The dawn of a new partnership encouraged the CCRP to be intentional about identifying its niche as a global program. The increase in funding allowed the program to invest in new concepts and initiatives within the program, including IMEP and AEI. It also created the ability to fund cross-cutting grants across the regions, such as the grant to the Statistical Services Unit from Reading University in the United Kingdom. The cross-cutting grant to Reading provided CCRP grantees with Research Methods Support (RMS). The funding of RMS was what eventually led to the development of the Multi Environmental Trial Initiative (METI).

**CCRP's History of Defining and Engaging Guiding Principles**

This research started with an assumption that the CCRP leadership team had been using an implicit and semi-coherent set of guiding principles to help define, shape, and structure parameters around its program developments. However, what I discovered is that CCRP's guiding principles had not been entirely implicit throughout the history of the program, particularly during the Gates era. The leadership team had explicitly discussed its guiding principles several times before I formally started my research on the CCRP in August 2014. This section described both how and what principles the leadership team discussed, as captured in available meeting documentation since 2009. Figure 4 provides a timeline and overview of the leadership team's previous articulations of its principles

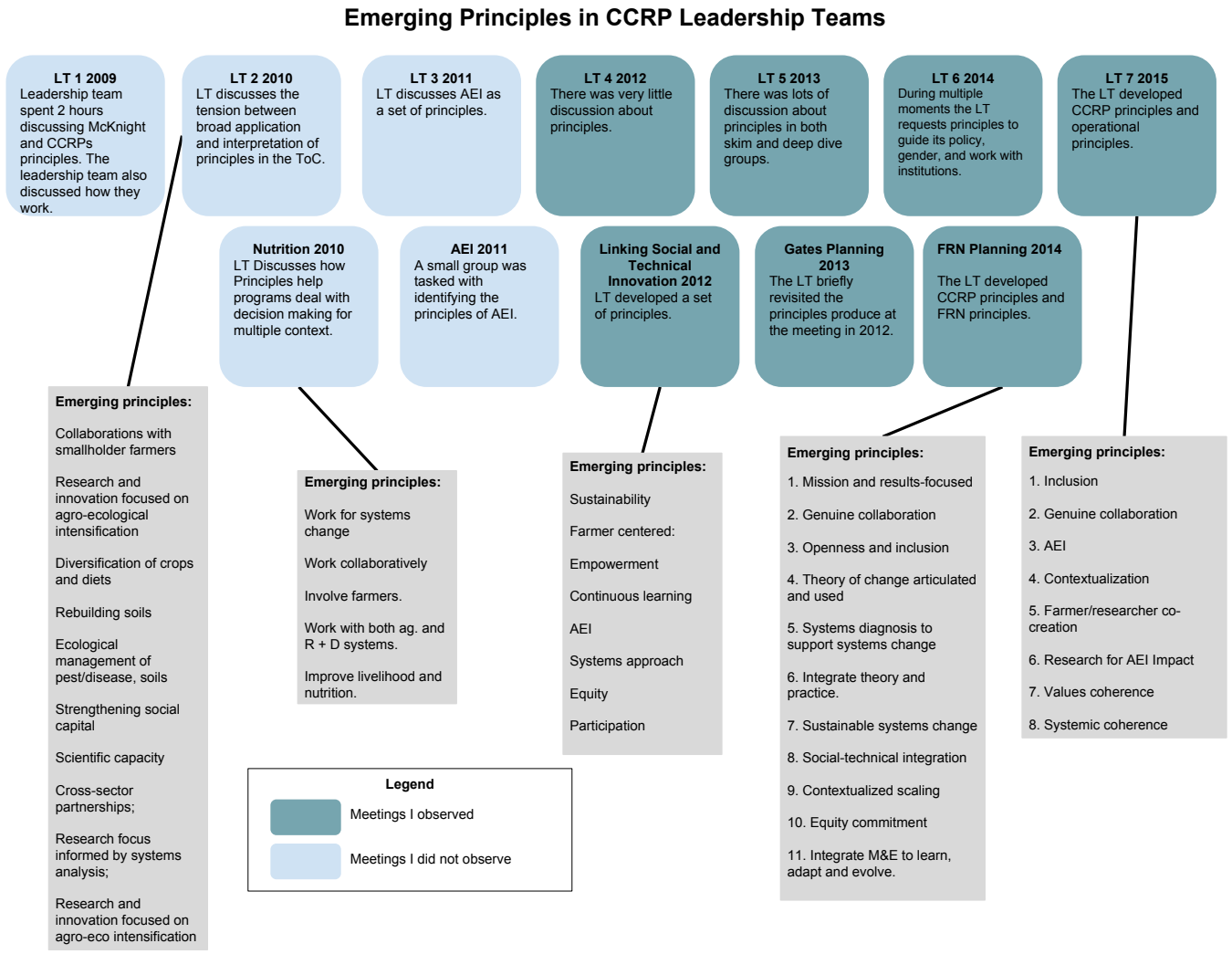


*Figure 4.* CCRP's history of guiding principles.

**Leadership team meeting 1.** The very first leadership team meeting (LM Notes 1, 2009) occurred in 2009 on the beaches of Florianopolis, Brazil. The meeting was the first with the program's new regional structure of regional teams supporting each CoP. The purpose and objectives of the meeting were five-fold: (1) to prepare for adaptive action and IMEP within CCRP, (2) to learn McKnight's procedures and policies, (3) to define CCRP's shared goals, (4) to build relationships within the leadership team, and (5) to review the grant from Reading University. As part of learning the McKnight Foundation's practice of grant making, the leadership team spent approximately two hours discussing the Foundation's guiding principles and the CCRP's guiding principles that guided grant making (LM 1 Agenda, 2009). The explicit guiding principles were not referenced in the meeting notes or in any of the supplementary documents that I could find.

But the leadership team did discuss how CCRP was unique. What came out of that discussion were lists of how the CCRP worked and how it focused its work. These could be considered the first articulations of CCRP's guiding principles. The following list came directly from the first meeting's notes. It is long, but an accurate description of the multiple foci that CCRP had at the time.

How we do our work:

- CoP organization focuses on group learning
- Focus on action on the ground
- Bare-foot innovative science
- Good flexibility around work programs
- Respect for local knowledge
- Strong relationship foundation to grantee – less bureaucracy
- Investing in neglected issues
- True professionals, true partnerships
- Two-way learning North<->South and South<->South
- Sustainability commitment
- Inputs from international, regional, local and none dominates

- Pragmatic, common sense approach
- Embracing complexity
- Regular contacts meetings and visits
- Provision of Technical Assistance to projects
- Synergies between projects
- Support for biodiversity
- Evolving model
- LS & RR & AC working together
- Research and development with focus on results
- Good meetings
- Embedded northern grad students in southern institutions
- What we focus on in our work: Quality, Respect, Pragmatic Collaboration
- Agrobiodiversity
- Orphan crops
- Neglected issues
- Statistics and improve rigor of statistical methods
- Plant physiology
- Specific technical issues (e.g., P efficiency)
- Nutrition and agriculture connection (LM 1 Notes, 2009, pp. 5-6).

**Leadership team meeting 2**. The second leadership team meeting in January 2010 included the first draft of what could be recognized as CCRP's first theory of change (ToC). At this meeting, a member of the leadership team pointed out that "…the principles represented in the ToC can be interpreted in many ways. This is good because it supports the diversity of projects and local needs, but it is confusing because of the wide range of implementations" (LM 2 Notes, 2010, p. 13). I examined the ToC that was proposed on page 12 and identified 11 emerging potential guiding principles within the ToC. I looked for the concepts that provided a foundation for the CCRP's system of reasoning.

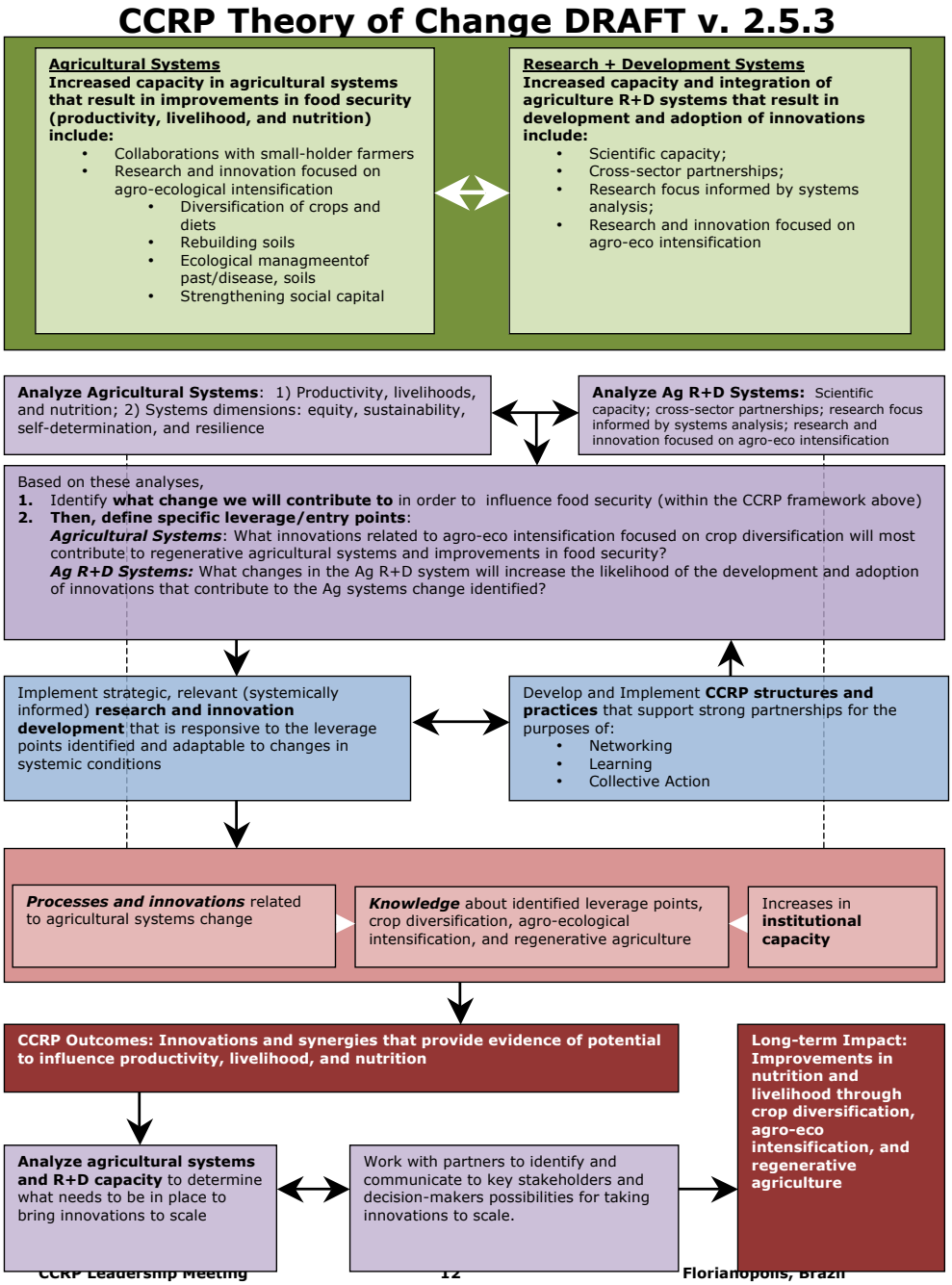


*Figure 5.* CCRP's theory of change from 2012 (LM 2 Notes, 2012, p. 12).

The potential principles I identified included:

- Collaborations with smallholder farmers
- Research and innovation focused on agroecological intensification
- Diversification of crops and diets
- Rebuilding soils
- Ecological management of pest/disease, soils
- Strengthening social capital
- Scientific capacity
- Cross-sector partnerships
- Research focus informed by systems analysis
- Research and innovation focused on agroeco intensification

There was not a specific reference to what the guiding principles were. But a comment from the leadership team member highlighted that the team was grappling with how the international multi-context program would interpret its guiding frameworks across multiple contexts. They were making inferences about what the guiding principles of the program were based on what was captured in the theory of change. In addition, at the close of the meeting, the to-do list in the notes indicated that a subcommittee was responsible for using the guiding principles to update CCRP's vision statement. I was not able to find a copy of those guiding principles.

**Agriculture and nutrition meeting.** In August 2010, the leadership team met in Minneapolis, MN to discuss the intersection of agriculture and nutrition and the implication for its work. The meeting notes captured a conversation and a schematic that

referenced examples of CCRP's guiding principles. The following list is quoted directly from the meeting notes:

- Working for systems change
- Work collaboratively
- Involve farmers
- Work with both Ag and R + D systems
- Improve livelihood and nutrition (Nutrition Notes, 2010, p. 10).

Additionally, the notes described a conversation that the leadership team had about evaluating interventions at the intersection of agriculture and nutrition. The dialogue focused on the various levels of questions and corresponding types of evidence that were required for various types of decisions (Nutrition Notes, 2010, p. 9). The levels of questions that the leadership team considered coincided with the levels of the CCRP: project, region, and program. Within the context of the evaluation discussion, the leadership team also discussed how various M&E questions and subsequent results and findings would be used within the program. Figure 6, taken from the nutrition meeting notes (2010, p. 10), shows how the leadership team conceptualized the use of evaluative conclusions at various levels. Notice how the example guiding principles in the theory of change were contextualized. Basic M&E was conducted, which serves three purposes in this model: (1) scaling up the findings, (2) providing evidence in support of or against the Foundation's theory of philanthropy, and (3) producing evidence in support of or against the program's guiding principles and theory of change.

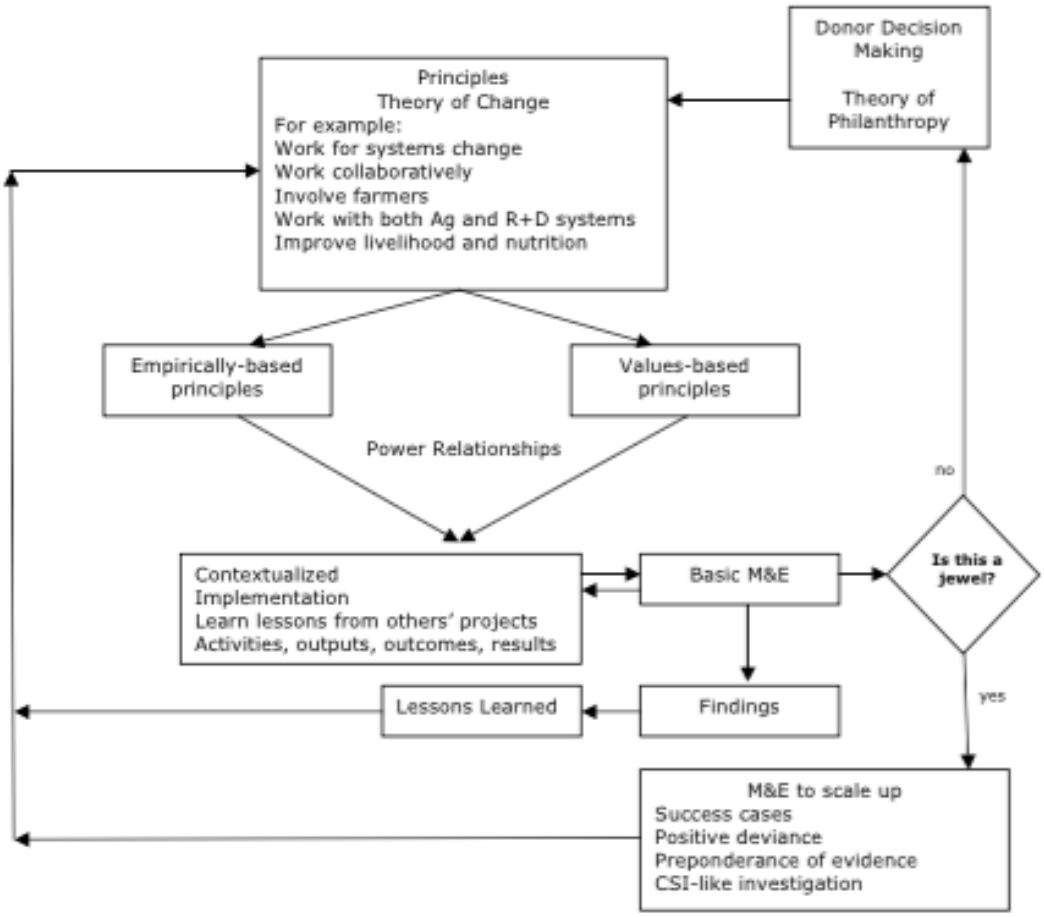


*Figure 6.* M&E and Guiding Principles in CCRP (Nutrition Notes, 2010, p. 10).

At the close of the meeting, participants were asked to share their key insights from the meeting. Some of these insights had to do with the role that guiding principles played in guiding grant making and programming decisions across multiple contexts. They also discussed the role of research methods in supporting the testing of guiding principles across multiple contexts. The discourse in the meeting notes pointed to the fact that the leadership team was embracing a guiding principles-focused approach as a way to organize the program.

**Leadership team meeting 3, thematic meeting on AEI and climate, and leadership team meeting 4.** According to the meeting notes from next three meetings

(i.e., the third leadership team meeting in January 2011, the thematic meeting on AEI in August 2011, and the fourth leadership meeting in January 2012), the leadership team did not explicitly discuss the guiding principles of the CCRP in any of those meetings. The conversations during these meetings shifted to identifying and discussing the guiding principles of AEI, rather than the program.

**Linking social and technical innovation.** Following a noticeable absence of explicit discussion about the guiding principles, the CCRP leadership team picked up the discussion again in August 2012 at the Linking Social and Technical Innovation thematic meeting. The purpose of this meeting was to "explore strategies and approaches through which CCRP might improve how our grantees and CCRP link social and technical innovation in the locales and communities we serve" (Linking Social and Technical Notes, 2012b, p. 6). In this meeting, the leadership team discussed guiding principles twice. The first instance was in the context of the core-4 being introduced to the leadership team. The core-4 was a research for development framework that was developed by a small group in the leadership team. It provided a conceptual structure of the research process held by the CCRP leadership team. The core-4 made an explicit reference to drawing on guiding principles to develop or test within a proposed agriculture research intervention.

The second conversation about principles was explicit in its purpose to identify the principles of the CCRP. On the last day of the meeting, someone recognized that "we need to talk about developing our guiding principles and integrating them into the grant process. These guiding principles in action led us to the nexus of social/technical" (Linking Social and Technical Notes, 2012c, p. 4). The leadership team worked on

developing guiding principles that guided CCRP's work in linking social and technical innovation. Groups produced and presented the potential guiding principles. The guiding principles were written on note cards and organized by theme as a group. The themes included:

- Sustainability
- Farmer Centered/Participation
- Evidence
- Empowerment
- Agroecological Intensification
- Systems Approach
- Equity
- Participation (Linking Social and Technical Notes, 2012c, p. 9).

The leadership team also worked on revising the program's theory of change. Within that section of the meeting notes, the team proposed editing the theory of change so it included a guiding principles section (Linking Social and Technical Innovation, 2012c, p. 10).

**Leadership team meeting 5.** In January 2013, the leadership team gathered in Faro, Portugal for its fifth meeting. This meeting was where the notes documented an elevated level of discourse and debate over principles within the program. During LM 5, the leadership team worked on deepening and improving several of its core processes. Team members identified promising practices within the Inception Period, Monitoring Checklist, CoP Meetings, Work Plans, Mid-Year Reviews, etc. Most of what was developed through this session were suggestions and promising practices. But the group that worked on the CoP meetings reported promising guiding principles instead of practices. Identifying promising guiding principles continued to be a part of the discourse during additional topics in the meeting. The leadership team also identified guiding

principles to help the research methods team plan the next phase of their grant. The guiding principles they identified included the following:

- Start with the end in mind, particularly with the objectives you are trying to achieve.
- RM (research methods) members should remain a part of the RT (regional team).
- Agree on major objectives – but with built-in flexibility as opportunities arise.
- Participate in landscape analysis with RTs.
- We want to be really clear about their role in Symon going forward? [sic]
- Use data we have for reflective learning to help in design of phase II (LM 5 Notes, 2013, p. 33).

Throughout the week, the leadership team worked on various "deep dive" topics. The purpose of the deep dives was to spend a significant amount of time discussing issues that needed more development within the CCRP. Within some of the topics, the CCRP leadership team worked on, developed, and proposed developing guiding principles for their work. The deep dive topics included context, engagement, broadening systems impact at scale, and capacity-strengthening.

Finally, in 2013 the CCRP initiated a gender audit of the program. The program hired external consultants to facilitate the review. During the meeting, the leadership team was asked to discuss the proposed design and questionnaire that the gender audit team would use. The leadership team asked several questions, including,

> Do we outline the guiding principles and some possibilities of a strategy for gender first, then do an assessment? If so, what are possible guiding principles and strategies at the project level? What are the principles and possible strategies for addressing gender at the institutional strengthening level of the CCRP? Should the strategy be developed at the regional level with guiding principles that guide the strategies at the program level? (LM 5 Notes, 2013, p. 69)

The meeting notes indicated an evolution in the level of discourse about guiding principles and programs being principles-focused. The leadership team did not engage

with the program's explicit guiding principles, but it engaged with the concept and developed questions about how principles were appropriate in their work.

**Gates planning meeting.** In August 2013, the leadership team met at the McKnight Foundation in Minneapolis, MN. The purpose of the meeting was two-fold. First, the Foundation had recently commissioned a desk review of the CCRP's work related to gender. The leadership team engaged with the consultants who conducted the review. The discussions were intended to help the leadership team come to some conclusions in regards to how it would incorporate gender into its work. The second purpose of the meeting was for the leadership team to begin the planning process for the second round of funding from the BMGF. The second grant from BMGF incorporated several new initiatives that the CCRP was going to launch, including the Sustainable Legume Intensification Initiative (SLII) and the Farmer Research Network (FRN). What is noticeably absent from the meeting notes was any explicit discussion about guiding principles. The one exception was when a participant mentioned that the list of guiding principles produced in 2012 during the Linking Social and Technical Innovation meeting had not been noticeably integrated into the program's theory of change or other program documentation.

**Leadership team meeting 6.** In January 2014, the leadership team met for its annual meeting in Seville, Spain. What stood out in the meeting notes was that the debate and discourse about CCRP's frameworks and initiatives included explicit references to working from a guiding principles-focused approach. This was a continuation of the pattern that was observed in the previous leadership team meeting (LM 5 Notes, 2014) in Faro, Portugal. The leadership talked about the guiding principles of AEI, institutional

change efforts, and how it engaged with policy and markets. Interestingly, as the Farmer Research Network initiative was unfolding, there was a realization that the FRN was going to be much bigger than just one model. One push from the team was to start articulating what FRNs would be at the level of guiding principles, so the program could start experimenting and learning through a guiding principles-focused approach.

**Farmer research network meeting.** The purpose of the Farmer Research Network meeting that took place at Cornell University in 2014 was to take the next step in planning, as a leadership team, what a Farmer Research Network was and what it would look like. It was during this meeting that I formally began my role as a researcher within the CCRP. On the first day, the leadership team agreed to use a guiding principles-focused approach to build agreement and coherence to define and develop the FRN. Several important discussions took place about the guiding principles that would define and shape FRNs. These deliberations included discussions and negotiations about CCRP's guiding principles. In fact, an emergent draft was developed and proposed to the leadership team. The initial list and definitions are below.

> ***Mission and results-focused -*** The work is guided at every stage by attention to positive and multidimensional outcomes for smallholder farmers and farm families (food, health, income, security, quality of life) and environmental integrity.
>
> ***Genuine collaboration -*** Those directly affected by decisions, procedures, processes, priorities, and frameworks are meaningfully involved throughout (from generating ideas, reviewing proposals, identifying and interpreting implications, resolving implementation issues, making sense of and using results, and ongoing revision).
>
> ***Openness and inclusion -*** Support farmers to express and influence priorities, participate meaningfully in relevant research, and adapt and experiment with technologies. The work is informed at every stage and level by obtaining and honoring multiple perspectives.

***Theory of change articulated and used -*** The theory of change is used to guide decision-making [sic], strategic thinking and actions, and evaluation. Theories of change at the CCRP program level, Community of Practice level, and project level are aligned.

***Systems diagnosis to support systems change -*** The work at every level is grounded in initial situation analysis from a systems perspective, then updated and deepened on an ongoing basis. Engage at multiple levels based on the systems diagnosis. Work to support interrelated changes with individuals, groups, communities, agroecological systems, and institutions. Analyze and engage across disciplines and sectors to support systems analysis and change.

***Integrate theory and practice -*** Contribute to scientific knowledge and farmer knowledge and practice. Frame research with attention to the state of knowledge and practice in science and local contexts, to enhance relevance. Integrate local knowledge and practices with global knowledge.

***Sustainable systems change -*** Support integrated socio-technological change in order to have sustainable systems change. Support diversified systems to increase resilience in agroecological systems. Base locally adapted research and practices on sustainability-focused AEI principles. Include attention to environmental integrity, productivity, profitability, practice feasibility, and social viability.

***Social-technical integration -*** Acknowledging that knowledge is socially constructed and communicated, research, technology development, and other technical work should be informed by analysis and understanding of the social, cultural, political, economic, and institutional contexts within which technical work unfolds, is used, and is disseminated. Enhance and connect social, technical, knowledge, political, and financial capital. Include attention to environmental integrity in social-technical integration.

***Contextualized scaling -*** Develop, research, document, and disseminate relevant options for different contexts to realize contextualized scaling.

***Equity commitment -*** Engage the work in a way that supports gender and socioeconomic equity -- from initial situational analysis (diagnosis) through research design, participatory implementation, and use of results.

***Integrate M&E to learn, adapt and evolve -*** Integrate M&E throughout the work, at all levels, to ensure shared ownership. Question assumptions and bring evidence to bear on the effectiveness of what we do and how we do it through reflective practice; learning and adaptation are built in and supported with time, resources, and intellectual engagement. (FRN Notes, 2014, pp. 39-40)

After the FRN meeting, I was able to be a part of a small team that edited and revised the list above based on survey feedback. Below is the revised list.

> ***Genuine collaboration.*** Smallholder agriculture systems are interdependent with social, economic, political, and environmental systems. As a consequence, the challenges within smallholder farm systems are also interrelated within these systems. Develop meaningful partnerships where multiple stakeholders from across and within sectors, institutions, and social groups work in genuinely collaborative ways.
>
> ***Focus on multi-dimensional outcome*s.** Agriculture is a multi-dimensional enterprise that affects social, economic, and environmental outcomes. Guide the work at every stage by collecting evidence on what contributes to positive, sustainable and multidimensional outcomes for smallholder farmers, farm families, rural communities and the conservation of ecosystem integrity and sustaining of ecosystem services.
>
> ***Build diverse and resilient agriculture systems.*** Profitable, resilient, diverse, and adaptable agriculture systems that utilize locally available resources and ecosystem-services while producing limited negative externalities are what characterize sustainable agriculture systems. Support diversified systems to increase profitability, resilience, stability, and adaptable agriculture systems that utilize locally available resources and ecosystems services. Include attention to minimizing risks to livelihoods, and enhancing environmental integrity.
>
> ***Farmer involvement.*** Understanding the gender dynamics, socio-cultural preferences, preferred genetic traits, constraints, and demands of farmers leads to research on crops, management systems, and knowledge that is more relevant for farmers. Support farmers to participate in shaping agriculture research priorities while studying their social and agroecological contexts as a means to make research more useful and relevant to farmers.
>
> ***Integrate local and global research.*** Useful and innovative research is framed by attending to local knowledge of relevant stakeholders with attention to the state of knowledge and practice within the scientific community. Therefore, support research designs that integrate knowledge of locally relevant stakeholders with the current state of knowledge in the global scientific community
>
> ***Link social and technical innovation.*** The technical innovation process is integrated with social innovation, meaning making, and adaptation processes. Therefore, support change in agriculture and research and development systems by integrating the social innovation, meaning making, and adaptation processes with the technical innovation processes.

***Contextualize scaling.*** Scaling technology or knowledge (research products) is a non-linear process that involves the processes of local discovery and agency, adaptation, and inspiration. This process leads to the tailored and formational use of technology, new knowledge and in some instances can inspire policy changes. Therefore, support the development of technology and construction of knowledge and principles so that farmers and relevant stakeholders are able to adapt technology, knowledge, and principles for their own purposes and contexts.

***Integrate theory and practice.*** Articulating theories about how change occurs supports collective action, decision-making [sic], strategic thinking, and evaluation. This enables programs to identify leverage points for change while putting boundaries on system change efforts. Articulate theories about how change happens at all levels of the program to enhance decision-making, strategic thinking and actions, evaluation and focus.

***Systems diagnosis to support systems change.*** Agriculture systems do not function in isolation. They are comprised of sub-systems such as seed, crop production, management, and marketing systems and exist within macro systems such as climate, research, culture, markets, and policies. Any of the sub-systems or macro systems can have an enormous influence on the multi-dimensional outcomes of agriculture. Acknowledge and work to support how research objectives interact with subsystems and macro systems. This requires situational analysis from every level on an ongoing basis to support necessary interrelated systems change.

***Integrate monitoring and evaluation to learn, adapt and evolve.*** Integrating program monitoring and evaluation across all levels of a program will help enhance adaptive learning, transparency, strategic thinking, and shared ownership. Integrate monitoring and evaluation throughout the work, at all levels, to enhance critical adaptive learning capacity, transparency, strategic thinking, and shared ownership.

***Commit to equity.*** Outcomes and processes of agriculture research can perpetuate and facilitate socio-economic inequality. They also have the potential to support the development of more equitable socio-economic systems. Engage the work in all projects to support socioeconomic equity -- from initial situational analysis (diagnosis) through research design, participatory implementation, and use of results.

**Leadership team meeting 7.** In March 2015, the leadership team met in Seville, Spain. One of the outcomes of the meeting was a breakthrough in defining and making CCRP's guiding principles explicit. A member of the leadership team created a new list of guiding principles built on previous articulations. But the structure and flow of the list

were altered significantly. The list of principles that emerged is in Figure 7 on the following page.

| CCRP Principles | |
|---|---|
| **C – Principles of Collaboration** | **Operational Principles** |
| **INCLUSION**<br>Convene multiple and diverse stakeholders to inform deliberations at all levels and locations of decision-making<br><br>**GENUINE COLLABORATION**<br>Ensure *authentic* collaborative engagement | **Reciprocity**: Build trust based on shared interests & honest interactions<br>**Mutuality:** Negotiate win-win agreements<br>**Realistic engagement:** Start where people are.<br>**Nudge:** Generate movement |
| **C - Principles of Crop and other agricultural systems** | **Operational Principles** |
| **AEI**<br>Apply agroecology concepts, knowledge & principles (AEI)<br><br>**CONTEXTUALIZATION**<br>Conduct contextual analysis | • Frame needs, diagnosis, the CCRP response, pathways of change, outcomes & scaling potential through the lens of AEI and options by context analysis.<br>• Value heterogeneity: Build on & enhance diversity<br>• Include multi-dimensional outcomes<br>• Enhance resilience & sustainability<br>• Look for intersections and interactions among multiple, interrelated pathways of change (e.g., soil health and plant breeding)<br>• Take an integrated long-term perspective while producing short- and medium term results (e.g., Quinoa #1, #2, # 3) |
| **R – Principles of Research** | **Operational Principles** |
| **FARMER-RESEARCHER CO-CREATION**<br>Engage farmers as partners to ensure relevance, use of research processes & results<br><br>**RESEARCH FOR AEI IMPACT**<br>Design and implement research to achieve impact (generating options by context for improving crop systems). | • Enhance quality through capacity building<br>• Integrate local & global research<br>• Link social & technical inquiry<br>• Integrate farmer knowledge into the research.<br>• Incentivize, support & reinforce farmer participation to ensure responsiveness to farmers' needs, knowledge, problems, concerns & constraints.<br>• *Make the research process empowering*: Build social, technical, and methodological capital through the farmer-researcher co-creation process.<br>• Phased and emergent design & implementation<br>• Be utilization-focused: Never collect data without purpose<br>• Ensure two-way flow of communications between farmers & researchers<br>• Secure data for access, aggregation, and future use locally & globally. |
| **P – Principles of Program** | **Operational Principles** |
| **VALUES COHERENCE**<br>Ensure that CCRP work is ethical and grounded in core values.<br><br>**SYSTEMIC COHERENCE**<br>Ensure that diverse levels, elements, dimensions & locations of CCRP are interconnected. | **Values Coherence**<br>• Clarify, reinforce, and incorporate core values: equity, gender, human rights & ethical interactions<br>• Keep the focus on smallholder, marginalized famers<br>• Ensure respect for indigenous culture & knowledge<br>• Empower<br>• Avoid doing harm<br>• Protect those at risk (be defensive when needed)<br>**Systemic Coherence**<br>• Integrate theory and practice<br>• Reinforce systems & complexity thinking throughout<br>• Integrate M&E<br>• Reflective practice, using the adaptive cycle<br>• Connect levels, pathways, regions, outcomes<br>• Connect CCRP to other development institutions & initiatives<br>• Ensure use of the Theory of Change<br>• Mutual accountability<br>• Administrative efficiency<br>• Effective stewardship & investment of scare resources.<br>• Economies of scale in programming<br>• Model of principles-focused collaborative development |

*Figure 7*. CCRP's principles from the seventh leadership team meeting (2015).

The set of principles from the seventh leadership team meeting was important because it struck a new level of balance between generality and specificity. The principles in the left-hand column were general, but they were simple enough that one could hold all eight of them in his or her mind. The sets of operational principles broke each guiding principle into smaller, more actionable propositions. This format for communicating principles helped minimize the number of propositions that users had to hold at one time. Either one held the guiding principles in the left-hand column, or the user held one row of operational principles in the right-hand column.

**CCRP History Conclusion**

My intention in documenting the history of the CCRP was to set the stage and context for the study. I wanted to demonstrate that this study did not happen in a vacuum. I intended to show that the leadership team explicitly wrestled with defining its guiding principles for several years. Because my study did not happen in a vacuum, I have to acknowledge that I was influenced by what I experienced and read. So what I looked for in meeting notes and listened for in interviews and observations was informed by how and what potential guiding principles had been discussed before my study.

I intended to show that using a guiding principles-focused approach was an evolution in the program. Guiding principles had been a part of the discourse of CCRP since the first leadership team meeting. But it was not until the FRN meeting in 2014 that the leadership team committed to action by being a principle-focused program. Finally, this section of the case study was used to ground and triangulate my findings through the cross-case analysis. The research problem that I was most interested in addressing was developing an analytical process for identifying the guiding principles of a program. As a

means of achieving this, I needed the ability to triangulate the findings of the case and cross-case analysis. The following sections discuss the three cases: IMEP, AEI, and METI. Each case focuses on who developed it and how it developed as a means to understand what guiding principles of the CCRP gave shape to each component of the program.

## Case Study: Integrated Monitoring, Evaluation, and Planning (IMEP)

### Introduction

This case study traced the history and evolution of IMEP in the CCRP. IMEP was the CCRP's evaluation process both within the program and for the research projects it funds. The case was written with the specific intent of identifying what potential guiding principles helped shape IMEP as it became an integral component of the CCRP. I traced the case from IMEP's origins and described how it was a contested initiative as it was developed and integrated into the CCRP. The case also draws on interview questions from leadership team members. The potential guiding principles that were identified in each section are included below.

Table 2

*CCRP's Potential Guiding Principles During IMEP's Case*

| Potential Guiding Principle | IMEP's Origins | Integration | Stability | Problems and Opportunities |
|---|---|---|---|---|
| Learning and adaptation | Yes | Yes | Yes | Yes |
| Systems thinking/systems lens | Yes | Yes | | Yes |
| Collaboration | Yes | | | |
| Developing coherence | Yes | | Yes | Yes |
| Use focused | Yes | | Yes | Yes |
| Integrating local and global knowledge | | Yes | | |
| High-quality evidence | | Yes | | |
| Build capacity | | Yes | Yes | |
| Lack of research results | | | | Yes |
| Clarifying assumptions | | | | Yes |
| Linking social and technical innovation | | | | Yes |

**The Origins of IMEP**

IMEP was born during the early stages of the Gates era. During that time, the President of the McKnight Foundation wanted CCRP to operate from within the Foundation. In the year leading up to the partnership with the Gates Foundation, CCRP had been managed out of Cornell University. As the Foundation added outside funding to the CCRP, the McKnight Foundation created a new international program area. The international program area brought together three different programs that had been operating outside of the Foundation. This organizational shift created the need for a new director of international programs. The Foundation hired the director in early 2008.

One reason the Foundation chose the director was because of her utilization and participatory evaluation experience within the field of international agriculture (LT 8, LT 12). She also had experience working with complexity and systems theories in evaluation (LT 11). Hiring a former evaluation consultant into the role of director all but guaranteed an elevated status of evaluation in the CCRP. As one leadership team member put it, "you do not have to convince an evaluator to evaluate something" (LT 15). From early on in her tenure, the program director had developed a vision for embedding evaluative thinking into the CCRP. The task of evaluation had previously been limited in the CCRP. The program dedicated a limited amount of resources to evaluation, and most of the evaluative efforts were put towards post-hoc efforts. The program director's experience with utilization focus, participatory, and systems theories in evaluation informed the initial vision of IMEP.

The leadership team began developing IMEP in 2008, several months before the first leadership team meeting in Florianopolis, Brazil. To launch the process, the director

brought in a team of evaluation and program consultants. This team worked with the program director to help construct the initial phase of IMEP in the CCRP for the first leadership team meeting. The first leadership team meeting (LM 1 Notes, 2009) was where the CCRP leadership team began the process of engaging with and implementing IMEP under a vision that IMEP would "improve performance, coherence, and clarity of purpose across all parts of the CCRP community." (LM 1 Notes, 2009, p. 8). As the CCRP experimented with IMEP, generative dialogue and theory of change were the first conceptual tools used to support IMEP's initial vision.

**Generative dialogue**. According to the meeting notes from the first leadership team meeting, generative dialogue was the first IMEP practice that the evaluation team introduced to the leadership team. In the meeting, generative dialogue was described as a process where groups come "together to consider their observations (what?), discuss possible implications (So what?), and plan next steps (Now what?)." (LM 1 Notes, 2009, pg. 8). The original team of evaluation consultants developed a guide for generative dialogue. Generative dialogue was intended to be a regular practice, a type of meeting that would occur on a regular basis. The guide that IMEP team created included a format for participants to prepare and use during generative dialogue meetings. The guide on generative dialogues included detailed instructions on how to use meeting space, time, and logistics for generative dialogues.

The generative dialogue was intended to support the three levels of the program together: program, region, and project levels. The first leadership team is an example of how generative dialogue was supposed to be integrated into a meeting process. To prepare for the first leadership team meeting, each participant was given a presentation

guide. The guide was titled, “Generative Dialogue: What? Guide for Preparation.” The purpose of the guide, as stated in list form, was to:

- Undertake the first part of the IMEP Generative Dialogue process (answering the “What?” questions given on the subsequent pages) and
- Provide high-level overviews of regions, so that everyone can begin to explore the patterns that inform CCRP as a whole (LM 1 Presentation Guide, 2009, np).

Generative dialogue as an explicit IMEP practice and a type of meeting did not make it past the first year of IMEP implementation. In fact, it was difficult for some to buy into the idea that this was supposed to be a core tool for program evaluation. Future meeting notes do not mention generative dialogue, nor do they appear in future IMEP documents. But a central concept of the generative dialogue experiment did stay with IMEP: the adaptive action cycle of reflective practice. The adaptive action cycle in IMEP relied on the same three questions as the generative dialogue: “What? So What? Now What?” Adaptive action as a theory behind IMEP can be found in IMEP’s latest handbook (IMEP Handbook, 2015), it is incorporated into the Mid-Year Review process for projects, and it finds its way into framing sessions of CoP meetings and sections of the leadership team meetings.

**Theory of change.** The CCRP’s program theory, also known as theory of change, was the second practice that was intended to help IMEP achieve its vision of developing clarity and improving performance and coherence. According to the meeting notes from 2009, this was one of the first conversations about using logic models and theories of change in CCRP’s work. The concepts and tools were initially introduced as a means of helping the CCRP leadership team develop its strategy as the program entered a new partnership with the Bill and Melinda Gates Foundation. In fact, the 2009 meeting notes

documented five uses and motives that were listed in support of using theories of change. Theories of change:

- Promotes shared meaning making
- Drives intentional and collective action
- Supports reciprocal responsibility
- Supports individual and group learning as models are tested against results
- Opens conversations about contexts and connections (LM 1 Notes, 2009, pg. 10).

The first theory of change for the CCRP was prepared for the meeting by an IMEP consultant and the scientific director. IMEP's intention was for the CCRP to use theories of change at the three different levels of the program: the project level, the regional level, and the program level (IMEP Handbook, 2008). As part of the meeting process, the leadership team discussed both a logic model and theory of change. They had the opportunity to give feedback on each one. Figure 8, below, represents CCRP's first attempts at creating a theory of change for the program (LM 1 Notes, 2009, p. 17).

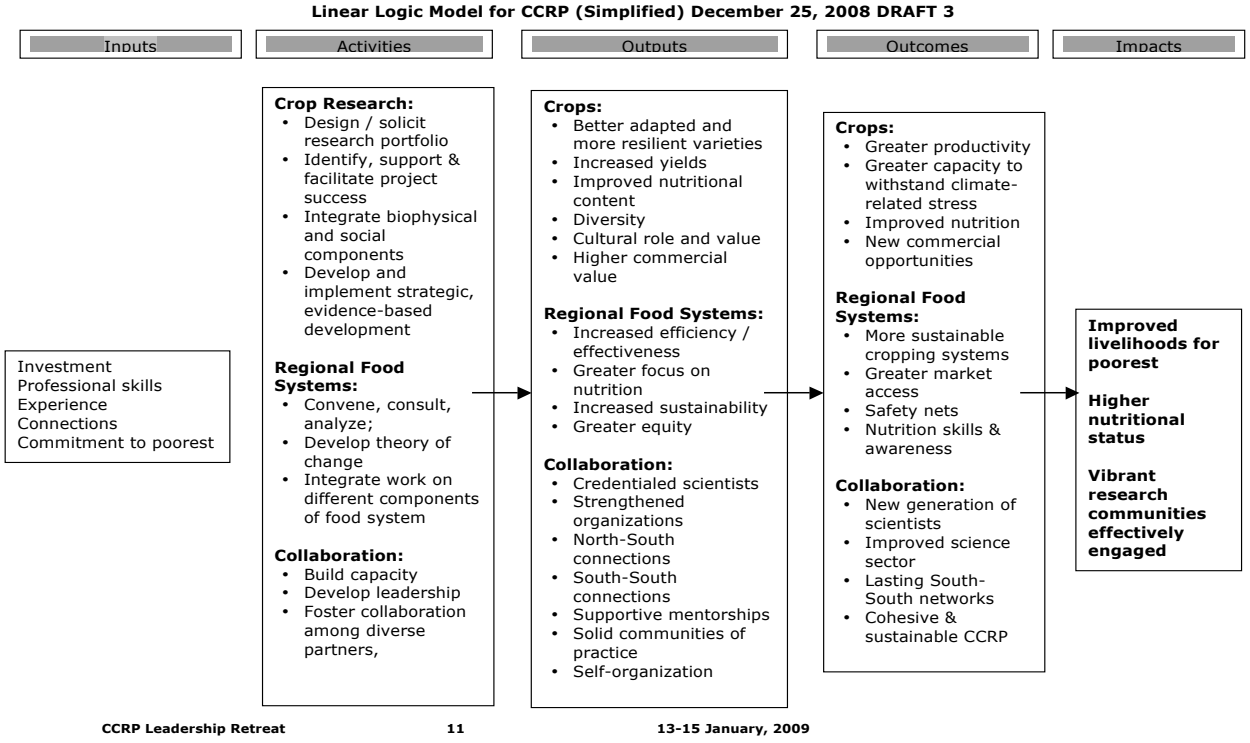


*Figure 8*. CCRP's first logic model (LM 1 Notes, 2009, p. 11).

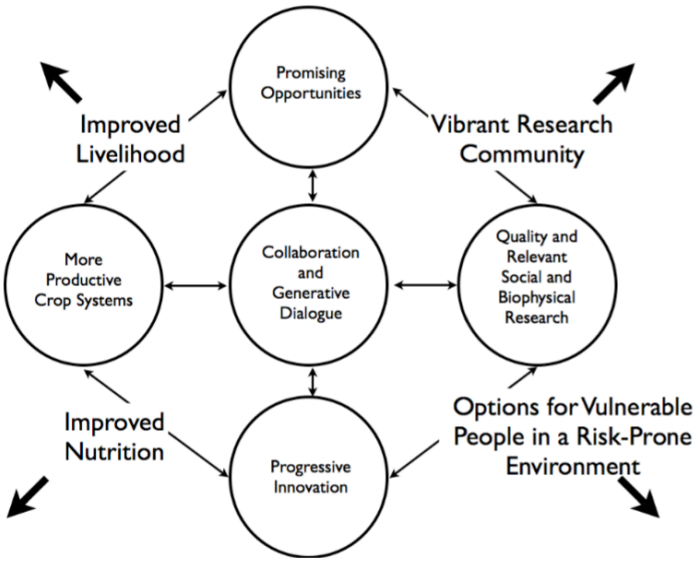


*Figure 9*. CCRP's first theory of change (LM 1 Notes, 2009, p. 17).

**Discussions about IMEP.** The generative dialogue and theory of change/logic models were central activities of IMEP during its first phase. The leadership team meeting was modeled after the generative dialogue concept and the leadership team had the opportunity to engage with both the CCRP's theory of change and logic model during the meeting. However, the leadership team also had a chance to talk about and critique IMEP. After the leadership team had been introduced to IMEP, the meeting facilitator had the leadership team list how IMEP was going to be similar and different to other evaluation approaches. The question about what is different and similar to other evaluation approaches is a useful way to see what potential guiding principles of the CCRP the leadership team saw in the IMEP process (LM 1 Notes, 2009, p. 11).

Table 3

*Comparing IMEP with Traditional M&E Approaches*

| How IMEP is similar to M&E | How IMEP is different from M&E |
|---|---|
| • Thought processes are the same<br>• Indicators are applied<br>• Theories of change<br>• Logic models (log frames) | • More explicit<br>• Same process at multiple levels<br>• Internally, rather than externally, driven<br>• Built explicitly on learning<br>• Reciprocal responsibilities acknowledged mental commitment over one-way accountability<br>• Local and system-wide indicators are tracked |

Similarly, the suggestions that the leadership team listed for IMEP were also a useful way to see which potential CCRP guiding principles were guiding IMEP at the time.

- Encourage and support interaction on Leadership Portal
- Other ideas for improvement to be included over time
- Don't [sic] reinvent the wheel use standard measures when they're [sic] available
- Allow for/encourage locally identified indicators
- Theory of change becomes very important
- Practical, Pragmatic, Parsimonious
- Respect for players' time
- Collaboration
- Solicit and integrate comments from users (LM 1 Notes, 2009, p. 9).

**Recommendations and concerns.** The meeting notes do not capture all of the debate, questions, and comments related to IMEP. But after the IMEP team cast the first vision for the generative dialogue and theory of change, the leadership team was given an opportunity to provide feedback. According to the first meeting notes, the leadership team asked the IMEP team to keep the process simple, involve the collaboration of other leadership team members, include other ideas for improvement over time, and not to

reinvent the wheel. What the notes do not capture, which several interviewees pointed out, was that there was a lot of complexity and conflict during this time.

**Complexity and conflict**. Most of the leadership team that was around during the beginning stages of IMEP describe a lot of theoretical disagreement about what the evaluation system was going to look like and how the technical parts of the system would function. There was a perception that many of the members of the leadership team either had negative baggage associated with evaluation or felt uncomfortable with evaluation (LT 11). Also, the initial team of consultants that was brought in to help develop the evaluation system often disagreed about the extent to which the evaluation system would draw from existing frameworks versus creating its own (LT 11). They also disagreed about whether the system would use theories of change and how, and the extent to which the system collected data as a way to make evaluative inferences vs. using generative dialogues and reflective practice. The beginning phase of IMEP was complex, particularly because of the level of disagreement about what IMEP was going to be (LT 5, LT 8, LT 9, LT 10, LT 11).

**Potential guiding principles from Phase I.** The first phase of IMEP in the CCRP was not a smooth rollout. This time was characterized by many as a period of significant disagreement about what IMEP should look like in practice. The rollout was also associated with the tensions over whether or not CCRP should create a new evaluation system. However, closely examining the original vision for IMEP, the purpose of the generative dialogues, and the purpose of the theories of change, some of the potential guiding principles of the CCRP began to emerge:

***Learning and adaptation.*** From the very beginning, the IMEP was intended to help the CCRP develop a system of learning and evaluation.

***Incorporating a systems lens.*** In 2009, the program was already operating on three levels: the program level, the regional level, and the project level. One of the motives behind IMEP was the belief that evaluation could support the integration of the program across the levels.

***Collaboration.*** The leadership team asked for IMEP to be designed and tested through a collaborative process.

***Developing coherence***. Learning and adaptation and incorporating a systems lens were part of the strategy for developing coherence. But developing coherence was one of the driving motives behind the establishment of IMEP.

***Use-focused evaluation***. Incorporating a systems lens to support learning, adaptation, and coherence of the program arguably highlights the belief in making sure the evaluation process and outcomes are useful.

Reconstructing the beginning architecture for the potential guiding principles that informed IMEP's development seems straightforward. That is not to say that these beginning representations of some of the CCRP's beliefs were without disagreement or not seriously negotiated within the leadership team. The early debates about the theory of change highlight this point. However, the desire to use evaluation to support learning and adaptation, develop program coherence, and incorporate a systems lens were patterns that remained salient within IMEP's development.

**Integrating IMEP into the CCRP**

IMEP was always envisioned to be something that folded the different levels of the program together, including the program, regional, and project levels. As a consequence, IMEP needed to be integrated into each level of the CCRP. How this would happen and what it would look like was originally a point of disagreement among the leadership team and consultants that were responsible for developing the system. IMEP's development trajectory started with evaluation specialists. It was then rolled out to the leadership team as described in the previous section. Following the program rollout, IMEP then began cascading out to the regional level and subsequently to the project level of the CCRP.

Regional and project implementation of IMEP started towards the end of 2009 and beginning of 2010. In September of 2009, the theory of change was first introduced to projects in the Southern Africa CoP. An entire day was dedicated to the topic. The morning was set aside for the projects to learn about ToCs. The afternoon was set aside for projects to begin developing their first ToCs. According to available documentation from the four CoP meetings, it was the first and only attempt to bring IMEP to the project level before the second leadership team meeting in 2010 (SAf CoP Notes, 2009). During the second leadership team meeting, IMEP was a central focus again. Being just over a year into the creation of IMEP, the leadership team still needed to define the central features and practices of IMEP at the program, regional, and project levels. They had to wrestle with how IMEP was going to be rolled out to the regions and the projects. Also, they had to agree on how and whether the CCRP would support the project's implementation of IMEP.

Last but not least, the second meeting was the first experiment where the IMEP team gave evaluative feedback to the leadership team about its portfolio. The experiment of presenting evaluative findings represented another issue that the IMEP team needed to define. How was the leadership team going to use evaluation to learn, adapt, and build coherence? During the integration stage, IMEP experimented with several practices at the three levels, including the theory of change, starting point, evidence framework, common indicators, M&E plan, work plan, mid-year report, and annual report. Some practices that define IMEP today survived through the integration stage while others were dropped or significantly adapted. The integration phase is not defined by time. Rather, it is defined by the amount of experimentation and learning that the program went through to build the IMEP system. The purpose of this section is to demonstrate how some of the potential guiding principles within the CCRP leadership team influenced the development of the IMEP initiative during the integration stage.

**Program level integration**. From the first leadership team meeting in 2009 to the second in 2010, the leadership team advanced the theory of change for the program. In fact, the primary objective of the second leadership meeting was to "understand and implement CCRP theory of change (what is CCRP now?)" (LM 2 Notes, 2010, p. 1). By the second leadership team meeting, the leadership team began integrating the theory of change as a central part of IMEP at a program level. The theory of change, Figure 10, was presented to the leadership team at the meeting. It represented a conceptual advancement from the theory of change presented in the first meeting.

In addition to the theory of change, IMEP's first experience with providing evaluative input at the program level occurred with a "starting point." The starting point

analysis was intended to help create a place where the program could make decisions as a result of improved understanding of how existing projects were aligned with the theory of change. Those who remember this particular presentation described it as a tense moment. The integration of IMEP to include evaluative feedback at the program level was met by resistance by several leadership team members (LT 12).

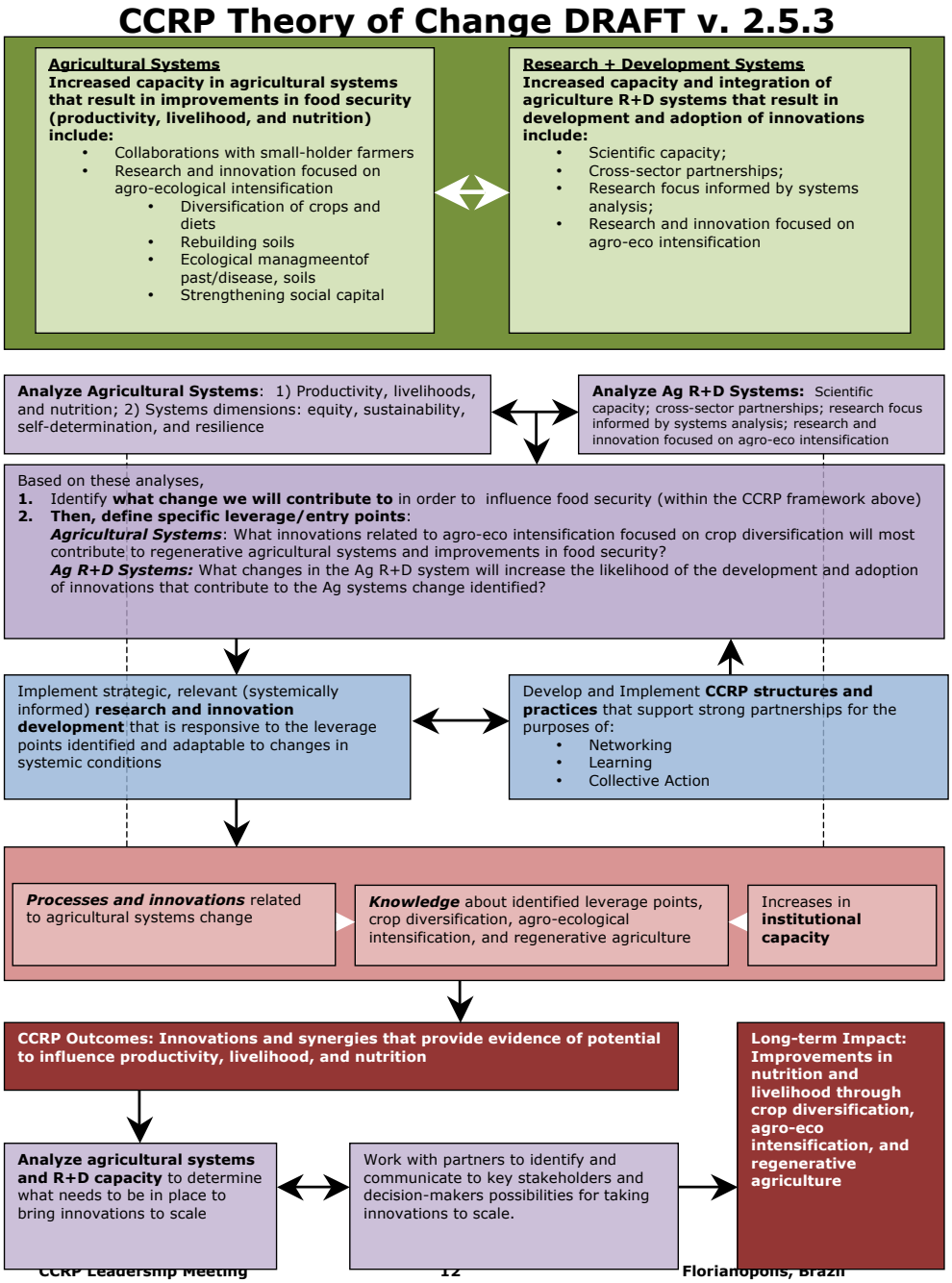


*Figure 10.* CCRP theory of change from the second leadership team meeting (LM 2 Notes, 2010).

**Regional and project levels.** The regional levels of the CCRP are where the bulk of the strategic grant making and capacity building happened. Regions were essentially responsible for the right-hand side of the program's theory of change. Therefore, IMEP also needed to be integrated within the regional levels of the program. The second leadership team meeting was an important moment for the negotiation between the two levels of the CCRP, i.e., the what and how of IMEP that was going to happen at the project level through regional teams. Therefore, in the integration stage, agreement on IMEP was crucial. There were three tools/practices in 2010 that the IMEP team wanted projects to implement. The first was a starting point. The starting point was intended to replace the baseline, which is what donors often expected from grantees. The starting point was intended to adapt the baseline process; "to establish a more adaptive view of CCRP work, the current state is captured in a 'starting point' analysis" (LM 2 Notes, 2010, p. 10).

The second tool/practice was the evidence framework. The evidence framework was described to the leadership team as one of "…the fundamental M&E tools of IMEP. It was a structure to help CCRP, regions, and projects consider what evidence they have/need to track progress against the steps in the ToC" (LM 2 Notes, 2010, p. 17). The use of the evidence framework was intended for all three levels of the program. The purpose of the evidence framework was to indicate what evidence would be required or needed to see the change they expect to see, as articulated by the theory of change. Several potential guiding principles drove the development of the evidence framework. The first potential guiding principle was a desire for the data and reasoning in the M&E process to be high-quality. Also, there was a desire for the learning and adaptation to be

informed by data, not just observations from the leadership team. The evidence framework put an intentionally thoughtful process about the M&E evidence in place at all levels of the program.

The quality of the evaluative inferences was dependent on the quality of the evidence of change. A second potential guiding principle emerged in the open discussion about the evidence framework. The discussion connected the potential guiding principle to two overarching evaluation questions about the program that the leadership team identified. The first question, "How effective is our work? Evaluate the work of the projects, regions and program" (LM 2 Notes, 2010, p. 18) was about evaluating the work for its purposes. The second question, "How effective is the CCRP method? Evaluate and do research about the CCRP approach compared/contrasted to traditional approaches" (LM 2 Notes, 2010, p. 18) was about evaluating the model compared to other research and grant making programs. The two evaluative purposes could be interpreted to be driven by the motive for evaluation and research to be relevant and useful for both immediate (local) stakeholders as well as the broader (global) philanthropic community.

The intention was to integrate the starting point and evidence framework with the theories of change produced by projects, regions, and the program. At the heart of the IMEP process at the integration stage was the theory of change. Without the theory of change, none of the other tools/practices would have been relevant or needed. The theory of change "…will open up more options for multiple levels, multiple causal paths, and diverse solutions to local issues" (LM 2 Notes, 2010, p. 27). This perspective on CCRP's use of theories of change during the integration stage reveals an attempt to continue to incorporate a systems lens in the M&E process. The specific practices and tools within

IMEP were still in development at the close of the second meeting. The IMEP team still had work to do in making the starting point process usable within the regions. That being said, a vision for the practices of IMEP and how they integrated into IMEP's purpose emerged.

> With an M&E program that is based on explicit starting points and evidence of results as described in a theory of change, IMEP can support an iterative and integrated learning process and innovative decision making that support continuous improvement and systemic change (LM 2 Notes, 2010, p. 28).

**IMEP support in the regions.** The CCRP conducted its grant making and facilitated its communities of practice through regional teams. The regional teams included a Scientific Liaison and Regional Representative. As the CCRP integrated IMEP into the practice of the regions, members of the CCRP leadership team believed that support was needed to help the RTs and projects implement IMEP. During the integration stage of IMEP, support for IMEP at the regional and project levels took two forms. The first form was through the CoP meetings. Across the regions, the CoP meetings became a focal point for introducing IMEP's concepts to the projects. The second form of support for IMEP was through a dedicated regional M&E consultant. The purpose of the regional M&E consultant was to help the projects and the RT develop and incorporate the M&E tools by building their evaluation capacity.

**Emerging potential guiding principles during the integration stage.** There was little agreement about how IMEP should be implemented. It was a complex space within the program. Some of the IMEP practices/tools described in this section have continued to play an important role in IMEP. Some of the practices/tools of IMEP during the stage are no longer used. In complex spaces, not every practice will be a good fit. The practices

and tools at this part of the integration stage for IMEP highlight several potential guiding principles of the CCRP leadership team:

***Learning and adaptive action.*** By the end of the second leadership team meeting, the agreement that developed was that IMEP would "support an iterative and integrated learning process and innovative decision making that support continuous improvement and systemic change" (LM 2 Notes, 2010, p. 28).

***Applying a systems lens.*** The agreement on the theory of change is illustrative of how the CCRP leadership team applies systems thinking in IMEP. The theory of change "…will open up more options for multiple levels, multiple causal paths, and diverse solutions to local issues" (LM 2 Notes, 2010, p. 27).

***Integration of local and global knowledge.*** The leadership team's framing of its two meta-evaluation questions at the time signals that the purpose of the IMEP is to produce knowledge relevant to internal and external stakeholders.

***High-quality evidence.*** The evidence framework and starting points were initiatives within IMEP to strengthen the quality of evidence used for learning and making evaluative inferences.

***Build capacity.*** During the integration stage, it was recognized that the evaluative concepts that IMEP wanted to roll out to the projects may not be accepted with much favor. Also, the leadership team believed that projects would be limited in their ability to implement evaluation the way CCRP was expecting them to. As a result, the CCRP leadership team put into place regional evaluation consultants. Their purpose was to support projects in their capacity development to implement IMEP.

**Stability**

> "I think that IMEP fundamentally makes sense,
> and it has gone away as like a debatable thing" (LT 9).

From 2010 to 2013, IMEP continued to evolve and experiment with various practices and tools. However, by the fifth leadership team meeting in January 2013, IMEP no longer was a point of controversy within the leadership team. Its core practices at the program and project levels were mostly in place. The debate about some aspects of IMEP continued, such as the Monitoring Checklist. But by 2013, most of the core practices of IMEP reached a point of stability. The most powerful indicator of stability was the IMEP Deep Dive during the fifth leadership team meeting. The deep dive sessions were intended for groups within the CCRP leadership to advance various topics at the program level. The Deep Dive session did not generate new ideas or steer IMEP into a new direction. Rather, it was a moment where there was a lot of coherence and agreement among the regional representatives and other members of the IMEP team about what IMEP was. The Deep Dive started with reviewing a draft of the IMEP manual. The focus of the deep dive turned from figuring IMEP out to sharing across the regions how they implemented the various aspects at the various levels.

**Regional and project level IMEP.** As IMEP developed at the various levels during the beginning and integration stages, it developed some practices that were implemented at the regional and project levels. Generative dialogues were expected at both levels. Developing theories of change were expected at both levels, as were starting points and evidence frameworks. Local evaluation consultants were hired to help the RT in the implementation of the regional practices. After experimenting with theories of change at the regional level, most of the regions had opted for using the program level

theory of change instead. After experimenting with evidence frameworks and starting points, IMEP decided to use M&E plans. The regional levels experimented with developing their M&E plans but again the regions opted for using the program level M&E plan. Finally, by 2013, IMEP had mostly opted out of the support model it developed during the integration stage. The evaluation consultants had not been fully integrated into the regional teams. Also, the support that the consultants gave to projects often turned into products that were not used by the regional team nor the projects. The decision to move away from regional M&E consultants marked a shift towards prioritizing greater utilization of the evaluation process at regional and project levels. At that, the Foundation asked the regional representatives to start providing and coordinating support for project evaluation practices (LT 11 and LT 12). The structural shift, in turn, placed a greater emphasis on both the need and purpose for the RTs to integrate evaluation within their work.

**Program level.** At a program level, IMEP continued to be integrated to support adaptive action and continuous learning. Gone were the days of the formal "generative dialogue." What had taken its place were regular leadership team meetings where outside facilitation was used. Gone too were the days where evaluation consultants gave evaluative presentations to the leadership team. Instead, the IMEP team developed a practice of providing the first layer of analysis to regional teams and the program team. The bulk of the evaluative interpretation has been given to the leadership team and regional teams. The two practices remain core to the practice of IMEP at the program level. These include the theories of change for the program and M&E plan. The M&E plan is based on the program level theory of change. In general, the IMEP team manages

the process for answering the program level questions but leaves most of the evaluative conclusions to be developed by the leadership team. The process of managing the data collection and storing observations in a program-wide database is managed by the IMEP team. The IMEP team makes that data available to the responsible teams for developing evaluative conclusions. Finally, the program and regional reflections occur leading up to and during annual leadership team meetings.

At a program level, IMEP is often described as an operating system. Operating systems in computers are designed to enable other parts of the computer environment to function. The design of the operating system is an important predictor of the success of other programs. What makes the operating system a useful analogy for IMEP is that the operation system is always on when the computer is on. Likewise, whenever the CCRP leadership team is working, the guiding principles that are foundational to IMEP are always a part of the CCRP's process of engagement.

**Integrating the program and project levels.** One of the problems that IMEP was intended to address was for the CCRP to develop coherence across its multiple levels (LT 12). By asking M&E to perform this function, it shifted the focus of evaluative work to be internally focused. Many donors structure their M&E for external purposes. As a structure for building coherence, CCRP integrates the multiple levels of the program with its evaluation work. In that way, it is mostly an internal process where, no matter the level, the project or program teams define what they want to research and what data to collect, complete the interpretation, and incorporate lessons learned (LT 5). In addition, the evaluative lessons developed by the IMEP team about the program are also shared with the projects (LT 4). The system is intended to be integrative and adaptive by using

evaluation primarily to learn and adapt at and across different levels. The practice is internally driven to support learning and adaptation, but the motives for sharing lessons learned with projects is indicative that the IMEP process includes the potential guiding principle of reciprocal responsibility. Reciprocal responsibly within an evaluative context such as IMEP guides the leadership team in its sharing of evaluative material across the levels of the program, including with project.

**Problems that IMEP Was Solving**

As part of my research, I asked every member of the leadership team to reflect on the problems that the CCRP was trying to address with IMEP. I asked these questions because I thought that it would create the opportunity for me to discuss the ideas and beliefs that were foundational to a stable IMEP. My impression was that through talking about the problems IMEP was addressing, it would illuminate the potential guiding principles that guided IMEP's practices. What I discovered is that in discussing the diagnosis, leadership team members articulated the potential guiding principles as the inverse of the problems that were foundational to understanding's IMEPs development. This section outlines some of the general problems that IMEP was trying to address, including the lack of learning and adaptation, the lack of results, and the challenge of producing useful research.

**Lack of learning and adaptation**. A common critique among the CCRP leadership team was that many of the projects work in environments where there was a greater emphasis on conducting the planned activities instead of asking whether those activities make sense (LT 2). According to the leadership team and project members, most of the projects were used to linear, accountability-focused forms of M&E. Learning

and adapting from M&E in this was not a part of the general institutional practice. The quotations below describe the broad diagnosis around the leadership team's beliefs about lack of learning and adaptation among CCRP's grantees.

> Okay, let me see how I can put this, here. I guess I think that they're trying to address the issues of adaptive management of things, because most projects or programs are you know, like, they're barreling down the road, and they're not often really trying… Evaluation is not [usually] something that's really about reflecting, "Oh this is where I thought that was going, am I getting there?" blah, blah, blah. It's more about, "Oh, I said I was going to reach 5,000 farmers, can I check that box?" (LT 2)

> A lot of development projects focus on the doing, without actually investing our time and resources in learning how they are doing, and what the results they're getting mean. And this was based on their experience over a period, but, they've been investing a lot in research. But the focus was more on doing the research, without extracting the learning out of the research. So I think that is one problem, that there wasn't sufficient learning taking place systematically in the program, and this was one way of addressing that. (LT 3)

> I think the main difference is that most other donors, it's for them. Like, they want to make sure that the project, they're doing what they said that they were going to do, and it's like… But within CCRP, the main thing is that, okay, you're learning from what you're doing, and you're using that learning to plan your actions, which is… CCRP can celebrate a project – let's say they've been doing something for two years, and they've spent 300,000 dollars, and then suddenly they realize – "Oh! We really should have been doing this, this and this," because they've taken the information that they've gathered, in those two years, and realized that this isn't going to get them where they want to go. So, then they re-recalibrate. Most other donors would tell you, "See you later. You don't know what you're doing? Get out of here!" But within CCRP, it's like, "Yay! Breakthrough, breakthrough!" (LT 2)

> Each, to allow planning as well. To allow – I think that's always been our aim, to try and facilitate better planning of projects going forward, but both within existing projects as they go from year to year. But that's quite hard, once things have actually started, and money's been agreed. But I think, perhaps, more, there's an opportunity, to really get to grips with how teams are working, what their shortfalls – what their strengths and what their weaknesses are, and use the IMEP system in planning of future work with them, and also in the greater community of knowing that there are certain issues that come up across a number of projects, I'd say, that you know you have to spend more time and more resources on in the future. (LT 5)

> And most of the projects have been thinking when you talk over Monitoring and Evaluation, it reaches a point where now you stop everything and maybe even call in somebody, an external person, to come in and evaluate you –Monitor, Evaluate. And it's sort of like a policing type of approach. So that has been the understanding of many, many of the projects. But now, what was new to them is this issue of integrating in and then, if you find things are not going right, you re-plan, so that things can go right towards meeting your goal. (LT 1)

**Lack of results**. One of the most difficult, but important questions for programs like the CCRP to answer is whether or not it was producing research results. Were the investments adding up to something? This results question was a perennial diagnosis in the CCRP. Learning and adaptation required having something to learn from. In addition, as a donor, the McKnight Foundation could invest its grant making into other program areas. There had to be some sort of documented and meaningful impact; otherwise, the Foundation would want to invest its resources elsewhere.

> The other thing I think they are trying to solve is having results. I've looked at our IMEP guide and what's said there, so I'm not regurgitating what's in there, but I'm just giving my own perspective. And so, I think results. You know, over time, I think the program was being asked, "Okay fine, you've been funding these programs for the last x years; what is there to show for all the resources and time that has been put in there?" So I think that's one way of making sure of, with IMEP, focus on not just adaptive learning but also, monitoring and evaluation aspects. Really keeping the results – what's the endgame? (LT 3)

> For me, as I understand it, the program is trying to gather the evidence that we're making a difference, and that our resources are used efficiently and effectively, and gathering – element of proof of that. And the other thing is… The first discussions were to bring evidence for potential to impact, and you cannot do that until you have the evidence that whatever you have tried is working at the sites you're working. So, M&E was important. You cannot avoid M&E once you want to collect data on the evidence that things are changing – at least on the sites that you're working. (LT 6)

**The futility of research utility.** Developing research results and products was one challenge. Seeing them through the research and testing stages and into the farmer use stage was another problem. In fact, the problems associated with producing results

extended beyond just providing useful research. It included the use of research products by the intended stakeholders and beneficiaries, another perennially complex problem that IMEP was trying to address.

> But then, how do you know which technologies to scale up, which would work? And so IMEP would help resolve that challenge. But also – a realization of the complexity in which research was being done. I think the initial focus was more on breeding, and coming up with new varieties, and probably ending at the level of seeds, and then assuming that that would necessarily translate into social change, and better nutrition, and all that. And I think, as they realized, that that was not happening. Then IMEP, I think, was seen as a way of helping organizations to think much more deeply of how they are working, and how they conceive through this complex change without losing the end in sight. (LT 3)

**Theory of Change**

I also asked leadership team members about the problems that the theory of change was trying to solve. The theory of change in IMEP was the tool from which all other evaluation and planning related tools and processes flowed. According to the IMEP manual (2015), it was the building block where research and evaluation questions were integrated. It was also the document that the M&E plan was built on. From there, the work was created. The theory of change was, theoretically, the foundational document the projects discussed and developed during the inception period or meeting. Also, it was the document that projects were supposed to revisit during their mid-year reviews and annual report writing. Therefore, I chose to spend time understanding how the leadership team members and the IMEP manual described the purposes and use of the theory of change.

**Leadership team responses.** Because it played such a foundational role in IMEP, I probed the leadership team about how they used the theory of change with grantees. By focusing on use at the project level, I expected members of the leadership team to discuss

the intended purposes that were foundational to IMEP and therefore the CCRP. The members of the leadership described five different intended purposes, including learning and adaptation, coherence, understanding assumptions, systems thinking, and linking social and technical innovation.

***Learning and adaptation***. A regional representative described how the theory of change was supposed to help projects make planning decisions by comparing its intended theory of change with what they had achieved.

> So I tell them that this is a document that you'll be using to assess your progress. And look at, "Are we really getting where we decided to go?" And if you're not, then maybe it's time to sit down and think of, "We may need to do it a bit differently." And now input that information into the ToC to help you reflect the next time. (LT 1)

***Developing coherence.*** The same leadership team member described how the purpose of the theory of change was also to help projects develop coherence.

> What is the purpose of a Theory of Change, is to make everybody be on the same page, and understand what the project is all about, and what you're going to do to get to our aim, to the aim of our project, and even the aim of the project is made clearer at that time. (LT 1)

> In fact, it is not an uncommon experience in the CCRP for project members to show up at the inception meeting without knowing what is written in the proposal. Since the first "C" is in the CCRP is collaborative, it is important for collaborative partners to be on the same page with what the project is going to do and intend to achieve. The theory of change can be an important part of the inception meeting where key project stakeholders build coherence. (LT 6)

***Clarifying assumptions.*** Three of the leadership team members described identifying and articulating assumptions as an intended purpose of the theory of change. Some referred to the assumptions as "miracles" (LT 8 & LT 9). The theory of change helped regional teams negotiate with projects on the soundness of their logic, reasoning, and evidence in their theory of change. But supporting projects to identify neglected

assumptions by regional teams allowed projects to attend to aspects of the design that had not received much thought.

> And going a bit deeper into the assumptions also. Usually in the log frame, the assumptions stayed at a very general level, like political stability, or so, you know? Not going into something like social innovations, or how the people need to be organized, those things were maybe neglected in the log frame compared to a theory of change approach. (LT 7)

***Systems thinking.*** The theory of change was also viewed as a tool to help projects think more critically about systems their research worked within. It forced projects to think about the boundaries of their work, as well as understanding how research could create the stepping stones to change.

> But then, of course, projects are only a very small part of the bigger picture. Whereas the theory of change is big picture stuff, projects are not big picture stuff. They're looking at specific components, which may eventually, you know, you might be looking at, say, one disease amongst many, in a crop. So to say that your theory of change is then going to make really big differences… I think that's the problem. People then look at the theory of change having to be something that's really going to change people's livelihoods. But that may or may not be the case. I mean, you know, that little component of breeding you're doing, or the little component of molecular biology you're doing is probably a stepping stone towards the larger picture. (LT 5)

***Linking social and technical innovation.*** Most researchers in CCRP-funded projects were trained in biophysical or technical disciplines. Researchers did not always have the necessary training to help them think about the social context of their research. Theories of changes were designed to help projects think through the social systems and necessary social innovations that would need to occur in order for technical change to happen. For example, in WAf, the An Be Jigi project was working to promote non-decorticated sorghum. The project found that decorticated grain resulted in a loss of zinc and iron. However, non-decorticated sorghum increased the price of milling because millers use the milled byproducts and sold it as animal feed. The loss of income for the

millers increased the price of milling. The quotation below highlights how theories of change could help project teams think about the interconnection between technical and social innovation.

> And now the increased price of milling non-decorticated sorghum grain influences the whole success of the project, and realizing this in a theory of change makes people think more about it and how to address this challenge now. And I thought there, it's quite useful to think deeply and to have all those factors in the theory of change, 'cause if milling the non-decorticated sorghum grain is more expensive, then the women won't take it there. It definitely influences the theory of change of the project. (LT 7)

**Conclusion**

At the end of 2008 and beginning of 2009, the CCRP began exploring building an integrated monitoring, evaluation, and planning system in the program. From its inception, the potential guiding principles of the CCRP that guided IMEP included learning and adaptation, systems thinking, and building coherence. The three potential guiding principles also highlighted how IMEP was being designed to be use-focused. As IMEP was integrated into the potential guiding principles of program learning and adaptation, systems thinking continued to be an integral part of IMEP. Also, I was able to document high-quality evidence and reasoning, integrating local and global knowledge, and building capacity as additional potential guiding principles. The tools and practices that would define IMEP began to emerge at this time. As the leadership team experimented with the theory of change, M&E plan, and starting point, it revealed how the leadership was trying to make sense of how IMEP would support high-quality evidence and reasoning and integrate both local and global knowledge in the process. Most importantly, the CCRP leadership team recognized this was a departure from traditional M&E for their projects. The need to build capacity was obvious.

IMEP's handbook signified that it had stabilized in the CCRP. The program was, for the most part, practicing IMEP's core activities. As IMEP stabilized, I was able to identify several potential guiding principles of IMEP, including utilization-focused research and evaluation, learning and adaptation, reciprocal responsibility, results orientation, systems thinking, articulating assumptions, and linking social and technical innovation.

## Case Study: Agroecological Intensification (AEI)

### Introduction

This case study traced the history of Agroecological Intensification (AEI) within the CCRP as a way to identify the potential guiding principles of the CCRP. AEI emerged as the CCRP's conceptual framework for agriculture research and development. The case included data from in-depth meeting notes, the AEI exchange, and leadership team member interviews. The table below provided a summary of where each potential guiding principle was observed during the case study.

Table 4

*Potential Guiding Principles that Shaped AEI*

| Potential guiding principle | AEI Definition | Development Stage | Integration and Stability | Problems and Opportunities |
|---|---|---|---|---|
| Systems thinking | Yes | Yes | Yes | Yes |
| Sustainability | Yes | Yes | | Yes |
| Contextualization | Yes | Yes | | Yes |
| Multiple outcomes | Yes | Yes | Yes | |
| Collaboration | | Yes | | Yes |
| Linking social and technical innovation | | Yes | Yes | |
| Diversity | | Yes | | |
| Farmer participation | | Yes | | |
| Integrate global and local knowledge | | Yes | | |
| Equity | | Yes | Yes | |
| Adaptation | | Yes | | |
| Use-focused | | Yes | | |
| Leverage ecological principles | | Yes | | Yes |
| Build capacity | | | Yes | |
| Focus on resource constrained smallholder farmers | | Yes | | Yes |

The case study starts with CCRP's definition of AEI that was published on CCRP's portal for AEI, also known as the AEI Exchange.

> Agroecological Intensification (AEI) means improving the performance of agricultural systems through integration of ecological principles into farm management. Depending on the context, improved performance may mean any or all of the following: increased productivity, enhanced use of local resources, maximized returns from external inputs, improved stability and diversity of yields, with associated increases in resilience and environmental service provision from farmed landscapes. (CCRP, nd)

Immediately, several potential guiding principles were identified in the definition of AEI. The first potential principle that emerged was the focus on systems thinking. AEI "means improving the performance of agricultural systems." AEI focused on interventions in farm systems rather than emphasizing the performance of one component of the farm system. The systems focus reflected the potential guiding principle of systems thinking. The "integration of ecological principles into farm management" reflected the potential guiding principle of sustainability. The CCRP included an emphasis on ecological principles as one way to reduce the externalities of productivity that were caused by external inputs.

The potential outcomes of AEI also reflected the potential guiding principle of sustainability by focusing on the environmental provision of the farm system. AEI as a means to improve performance, "depending on the context," revealed two additional potential guiding principles: contextualization and multiple outcomes. By focusing on a range of outcomes in different settings, AEI encompassed flexibility in defining performance according to context. By allowing for the possibility of improving performance to include any combination of performance measures, AEI reflected an

approach to agriculture development that recognized agriculture as an enterprise with multiple outcomes.

The definition of AEI emerged out of the collective work of CCRP's leadership team. As a relatively stable component of the program, the definition of AEI opened with four potential guiding principles that were foundational to the CCRP: systems thinking, sustainability, contextualization, and multiple outcomes. The remainder of the case study explored the development of AEI within the CCRP, with a particular focus on why and how AEI developed and the problems AEI was addressing in intentional agriculture development.

**The Roots of AEI Defining CCRP's Niche**

When the McKnight Foundation began its relationship with the Bill and Melinda Gates Foundation in 2008, there was little agreement among the leadership team about what the niche of the CCRP was (LT 15). Before the Gates era, CCRP invested in extensive programs for which the grant resources were relatively insignificant (LT 15). The relationship between the two foundations pushed the CCRP leadership team into developing and articulating its niche. This awareness grew, in part, out of an emerging recognition of the ways in which the CCRP differed from its funding partner. The CCRP leadership team also wanted to position the CCRP in the complex and large world of agriculture research and development.

> We have to clarify and give ourselves an explicit niche because we are a small program in a big world. We need to come to an agreement about something that describes and defines who we are and what we do. (LM 2 Notes, 2010, p. 15)

In developing the niche, the quotation above emphasized the importance of establishing a niche. But the significance of clarifying the niche was that the team would

come to agreement. The emphasis on the leadership coming to agreement reflected the potential guiding principle of collaboration. Collaboration played a foundational role in how CCRP funded grants and how the leadership team developed its guiding frameworks. Finally, the CCRP leadership team realized that if the niche was articulated, it could be an additional way to bring coherence to the program, i.e., to focus grant making and non-grant making support (LT 12).

**Leadership team meeting 2.** Officially, the CCRP leadership team did not start discussing AEI until the second leadership team meeting in Florianopolis, Brazil. One of the many stated goals for the meeting was to "define implications for CCRP's niche (Agroecological Intensification)" (LM 2 Notes, 2010, p. 1). It was during this meeting that AEI as the niche was formally pitched to the leadership team. There was a presentation followed by a discussion that allowed the directors and leadership team members to ask questions and test the boundaries of the concept. The discussion revealed some initial patterns in the priorities and interests of the leadership team members. The conversation could be viewed as the leadership team grappling with the extent to which AEI fit within CCRP's guiding principles. Several excerpts from the conversation were included, documenting how they highlighted the potential guiding principles of systems thinking, collaboration, sustainability, linking social and technical innovation, and diversity.

The first excerpt highlighted the way that the theory of change was connecting agricultural systems and institutional research systems. It reflected how systems thinking was informing how the CCRP viewed its niche by emphasizing the need to connect the two systems in its work. The excerpt did not reference how exactly the system would be

connected, but to put farmers and institutions together to create change most likely was referring to the need to have farmers and institutions collaborating.

> What I see in the ToC is that agricultural systems and institutional systems and the hypothesis embedded in here is that something about research looking at agro-systems, looking at farmers and at institutions that we think will create change. I think that is to put R & D together. (LM 2 Notes, 2010, p. 15)

Putting systems together emerged as part of its niche within AEI: "We are clearly thinking about research plus development (R+D) as the description of the work we do in CCRP" (LM 2 Notes, 2010, p. 15).

Sustainability was the second potential guiding principle that came out of the discussion. The excerpt below highlighted two different ways the leadership team was thinking about sustainability. The first was with the level of production. Farmers were not intensifying their systems enough. The second was with the potential costs of intensification, leveraging ecological balance and future generations.

> You have knowledge that there is a problem with the level of production and productivity from the people we work with, and you see the way out of the program through the intensification of the system. But you don't want just to intensify the system at the cost of the equilibrium and the future generation. So you want to do in an agroecologically sensitive manner. (LM 2 Notes, 2010, p. 15)

The third potential guiding principle that came from this discussion was the idea of fostering and linking social and technical innovation. People were viewed as an integral part of the agroecological system. The excerpt elevated the need for the CCRP to explore the link between social systems and agricultural change.

> While certain measures of productivity can be the focus of how we use money, we should also look at how social capital, people capital, and institutions come into the kinds of changes we are trying to affect. People are part of the agroecological system. (LM 2 Notes, 2010, p. 16)

The fourth potential guiding principle that came out of the discussion was diversification. In a section of the discussion that was focused on creating a succinct statement that reflected AEI and the niche of CCRP, someone offered diversity as the succinct point: “Get the essence: Diversity is a key component of the production system, so it is more resilient” (LM 2 Notes, 2010, p. 16).

At the close of the second leadership team meeting, AEI had not yet taken the main stage in the CCRP. Several more meetings and subsequent debates would take place until AEI became a stable guiding framework for the CCRP. However, looking back on AEI’s growth up to this point in its development, several potential guiding principles that were foundational for the CCRP had emerged, including collaboration, coherence, fostering and linking social and technical innovation, diversification, and systems thinking.

**AEI’s connection to CCRP’s past.** It is important to point out that for many, AEI was never a radical departure from CCRP’s roots before its relationship with BMGF. Rather, AEI grew from the McKnight Foundation’s principles and CCRP-funded projects. Before 2008, CCRP’s program documentation made explicit references to ecological concerns (LT 12). In addition, the McKnight Foundation’s former East Africa Women’s Empowerment Program funded organic agriculture work that included markets and training centers. The McKnight Foundation also had held a longstanding interest and concern for the health of the environment. In fact, most of the principles that this case has identified thus far can be seen in the following quotation. What was interesting about the reference was how the ideas were alive, but not articulated. “The interest in sustainability and the environment, and meeting multiple outcomes of livelihoods, nutrition, and social-

economic environmental outcomes – were very much alive and well in the CCRP, but [this] was never articulated" (LT 12).

A recent historical document of the CCRP described the program having some of the principles of AEI long before the beginning of the partnership between the two donors (The McKnight Foundation, 2015). In fact, the historical document had the CCRP oriented towards agroecology as far back as 2001. Biodiversity and sustainability were always important to the McKnight Foundation, as well as producing meaningful breeding outcomes for farmers (LT 15). While the perspectives and interpretations among leadership team members might vary on the extent to which agroecology was a part of the program before 2008, most agreed that AEI grew out of an environment that was supportive of ecological knowledge and concern in agriculture. However, as much as this was true, many projects that CCRP supported were not aligned with what was becoming AEI.

**AEI's Development**

The development of AEI within the CCRP, similar to IMEP, occurred over a period of several years. Between the second and third leadership team meeting, the CCRP directors organized a thematic meeting on nutrition. The meeting notes from the topical meeting on nutrition only referenced agroecological intensification once. It was mentioned during a group exercise where individuals were asked to identify terms they considered jargon (Nutrition Notes, 2010). As the only explicit reference to agroecological intensification in the meeting, one possible interpretation of this statement was that some were still skeptical about its meaning and relevance to the program.

The development of AEI was characterized by several leadership team interviews as a time of conflict. Some leadership team members were totally opposed to AEI. Others did not see the need. Others thought there was no need to use the name agroecological intensification when agroecology was already a recognized approach to agriculture (LT 12). While some saw the connection among AEI, CCRP's roots, and its portfolio, others were not easily convinced. The backdrop of AEI's development in the CCRP was that there was little agreement about the need, purpose, or clarity of what AEI was going to achieve at the beginning. This was an interesting juxtaposition, given that one of the motives for developing AEI as a framework was to develop more coherence and that the process was intended to be collaborative.

**Leadership team meeting 3.** The third leadership team (2011) meeting took place in Recife, Brazil. This meeting was where "we started to pull apart and deconstruct [AEI]" (LT 12). The meeting notes do not include a good description of this process. But what the meeting notes did indicate was that AEI became more integrated into the presentations, conversations, and questions during the meeting. For instance, a key message for the state of the CCRP presentation was the "evolution of the AEI concept" (LM 3 Notes, 2011, p. 2).

The overnight thoughts from the second day included both questions and discussion about advancing AEI. Excerpts from the conversation are quoted below.

- We need some platform to move discussion of AEI forward; extending into an assessment of our shared assumptions.
- AEI- In what level to make the term explicit/implicit? What are the implications of a more explicit AEI foundation? Is there going to be a change in expectations? A shift from what has already been done?
- Chicken! I think the discussion of chickens was left at the point where we need more thought. It seems chicken makes sense with AEI, but not the other way.

- CG manifestation is the definition of AEI. If we look at AEI, I want some focus. Build upon investments, strategic focus on fertilizer. The IMEP issues goes along with this.
- Sustainable! How does that mix it up with AEI? (LM 3, 2011, p. 7)

The meeting also included an in-depth conversation amongst the leadership team about AEI, nutrition, and livelihoods. Presentations from a guest lecturer on AEI and the scientific director preceded the discussions. The vision of AEI at this time was to connect research components, systems, and farmer goals and preferences with local integration. The leadership team then reflected on how AEI, nutrition, and livelihood were supported by the program, regional, and project levels, what would strengthen CCRP support, and what recommendations CCRP could use going forward.

Throughout the meeting, a group met to develop answers to the questions above. The small group argued that projects mostly supported an AEI approach through component research. This turned into a debate concerning what AEI would mean for CCRP. The debate elevated the potential guiding principle of farmer participation (LM 3, 2011). The excerpt below showed that farmers' voices were emerging as an emphasis in AEI.

> I am concerned about the voice not appearing for a long part of it. It was needed at the end, but should take advantage of AEI to include more of their voice. We said that AEI offers [the] possibility of putting a variety of options in front of these that we are working. Therefore, it is about giving them the choice. (LM 3, 2011, p. 14)

As the meeting progressed into the following day, the leadership team had another opportunity to reflect on their overnight thoughts. The reflections demonstrated that for many on the leadership team, AEI had not yet come together as a coherent concept. There were three comments made about AEI. One concern was that AEI was being pulled apart and not given space to put it back together. "We deconstructed AEI. It's hanging. Not on

the agenda where we dig into and bring AEI back together" (LM 3, 2011, p. 15). Another concern was that AEI was too theoretical and not practical enough for grantees. "AEI discussion is theoretical. Trying to imagine if I am working with the grantees, what can I tell them AEI is?" (LM 3 Notes, 2011, p. 16). Finally, one leadership team member highlighted the importance of both human and social capital in making AEI work. "Human capital is so important. Depending on the type of AEI, it might be an environment not taken into account by infrastructure. Social capital is so important as well" (LM 3 Notes, 2011, p. 15).

Following the overnight thoughts, the CCRP leadership team had the opportunity to reflect on a series of site visits from the previous day. The site visits exposed the leadership team to different AEI practices in the Brazilian context. Out of this reflection emerged an exercise where the Leadership team worked together to identify the principles of AEI within CCRP. They also worked to determine the principles that needed further discussion and clarification. I examined the principles of AEI that the leadership team developed. They were useful data highlighting which potential guiding principles guided AEI's development. I organized the potential principles and content from the leadership into a table.

Table 5

*AEI Principles (LM3 Notes, 2011, p. 32).*

| Potential Guiding Principle | Principles of AEI |
|---|---|
| ***Contextualization*** | • Recognize heterogeneity and locality of systems and people<br>• Non-dogmatic |
| ***Integrate global and local knowledge*** | • Blend prediction from theory with local context |
| ***Diversification*** | • Aim to reduce risks through diversification and increasing resource efficiency |

| | |
|---|---|
| ***Multi-functionality*** | • Multifunctional, balanced and smart |
| ***Systems thinking*** | • Integration at systems level<br>• Synergies / complementarities in resource use |
| ***Sustainability*** | • Contribute to improving the environment (ecosystems services) |
| ***Equity*** | • Equity sensitive (women and children) |

The third leadership meeting was the second time the leadership team debated and discussed AEI as the niche of the CCRP. Throughout the debates and discussions that were captured, several potential guiding principles of the CCRP surfaced as leadership team members discussed AEI. The potential guiding principles included farmer participation, contextualization, integrating global and local knowledge, diversity, multi-functionality, systems thinking, sustainability, and equity. As the meeting came to a close, three action items for AEI were detailed, which indicated that AEI was going to receive more work and attention. The work plan included 1) drafting and detailing the principles of AEI, 2) organizing a thematic meeting on AEI, GIS, and systems modeling, and 3) preparing a manuscript on Agroecological Intensification.

**AEI and GIS modeling thematic meeting**. At the close of the third leadership team meeting, the program directors indicated that there would be a thematic meeting organized for August 2011. The topic of the meeting was "Exploring Agroecological Intensification as a Framework for Research and Development for Smallholder Agriculture" (AEI Notes 2011b, p. 1). The meeting was held at the McKnight Foundation in Minneapolis, MN. It included members of the leadership team and invited scholars and practitioners with specialties in agroecology, intensification, systems modeling, farmer learning, adaptive action, nutrition, agroforestry, and crop modeling, for example. The next section of the AEI case study discussed the portion of the meeting where CCRP

leadership team members and invited guests explored how AEI could be integrated into the program.

***Background paper and discussion***. Leading up to the meeting, a background paper was written to frame AEI. The paper helped frame a discussion that identified the "Key Emerging Issues in AEI" (AEI Notes, 2011b, p. 5). The issues were organized into four discussion groups. Each discussion group then spent time answering one of the following questions:

1. What are the foundations of AEI: Principles, values, Theory of Change?
2. How can we address the human dimensions of AEI, including: Extension, education, knowledge, learning, community engagement? Nutrition, livelihoods?
3. What are trade-offs implied in AEI implementation and how should we address them?
4. What is involved in implementing AEI at multiple scales and in diverse conditions? (AEI Notes, 2011b, p. 5)

*Human dimensions of AEI.* The notes captured the summary of two out of the four group presentations to the plenary. Several potential guiding principles emerged in the group that discussed the human dimension of AEI, including farmer participation, thinking in systems, collaboration, contextualization, and adaptation. The potential guiding principle of farmer participation emerged when the discussion group placed farmers at the center of the innovation process: "Humans are at the core of AEI, involved in all phases; technology is not external process but starts with needs and circumstances of the farmers" (AEI Notes, 2011b, p. 5). The group argued that farmers should be included in all stages of research: "Farmer involvement is a key feature of AEI. They should be involved in planning, design, implementation, and evaluation" (AEI Notes, 2011b, p. 5). The potential guiding principle of thinking in systems emerged in the discussion about AEI having diverse pathways and involving multiple dimensions:

"Diverse human implications because diverse pathways and possible interventions (infant diarrhea, bicycles, cereal production) are consistent with AEI" (AEI Notes, 2011b, p. 5). "AEI involves multiple dimensions of possible action from different sectors of society and choices have to be made at different levels. The question is how do these decisions get made?" Collaboration is a potential guiding principle that came from the general comments from the human dimension small group. The group emphasized that "dialogue is critical to engaging people in AEI and engaging AEI in service of people" (AEI Notes, 2011b, p. 5).

The group also argued that the human dimension of AEI implies a different model of scaling up. This is an approach that is influenced by the potential guiding principles of adaptation and use-focused: "Shareability should be discussed at design stage, as opposed to 'scaling up,' which implies distribution of pre-determined solutions. The focus should be transferability, instead of scalability" (AEI Notes, 2011b, p. 5).

*AEI at different scales.* The group that shared implementing AEI at multiple scales and in diverse conditions had an entire discussion that reflected the potential principle of thinking in systems. The discussion captured several different elements of systems thinking. One element was how functional diversity can interact across scales, "where systems components interact with each other, and functional scales, 'where scales interact with each other'" (AEI Notes, 2011b, p. 6). The group also defined the scales as spatial and temporal. The group provided several examples, which also revealed how thinking in systems helped shape AEI. The potential guiding principles across all four examples were adaptation and contextualization. The group's central argument was that many conservation or agroecological practices could be transferred across scales, but

local adaptation and implementation would vary. For example, “keeping ground cover throughout rainy season is a principle that will increase WUE (applicable across scale and diversity ranges). Actual implementation will be context specific” (AEI Notes, 2011b, p. 7).

***Modeling AEI using case studies***. The meeting participants also explored how modeling could be applied to five different case studies. Each case topic contained elements that reflected potential guiding principles of the CCRP.

*Southern Africa.* The Southern Africa case focused on the integration of legumes and the use of models to predict which genotypes performed in which environment (GxE) (AEI, 2011b, p. 15). Legume integration and GxE reflected systems thinking and contextualization as potential guiding principles supporting AEI’s development. Legume integration involved incorporating legumes into cereal-based agriculture systems. Legume integration was complementary to these agriculture systems. It could improve nutrition, soil health, and livelihoods. Integration could include adding in rotation of legumes or legume intercropping.

Emphasizing the role of legume integration as a way to incorporate AEI in the SAf portfolio emphasized the way that thinking in systems was driving how CCRP developed AEI. It also leveraged ecological principles. In addition, matching genotypes to the right environments reflected the potential guiding principle of contextualization. GxE’s purpose was to make available the varieties that perform best in a given context. SAf’s emphasis on GxE as a way to apply AEI in their portfolio highlighted the potential guiding principle of contextualization.

*The Andes.* The Andes team produced two case studies. The case studies highlighted the potential guiding principles of farmer participation and forging and linking global and local knowledge. In regards to farmer participation, the case study explored "how can general knowledge on nutrient budgets, cost-benefit analysis, nutrition and cultural practices be combined and used to enter local information and help farmers plan more optimal rotations?" (AEI Notes, 2011b, p. 16). The second case study from the Andes explored how modeling could support projects in characterizing existing and potential new research sites by forging and linking social and technical innovation through multiple types of data, including soil data, climate data, social capital, crop systems, market access, and economic indicators of poverty and wealth.

*East Africa.* The East Africa participants focused their case on the "optimization of cereals portfolios" (AEI Notes, 2011b, p. 17). Their discussion highlighted two potential guiding principles: contextualization and farmer participation. The working group discussed the importance of understanding the production of maize, sorghum, and finger millet through environmental, market, and cultural factors and how important it was for farmers to be engaged in designing food systems that could address the hunger season.

*West Africa.* The fifth and final case study focused on managing the millet head miner in WAf. This exercise was a space that merged several different potential guiding principles, including contextualization, forging and linking social and technical innovation, environmental sustainability, and collaboration. The working group discussed the importance of variability and performance in real farmer conditions. To understand the sources of variability, both the social and biophysical factors needed to be tested as

hypotheses. In offering a biological control option, the head minor control group prioritized environmental sustainability as a potential guiding principle. Furthermore, the working group explored how the different regions within CCRP could collaborate. Similar biological control work was being done in the Andes.

***Next steps for AEI.*** The meeting ended with a discussion among the leadership team about the next steps in advancing AEI within the CCRP. What was captured in this section was the need to continue the discussions about AEI within the program's leadership team. AEI as a framework needed to be refined, but it also needed to be actionable. There were still questions among the leadership team as to how AEI was going to be the focus of the CCRP and how it would affect the current grant portfolio and future grant making. There were also questions about the extent to which capacity would have to be strengthened to incorporate AEI at regional and project levels. One thing stood out: if it was going to be the focus of the program, it was important to publish a paper and support it. Publishing a paper on the need for AEI would legitimize the AEI within the broader global research and scientific community.

Participation in the fourth day of the meeting was limited to CCRP's leadership team. This time was dedicated to debriefing and advancing AEI within the CCRP. The leadership team focused on three tasks: developing and deploying an AEI taxonomy that would rate each project's alignment with AEI; discussing the evaluation potential and implications for the program because of AEI; and considering how the leadership team would know how the regions and projects were moving towards AEI.

As the meeting was brought to a close, the leadership team articulated a comprehensive action plan for integrating AEI as the central guiding framework for the

CCRP. The plan asked the whole team to "Integrate AEI at program and regional levels" (AEI Notes, 2011c, p. 9), "Refine principles for AEI in WAf" (AEI Notes, 2011c, p. 9), "Elaborate the AEI tool and data table" (AEI Notes, 2011c, p. 10), "Explore the book idea on AEI (proposal?)" (AEI Notes, 2011c, p. 10), "Visit and talk to NARs about AEI to inform collaborative action in WAf" (AEI Notes, 2011c, p. 10), "Commission [an] audit of institutional and tools to support AEI in all regions (e.g., study union)" (AEI Notes, 2011c, p. 10), "Explore AEI grant making ideas" (AEI Notes, 2011c, p. 10), and so on.

The documented conversations and debates that occurred during the third and fourth leadership team meeting provided insight into how AEI developed and what potential guiding principles gave shape to AEI. The potential principles uncovered included the following:

- Farmer participation
- Contextualization
- Integrating local and global knowledge
- Multi-functionality
- Systems thinking
- Diversification
- Sustainability
- Equity
- Adaptation
- Forging and linking social and technical innovation

**Integration and Stability Stages**

From January 2010 to August 2011, the CCRP had wrestled with developing AEI as a framework for the CCRP. It was not until the August 2011 meeting that the CCRP began to make headway in integrating AEI into the program. The next leadership team meeting (LM 4) took place in January 2012. The notes from that meeting indicated that

AEI was moving from the development stage to the integration and stability stages within the CCRP. This next section showed how AEI became integrated into the program.

**Leadership team meeting 4.** The CCRP's fourth leadership team meeting took place in Faro, Portugal during January 2012. The meeting marked a significant moment in the history of AEI in the CCRP. This is where the language in the meeting notes shifted towards acting on and integrating AEI into the program rather than exploring the concept. For example, the goal of the meeting was to "plan the structure of CCRP's AEI approach (framework) and explore how to embed it into tools and methods to inform our work" (LM 4 Notes, 2012, p. 7). This statement is markedly different than the topic of the previous meeting on AEI and modeling which was titled, "Exploring Agroecological Intensification as a Framework for Research and Development for Smallholder Agriculture" (AEI Notes, 2011, p. 1). The meeting agenda outlined the multiple ways AEI was going to be integrated into the program, including through a virtual book, a virtual social network, a toolkit for researchers that included literature databases, a knowledge management/database system, the communication plan, gender empowerment, collaborations and partnerships, and, of course, grant making.

The focus of the meeting was the work towards developing products that could be used to align, evaluate, communicate, and build collaborations to support AEI. Several products that eventually became the program's core AEI resource base were advanced during the meeting. The AEI Framework was proposed and finalized using an iterative process with the leadership team. As a tool, the AEI Framework was developed for analyzing projects and portfolios, guiding strategic decision making, tracking changes over time, communicating AEI across the program, and reporting performance. The

framework in Table 6 came from the meeting notes (LM 4 Notes, 2012, p. 22). It encompassed many of the potential guiding principles that have been discussed so far.

First of all, the framework was divided into two different categories: levers and outcomes. The AEI levers were the row labels of the table. They were the various types of interventions in the agricultural system that, if blended together, could lead to AEI outcomes, which were located in the column headers of the table. Two potential guiding principles stood out in the outcomes section of the framework. The first potential guiding principle was the multiple outcomes principle. The framework included five different kinds of outcomes, including productivity, resilience, livelihoods, nutrition, and equity and empowerment. Second, the AEI framework specifically included an outcome focused on equity and empowerment.

The levers were designed so they would interact to achieve multiple outcomes. In addition, they addressed both technical and social aspects. It demonstrated the systems thinking and linking social and technical innovation as potential guiding principles. Third, the framework also made explicit reference to building capacity as a potential guiding principle.

Table 6

*AEI Framework*

| Ends → / Levers ↓ | Rubber meets road | Productivity | Resilience / ecosystems services | Livelihoods (Income / assets) | Nutrition for human health | Equity and Empowerment |
|---|---|---|---|---|---|---|
| **Systems diversification and risk management** | | | | | | |
| **Crop and other component improvement** | | | | | | |
| **Agroecological pest management** | | | | | | |
| **Systems diversification** | | | | | | |
| **Coping with climate variability and change** | | | | | | |
| **Leveraging knowledge heterogeneity** | | | | | | |
| **Risk management** | | | | | | |
| **Improving farm resource-use efficiency** | | | | | | |
| **Improving on-farm post-harvest practices** | | | | | | |
| **Building social capital** | | | | | | |
| **Forging and linking social and technical innovation** | | Ag. Systems Inst. Systems | | | | |
| **Building human and social capital, and collective action (Including gender, age, and marginalized groups)** | | | | | | |
| **Markets and policy** | | | | | | |
| **Improving functionality of value chains** | | | | | | |
| **(Influence) policy** | | | | | | |
| **Cross-cutting capacities** | | | | Capacity building: Post-graduate training; research methods (including participatory action research); integrated monitoring, evaluation and planning capacity; farmer-to-farmer learning; knowledge management ; national action plans and policy | | |

The leadership team also spent a significant amount of time during this meeting discussing its communication plan and strategy. A central component of that plan was to design an AEI portal that would be a centralized—a social network, a literature base, a virtual AEI book, and toolkit for AEI-focused research. The meeting was intended to gather feedback on the AEI portal and its design. The leadership team rotated through varying stations and explored websites that displayed different formats for the AEI portal. The work during the meeting laid the groundwork for the eventual development of the AEI Exchange (AEIx). It took over a year for AEIx to be operational, but it became the primary tool of the CCRP for communicating AEI to external and internal audiences.

Throughout the week, a communication consulting firm assisted the CCRP leadership team in drafting some of its core communication documents, including its mission and vision statements. This mission and vision statements were another step towards the integration of AEI. The mission statement, developed by the leadership team, read: "To contribute to a world where all have access to nutritious food that is sustainably produced by local people." The vision statement incorporated AEI: "We do this through collaborative Agro-Ecological systems research and knowledge sharing that strengthen the capacities of small holder farmers, research institutions, and development organizations" (LM 4 Notes, 2012, p. 53).

The integration of AEI into the program was also reflected in the planning stage of the meeting. Both regional and program plans reflected the integration of AEI into the program. For example, in WAf, the RT was going to work with potential grantees to develop AEI concept notes to make the portfolio in the region more reflective of AEI. In

SAf, the RT had two new grants. The plan was to nudge existing projects to fit more comprehensively within the framework. In EHAf, the RT planned on nudging projects towards an AEI approach in addition to producing critical AEI messages for the CoP. At the program level, the communication consulting firm was tasked with continuing the development of the AEI portal. The AEI framework was going to be integrated into CCRP's database (SyMon). At the regional level, all RTs were asked to continue to "… 'nudge' projects toward greater AEI engagement" (LM 4 Notes, 2012, p. 57).

The fourth leadership team meeting focused on the integration of AEI. Many plans were set in motion to do so following the meeting. The AEI framework that was finalized during the meeting included four potential guiding principles that had been highlighted during the development stage: multiple outcomes, systems thinking, forging and linking social and technical innovation, and equity. The framework highlighted one other potential guiding principle: capacity building.

**Managing the grant portfolio.** The CCRP was primarily a grant making program within the McKnight Foundation. Naturally, the guiding framework had implications for existing and future grant recipients. In the CCRP, it meant that new grants would have to have a more explicit focus on AEI (LT 2 and LT 7). It also meant that some grants no longer fit in the portfolio (LT 2, LT 11, LT 10). For the CCRP, it primarily meant that Regional Teams worked to nudge existing grantees to make their AEI work more explicit (LT 7). As AEI was integrated into the program, nudging existing grantees and finding new grantees to match the AEI agenda became a central part of the regional team responsibility (LT 4).

**Concluding the Development of AEI**

The integration of AEI in the CCRP from 2012 forward was part of the ongoing work of the leadership team. It included the publishing of two conceptual papers (Nelson & Coe, 2013; Nelson & Coe, 2014), an online exchange, an integrated M&E database, inclusion of AEI as necessary grant making criteria, and moments where the program has discussed AEI with large global stakeholders working on international agriculture research and development. In addition, since 2012 the leadership team had focused discussions on linking social and technical innovation (Linking Social & Technical Notes, 2012a), integrating a gender focus (Gates Planning Notes, 2013), a Sustainable Legume Intensification Initiative (LT 5), and developing the Farmer Research Network (LM 6 Notes, 2014; LM 7 Notes, 2015), as well many others. But what stands out was that the leadership team did not attempt to replace these topics as CCRP's niche. Rather, they worked to explore how they were integrated within and supported the AEI framework.

This case study thus far has explored what AEI is and traced how AEI developed in the CCRP as a means to identify the potential guiding principles of the CCRP. The next section discussed the ways in which leadership team members understood how AEI was addressing various problems and opportunities in international agriculture research and development.

**Problems and Opportunities**

For the AEI case, I asked members of the leadership team a set of questions similar to that of the IMEP case. The questions focused on what problems the CCRP was trying to address with AEI. By focusing on how the leadership team described the problems AEI was trying to respond to, they inevitably described how it was a solution.

In describing the problems and solutions that CCRP worked on, I was able to listen for how the leadership team was building its foundational beliefs into the CCRP's core program developments without having to ask the question, "What are CCRP's principles?" Most of the responses from the leadership team fit within the existing potential guiding principles that came out of the historical section of the case study, with a few exceptions. The following section discussed how the leadership answered the question.

**Focus on resource-constrained smallholder farmers.** AEI, as it was described in both AEIx and in journal publications produced by the leadership team (Nelson & Coe, 2013; Nelson & Coe, 2014), contained language about the potential guiding principle of focusing on resource-constrained smallholder farmers. Interestingly, this was not a theme that emerged out of the historical overview of AEI. Farmer participation emerged as a potential guiding principle shaping AEI's development, but there was not a noticeable pattern of discussion about resource-constrained smallholders. There are two possible explanations for this. The most likely explanation is that, in part, it was a given that the leadership team focused AEI on benefitting resource-constrained smallholder farmers and that the meeting notes did not capture every conversation. Likely the discussion had come up in various small or large group discussions that the meeting notes did not capture.

Resource-constrained smallholder farmers had a difficult time keeping their agriculture systems productive enough to meet their livelihood and nutritional needs (LT 1). AEI was seen as a response to the varied conditions of constrained smallholders.

> So we are recognizing that we have farmers with different endowments, and we want to try and help take care of the varied farmers that we deal with by using what they have to improve their farming system and to benefit them. (LT 1)

Another leadership team member described AEI as a response for smallholders that did not have access to many resources.

> Okay, I think perhaps a number of things. One is how you try and impact on smallholder systems without too many resources, where farmers don't have access to too many resources. I think AEI is our sort of bringing together of a number of strands of thinking over the years, towards dealing with a very complex agricultural system, to which you just can't apply a lot of cash resource. (LT 5)

But within AEI, the CCRP was offering an alternative approach to the same problem that other organizations were trying to address. As one leadership team member described, "You know, I think the overall problem is the same problem that many, many other programs are trying to address, of the integrated problem of livelihoods and environmental problems, particularly in developing countries" (LT 14). AEI was about spending the time and resources necessary to take the AEI principles and make them accessible to constrained smallholders.

> So, the problems are that we know about the principles, but applying them and finding ways to make them accessible as technologies to poor farmers requires the ability to understand and the capacity to invest that might not be there because agroecological solutions require time and require a consistent approach to looking after soil, water, and the rest of the components of the system. (LT 13)

Being smallholder-focused was not a unique niche of the CCRP. What made CCRP unique was how it was trying to address those problems through AEI.

**Systems thinking.** At the core of what made the CCRP and AEI unique was the focus on the potential guiding principles of systems thinking and how it emerged in its various program developments, including AEI.

> Well, you know, to again oversimplify it, the real problem is component-based research that doesn't take into account whole systems and contexts, in a nutshell. And the idea that smallholder farmers can't work at the component level because when it's that small, you have to be thinking about the whole system because you live in the system. (LT 11)

In being systems-focused, AEI brought together both the biophysical systems and various social systems in which smallholder farmers engage.

> And there, AEI comes in because it recognizes that – you know, it's a systems-based approach – it recognizes that the human side is as important as the ecological side. It recognizes that the human side is not just market economics, but there's other things that come into play as well. (LT 14)

> Working within both the ecological and social contexts includes the potential principle of forging and linking social and technical innovation. AEI includes developing ways to bridge the social and technical sides of innovation that initially were seen as almost parallel processes, but sort of merging them. (LT 3)

The specific focus on systems thinking within AEI had its roots in the leadership team. Many of the leadership team members had been thinking this way for a long time.

I think within the CCRP leadership team, there was certainly more of a concentration on systems thinking.

> And you know, we have put a lot of effort into it, you know – we had the whole AEI meeting what, two years ago, three years ago. And we've had a lot of people to talk to, who very much have been thinking this way for a number of years. And a number of us, like myself, come from originally a farming systems background, and then into participatory research, so I think we've had a lot of the elements there, to make it work. (LT 5)

But the systems focus in AEI was not just a means of creating a distinct niche for CCRP. It went back to the problems with food security. Focusing on component-based research was viewed as an inadequate pathway to change.

> Well, I think the reason is that – or, the classical research individual components of the system are just not enough. They are insufficient in our region to address this nearly chronic underproduction and food insecurity. We really need more new entry points and more holistic approaches that are based on production systems or possibly even on livelihoods. Farmers do not just cultivate one variety. They have legumes, they have animals, and they have other activities that they follow up, and it's good to look at this a little bit in a more holistic manner. (LT 7)

The leadership team saw how AEI had a systems-focused response to the complexities of supporting agriculture research in international development. Being systems-focused was linked together with the next potential guiding principle discussed in the interviews with members of the leadership team, i.e., contextualization.

**Contextualization.** The potential guiding principle of contextualization went hand in hand with being systems-focused. AEI, a framework, was promoting a way of thinking that would lead to the generation of locally specific technologies and management practices.

> I think it's a number of things that go together. And knowing that there need to be local solutions to local problems. I think that's another important part of AEI, which of course isn't just exclusive to AEI and what CCRP's trying to do with smallholder farmers. (LT 5)

When asked to define what that meant compared to other approaches to agriculture development, the leadership team member above described how conservation agriculture was still looking for a single, silver bullet recommendation, rather than recommendations that were more specific to the context.

> I mean, you'd probably get people in conservation ag work saying that they do (laughs). And they certainly have elements of it. They're trying to integrate, you know, a number of principles into inter-crop production. But I think they're still looking for the one recommendation, the blanket recommendation of how to use conservation agriculture, instead of looking at how you can use different elements of it, depending on the circumstances in which a particular farm, in which a particular family is working at. More site specificity, for example. (LT 5)

The potential guiding principle of contextualization in AEI supported practices of developing and evaluating precise, context-specific options rather than reducing the options and standardizing solutions across highly variable contexts. Embracing complexity was an approach that distinguished AEI as a guiding framework.

> The idea of heterogeneity and options by context, that's something which isn't always there in alternatives, because the standard alternative model says you simplify things until they work everywhere, and that has some implications then for the sorts of designs that we promote. (LT 14)

Smallholder-focused, systems thinking, and contextualization were evident in the thinking behind AEI. These potential guiding principles influenced AEI to be sensitive to context and relevant to the various social aspects and needs of smallholder agriculture. But there was an additional potential guiding principle that was a major contributor to AEI: ecological sustainability.

**Ecological sustainability.** The ecosystems where CCRP funded most of its work were experiencing large degrees of use and pressure and food insecurity. As one member of the leadership team put it: "We have limited land to produce the food we need, and we have troubling environmental problems which affect farmers in a variety of ways" (LT 3). AEI was viewed as a response to both realities. "AEI is trying to reduce externalities and increase food production" (LT 3). Ecological sustainability was a potential guiding principle that was raised over and over again in interviews with leadership team members. "And, when I say sustainability, I'm thinking primarily, although not exclusively, about environmental sustainability" (LT 4). But it was almost always discussed in the realm of trying to help the smallholder without damaging the environment or by protecting an ecosystem service.

> And also, I think, wanting to do the right thing by the environment as well, to protect the environment for the future, to sustain productivity of smallholder farms without further damage to the resource base. And to protect ecosystem services. (LT 5)

> How do we feed the world's poorest farmers in a sustainable way – a resourceful farmer in a poor environment, also? How do we sustainably produce, for that farming family, in that environment to be able to feed itself, and also… yeah, and in a sustainable way? (LT 6)

The whole notion of ecological sustainability was not a pipe dream for the CCRP. It was a very real concern that came close to matching the concern for smallholders to feed their families and their world. One leadership team member (LT 13) described, from his point of view, the history of agricultural intensification in North America and Europe.

> A key ingredient to intensification was accessible and cheap fossil fuels. Fossil fuels drove the first major wave of intensification through mechanization, then drove the second wave through the petrochemical movement of fertilizers and pesticides. Both movements in agricultural mechanization increased productivity, but both led to undesirable environmental externalities. AEI was an attempt to craft an alternative agriculture that, if possible, [is] beneficial to the environment, and, if not possible, at least doing it in a way that it reduces the negative impacts. (LT 13)

**Leveraging ecological principles**. The leadership team connected AEI to sustainability. But how exactly do you increase productivity without the driving force of fossil fuels? The potential guiding principle that supported sustainability in AEI was the leveraging of ecological principles.

> So what is our solution? And I think, and this is what AEI represents for me – is the increase in the use of knowledge for agricultural production, which basically means, understanding better the agroecological relationships and principles that we work with to increase productivity without placing harm, or increasing the benefits to the environment. (LT 13)

This meant using diversification and taking advantage of natural ecological cycles that functioned in support of agricultural production. These potential guiding principles were viewed as leading to a more stable agriculture. “And I feel like the diversity, and the trying to work with natural cycles, and things like that – understanding basic ecological principles and how that can be applied to making your farming less risky – those are all important” (LT 2).

**Collaboration**. The last potential guiding principle observed in the interview data was collaboration. One member of the leadership team understood AEI to be more than just a framework for agriculture systems. It was a framework working with a collaboration of institutions at a local farm level and research and university level for the purpose of producing localized solutions.

> I just understood, in broad terms, that it was interested in promoting sustainable approaches to agricultural production, and that it was trying to engage as much as possible with farmers' groups as well as the formal research system, and that it was bringing in a sort of wider network of organizations interested in the research process, to identify problems, and to try to develop solutions at the local level. (LT 4)

## Problems and Opportunities

This section of the case study was written to explore potential guiding principles of the CCRP in how the leadership team talked about the problems AEI was addressing. I intentionally limited this section to a discussion of how leadership team members externalized their thinking. I chose to do this to demonstrate how talking about the motives for a program development or a major decision could reveal the potential guiding principle of a group of decision makers. In my interviews with leadership team members, six different potential guiding principles of the CCRP emerged, including focus on resource-constrained smallholder farmers, systems thinking, contextualization, ecological sustainability, leveraging ecological principles, and collaboration.

**Conclusion**

In 2010, the CCRP started down a path that more precisely defined its landscape. Agroecological Intensification was developed and integrated into the program as its guiding agricultural framework – its niche. This case study focused on the potential guiding principles that helped shape and define AEI as a permanent fixture in CCRP's own ecology. The early vision for AEI was that it would bring coherence to the program through collaboratively developing an agreement in defining AEI. AEI was developed through debate. It was a contested proposal among the leadership team. But, in examining the meeting notes, what stood out was not that AEI was opposed, but that the leadership team was debating what AEI was going to be in light of the potential guiding principles that held the CCRP together as a program. These potential guiding principles during the development and integration stages included systems thinking, sustainability, contextualization, multiple outcomes, collaboration, linking social and technical innovation, diversity, farmer participation, integrate global and local knowledge, equity, adaptation, use-focused, leverage ecological principles, build capacity, and focus on resource-constrained smallholder farmers.

These themes were consistent from meeting to meeting. They either preceded a presentation or were included in framing a discussion or concern about AEI. This dynamic highlighted the role that guiding principles could play, even if they were not defined, in creating the boundaries of a program development or intervention. When I conducted interviews with the leadership team, the team had moved AEI beyond the integration stage and was in the implementation and expansion stage. The themes that came out of my interviews with members of the leadership team were a similar but

shorter list of potential guiding principles including focus on resource-constrained smallholder farmers, systems thinking, contextualization, ecological sustainability, leveraging ecological principles, and collaboration.

## Case Study: Multi Environmental Trial Initiative (METI)

### Introduction

This case study explored how METI, a training initiative within the CCRP, developed. METI developed as one of many capacity building efforts tied to the Research Methods Support (RMS) team within the CCRP to understand the development of Multi Environmental Trial Initiative (METI). The Multi Environmental Trial Initiative was a smaller program development than IMEP or AEI. METI represented one component of RMS. Nevertheless, it was a significant part of the support provided by RMS. The case study started with an overview of RMS's history in the CCRP. The overview situated RMS's role within the program. The second section explored what METI was, why it developed, how it developed, and the role the initiative played within the program. The third section explored, from the leadership team's perspectives, the various problems that METI was addressing. I used each section to identify the potential guiding principles that gave shape to METI. The table below provides a summary of where each potential guiding principle was observed during the case study.

Table 7

*Potential Guiding Principles that Shaped METI*

| Potential guiding principle | Research methods background | Development | Problems and opportunities |
|---|---|---|---|
| Strengthen capacity | Yes | | |
| Collaboration | Yes | Yes | |
| Learning and adaptation | Yes | | |
| Contextualization | | Yes | Yes |
| Link social and technical innovation | | Yes | Yes |
| Farmer participation | | Yes | Yes |

**Background of Research Methods Support.** Before the Gates era, CCRP did not have formal research methods or statistical support for its grantees. The addition of the Research Methods Support team from Reading University to the CCRP occurred during the Gates Era. One of the objectives at the first leadership meeting in 2009 was to review a cross-cutting grant for statistical support within the CCRP (LM 1 Notes, 2009). The grant was intended to give projects funded by the CCRP access to high-quality research methods support. The hope was that increased support would improve both the capacity of researchers and the quality of the research they produced. According to the meeting notes, the topic of RMS during the first leadership team meeting was primarily dedicated to reviewing the proposal from Reading University. The leadership team provided feedback that was incorporated by the Reading team. The Foundation eventually funded the cross-cutting grant.

The second leadership team meeting in January 2010 included two members of the RMS team. According to the notes, this was the first meeting where members of the RMS team participated and engaged in the leadership team meeting. CCRP gave the RMS team the opportunity to discuss how it proposed to engage and work with funded projects. The meeting notes provided enough data for a rough picture of some of the potential guiding principles that guided RMS's early involvement with the CCRP. In a presentation to the leadership team, the RMS team indicated that CCRP's approach of learning and adaptation fit well within their approach; "the CCRP structure of What? So what? And Now what? fit nicely into the work of Reading to improve research designs and statistical analysis for CCRP projects" (LM 2 Notes, 2010, p. 23). The approach would allow the RMS team to "be flexible to adapt to the needs of individual projects"

(LM 2 Notes, 2010, p. 24). The bulk of the project support would have to do with the design, data flow, analysis, and writing of research products. Also, according to the meeting notes, there was demand from the regional teams for RMS to become integrated into the teams and participate in regional CoPs.

One of the unique arrangements of the CCRP compared to other institutions that use Reading Statistical Services for support was the integration of Research Methods Support staff among the leadership team. One member of the leadership team used a powerful analogy to describe the difference. Battleships had navy personnel above and below deck. The leadership of most battleships was stationed above deck so they could make strategic decisions and communicate to all the ship's crew, most of whom are below deck. The statistical support service at Reading rarely played an above deck role in research projects. Rarely were they involved in the visioning and strategic conversations. Early on in their involvement with the CCRP, the directors of the CCRP requested that the RMS team participate in the CCRP's leadership team meetings. Including the RMS team within the leadership team meeting meant that the RMS team would contribute to the development of the CCRP. At the same time, RMS would continue to function in its below deck capacities in helping CCRP-funded projects with various types of support. By including the RMS team in leadership, meetings were guided by the emphasis that CCRP placed on collaboration, a potential guiding principle.

**The beginnings of METI.** Following the first stage of the first grant issued to Reading University, the RMS team played a central role in both the leadership team functions in the CCRP and capacity building in the regions. RMS members designed and implemented various workshops, attended CoP meetings, and provided individual

projects with feedback. Given the breadth of CCRP's portfolio and the diversity of project capacities, it was difficult for some leadership team members to see any noticeable impact on the capacity improvements of projects. While the necessary skills for conducting high-quality research varied from project to project, most projects tended to share one similar problem. Few projects had the ability to design and analyze research trials that accounted for the natural variability in different farming contexts.

The idea for the Multi Environmental Trial Initiative was conceived during the fourth leadership team meeting in January 2012. The impetus behind the initiative was two-fold. First, launching an effort meant that the program would support more than just a series of workshops that did not have an overall arch or theme (LT 5, LT 15). Second, most projects were already using multi environmental trials. The problem was that they were not producing contextualized results (LT 11). The CCRP leadership team had noted that the common practice, especially in the African context, was for agriculture research to create one or a few limited technology options for a vast and diverse number of circumstances. As noted in the AEI case study, the fourth leadership team meeting was also a moment within the CCRP where AEI solidified its position as the organizing conceptual framework for the CCRP. METI was born within that context.

Between the 2012 and 2013 leadership team meetings, the RMS team organized two METI workshops. The first workshop occurred in April 2012 and the second happened in December 2012. Both workshops included project representatives from multiple regions. The 2013 leadership team meeting was where METI began to emerge as a core cross-cutting design consideration of the program. Several significant developments or clarifications came out of that leadership meeting in 2013. First, it was

articulated that METI was an extension of the principles of genotype x environment designs, which breeders had been using for a long time. However, METI was trying to bridge the social context as well (LM 5 Notes, 2013). In doing so, the METI became one way to link social and technical innovation. Second, the options x context (OxC) framework and METI became a central feature for helping projects move away from making blanket recommendations so that contextualized results would get the fit right.

Between the 2013 and 2014 leadership team meeting, the leadership team organized a planning meeting for the second grant from the BMGF. One of the discussions that occurred during the meeting about METI was the extent to which METI was an innovation. What emerged from the debate was an agreement that the methods were not new, but the way they had been put together within METI was allowing researchers to ask and answer new questions. It was deemed special, but not innovative (Gates Planning Notes, 2013). It also reinforced that METI was not just biophysical. It was also social and included multiple agroecological zones and production systems (Gates Planning Notes, 2013). By the end of the meeting, it was clear that METI was a core cross-cutting component of the CCRP.

The third METI development occurred in December 2013 just before the 2014 leadership team meeting in Seville, Spain. METI continued as one of the only research methods topics that received special focus. This trend, along with comments from previous meetings, highlighted the relative significance of METI among the leadership team. The planning group proposed METI as the way the CCRP should advance the conceptual work behind the Farmer Research Network (FRN), another new initiative in

the program. They argued that farmer involvement was critical and that METI needed to continue to bring in social innovation (LM 6 Notes, 2014).

METI training continued to occur in 2014. It included METI in West Africa and the METS for LEGs (Legumes) in Malawi. Interesting, the METS for LEGs was a slightly different focus than in the past. The design of the workshop was comprised of projects working on legume integration. It focused mostly on cropping systems rather than breeding (LT 14).

In August 2014, the leadership team met at Cornell University. The primary purpose of the meeting was to advance the Farmer Research Network initiative. Again, METI was the only research methods initiative that received dedicated planning time. What emerged during the meeting and planning time was an awareness that multi environmental trials – and therefore, METI – played a significant role in "supporting the development of sound research approaches based on experimentation for AEI, particularly for use in FRN" (FRN Planning, 2014, p. 43). The significance of the role implied that METI was also inspired and bound by the same potential guiding principles of AEI and the emerging FRN initiative. In particular, those included a focus on farmer participation and collaboration.

**Problems and Opportunities**

As part of the research, I also asked members of the leadership team to reflect on the problems that the CCRP was trying to address with METI. This section outlined some of the general problems that METI was seeking to address, including the lack of contextualized thinking in research projects, the need to link social and technical innovation, and farmer participation. The purpose of this section was similar to the IMEP

and AEI case studies. I asked how members of the leadership thought about the problems that METI was addressing as a way to explore its potential guiding principles.

One of the overarching themes from my interviews was that fundamental to METI were views that the leadership team held of the incentives and policy structures that governed research and development. The pursuit of silver bullet, over-generalized, blanket recommendations were thought to be shaped by the incentives put in place by governments. The CCRP leadership team perceived that most grantees operated within an institutional context that rewarded them for promoting general innovations or technologies that should work for everyone.

> And so we realized those constraints that our grantees did very conventional research, searching for those famous silver bullets, one-size-fits-all recommendations for a whole country. And we thought that it was not what we would like to support. We would like grantees to appreciate better the heterogeneity of the farmers and of the ecologies, and to make more site-specific recommendation. And there needs also a better experimental design for environmental trials. (LT 7)

***Contextualization.*** The issue that the CCRP leadership team had with blanket recommendations was that they rarely if ever worked equally well for all farmers. "If you really look at the data, it's very rare that one thing is doing well across all these different environments" (LT 2). Creating the conditions for projects to produce contextualized research outputs was one of the motives for METI, argues one member of the leadership team: "Yeah, actually it's because of this option by context issue that the METI also came up" (LT 1). However, for research outputs to be contextualized, projects have to value the heterogeneity of farmers and farming communities. METI was built upon the belief that diversity across contexts was something to be designed for, not designed out of

a research study. Below are several excerpts from my interviews that emphasize the need for projects to think contextually.

> . . . 'cause now you're using different people, working in their real, real circumstances, and you're giving them a range of options. So they can choose what they want, and now you start collecting data from that, which you can generalize; now, say you're in this situation, maybe this is what you'd do, and you have evidence to show that many people have worked with it and have found it working. (LT 1)

> Mainly to be able to account for the diversities that is in the farming communities – including biophysical as well as social diversities. And, account for those differences of contexts. And be able to see how the different innovations perform under different contexts, and to be able to offer to the farmer the different options or basket of options that he can combine or select in his own context. (LT 6)

> I would imagine that this arose from a recognition of the need to try to ensure that the research recommendations that emerge from the activities that are being carried out are tailored to meet the conditions at kind of local scales because, quite often, national agricultural systems tend to do research under a very restricted set of environmental conditions, and then come up with a broad-scale recommendation that, you know, may be the best fit overall, but may actually not necessarily provide very helpful solutions to farmers in agroenvironmental conditions. (LT 4)

***Linking social and technical innovation***. Thus far we have established that leadership team members placed a high value on contextualization. In the past, GxE research was contextual in so far as understanding the interaction between genotypes and different environments. However, METI was bigger than that. The quotation below from a leadership team member argued that one of the beliefs was the interaction of not just biophysical but social factors with research outputs, linking social and technical innovation together by design.

> Okay, that is not really very new, in terms of in the thinking. I mean, a lot of that is farming systems research, in my opinion. And it's really the recognition that the smallholder environment is very heterogeneous, complex. So both social reasons, and biophysical reasons – and so, you need to constantly be aware of that dimension. But the reality, within most of our projects, is that people do these trials in one place and they're looking for a winner, something that they can

> recommend as a best practice for the whole country, and things like… I think, though, that by getting people and organizations that are already in the AEI thinking, that they will automatically understand the METI aspect of it, clearly – than people that are coming from a more conventional background. (LT 2)

***Farmer participation.*** Farmer participation did not emerge as a driving potential guiding principle in my interviews. However, one leadership team member did make the connection between a project that was producing METI results and how well they worked with farmers.

> But they were in Western Kenya. Even that Kenyan cowpea project, I remember the project coordinator there, and it had more to do with the farmers, I think. Most of the highly trained agricultural researchers just cannot imagine farmers actually having the skills, incentive, time to actually get engaged – more than just the testing. That's how they've been trained. (LT 3)

**Conclusion**. The very beginning of RMS's engagement in the CCRP revealed three potential guiding principles that helped develop METI: learning and adaptation, collaboration, and building capacity. These were the potential guiding principles that brought RMS into the CCRP and were foundational in creating the conditions for METI to emerge. As the RMS spent time learning about the CCRP, becoming integrated into the regional team structure, it became evident to the team that RMS's work in the CCRP needed to be more focused around a set of particular issues. The issues defined what potential guiding principles of the CCRP helped develop METI, including the potential principles of contextualization, integrating social and technical innovation, focus on resource-constrained smallholders, and farmer participation.

# Cross-Case Analysis

## Introduction

The purpose of the cross-case analysis in this study was to systematically examine the patterns across the three cases to identify the principles that guided the development of IMEP, AEI, and METI. The intention was that by exploring how each initiative developed, the implicit guiding principles that helped shape CCRP's development would be revealed. This analytical process was intended to help build and strengthen the practice of principles-focused evaluation by testing a process for identifying the guiding principles of a program that had been developing, evolving, and emerging.

The cross-case analysis was the section of the study that explicitly answered the research questions:

1. What are the principles that have guided the development of the CCRP?
2. How do the guiding principles compare and contrast across CCRP's program developments?

## Analysis

The analysis section broke all 16 guiding principles into three parts. The first section included the name of the principle and a description of its meaning in the CCRP. These were written as active sentences, intended to describe the essence of what the principles meant in the CCRP. The second section described where and how that guiding principle existed explicitly in CCRP documentation as a potential principle. For this analysis, only the lists of principles starting from 2012 were included. The third section described the observations supporting the guiding principle that informed each case study. This section was intentionally concrete. As an insider within the program, I had

developed my vision and imagination of what IMEP, AEI, and METI were. I wanted to ensure that the evidence I used in the case study and cross-case analysis was grounded in the words of others and not only my own. In the fourth section of each guiding principle, I explored with more creativity and my own insight from my experience in the program. In this section, I was intentional about including my perspective as an insider. I gave specific attention to how IMEP, AEI, and METI were guided by the principle, even if it was not observed as a primary principle of that initiative. In the instances where the principles were identified in the three cases, I didn't include a reflection because the evidence that the principle helped shape the case's development was already substantiated. A summary of the analysis can be found in Table 9 at the end of the chapter.

Table 8

*CCRP's Guiding Principles and Definitions*

| **Guiding Principle** | **Definition** |
|---|---|
| 1. Build sustainability | Support agriculture research and development that produces positive food security, nutritional, and livelihood outcomes while minimizing environmental degradation. |
| 2. Develop coherence | Build shared understanding and agreement about the purpose, scope, and nature of the CCRP. Ensure all initiatives and activities fit within CCRP's values, principles, and theory of change at all levels. |
| 3. Collaborate | Develop meaningful partnerships where multiple stakeholders from across and within sectors, institutions, and social groups work with and not against each other for each other's good. |
| 4. Diversify | Focus research on agriculture systems to include diversity among varieties and across species and management options to optimize ecological principles and resilience. |
| 5. Emphasize the multi-dimensionality of outcomes | All changes in agriculture systems produce multiple outcomes. Collect evidence on the net impact of new agriculture products and knowledge while minimizing risk associated with potentially adverse outcomes. |

| Guiding Principle | Definition |
|---|---|
| 6. Focus on resource-constrained smallholder farmers | Direct resources, attention, and advocacy towards forming partnerships and working in collaboration with farmers who are vulnerable, marginalized, and do not benefit from mainstream, commodity-driven movements in agricultural research and development. |
| 7. Focus on use | Ensure that every inquiry starts and finishes with the potential for use of the process, knowledge, or product in mind. |
| 8. Foster the link between social and technical innovation and inquiry | Support change in agriculture and research and development systems by integrating the social innovation, meaning making, and adaptation processes with the technical innovation and inquiry processes. |
| 9. Integrate farmer participation and knowledge | Integrate farmers, their resources, and their knowledge into the design, implementation, analysis, and reporting and sharing of research results. |
| 10. Integrate global and local knowledge | Ensure that global scientific knowledge and principles interact with and are in dialogue with local and indigenous knowledge. |
| 11. Learn for adaptation | Foster reflective practice and learning. Prepare to change the nature, scope, and focus of the program and projects based on iterative learning, emergence, and changing contexts. |
| 12. Leverage ecological principles | Use ecological knowledge to support increases in systems productivity while reducing environmental degradation. |
| 13. Leverage and communicate contextual variation | Plan for and integrate variation among biophysical environments, production and management systems, and social systems in the design, implementation, and communication of research products and knowledge. |
| 14. Promote equity | Focus research and development activities that promote socioeconomic justness from design to the use and impact of research knowledge and results. |
| 15. Think in systems | Agriculture and development systems are interconnected systems comprised of global and subsystems that interact with and influence how agriculture research knowledge and technologies foster change. Support research and development to document and observe how research components interact in social, environmental, economic, and political systems. |
| 16. Strengthen capacity | Create opportunities to strengthen the work of projects in their design, implementation, management, and communication of AEI research. |

## CCRP's Principles

This section included the guiding principles of the CCRP that I uncovered in my case studies of IMEP, AEI, and METI. Each principle started with a short label, followed by a synthesis that reflected the observations from CCRP's previous articulations of its principles and what meaning these principles had in developing IMEP, AEI, and METI.

**1. Build sustainability.** Support agriculture research and development that produces positive food security, nutritional, and livelihood outcomes while minimizing environmental degradation.

***Explicit documentation.*** The CCRP documented "build sustainability" twice in potential lists of guiding principles. The first occurred during the linking social and technical innovation meeting. The second took place during the FRN planning meeting. The principle was entitled "sustainable systems change." That principle used concepts such as integrating social and technical, diversification, AEI principles, and others.

***Case observations.*** I only observed sustainability as a guiding principle in the AEI case. The development of AEI in CCRP was a step towards offering an alternative approach for smallholders other than the green revolution. The alternative approach was aligned with the Foundation's long-term interest in biodiversity. In fact, sustainability can be observed in both AEI's early development and how it stabilized in the CCRP. The definition of AEI on AEIx included multiple references to environmental sustainability. The M&E plan referenced sustainability in light of AEI. Also, leadership team members conceptualized AEI as a movement to help smallholders without damaging the environment by leveraging ecosystem services.

***Case reflections.*** Build sustainability did not emerge out of the IMEP or METI case studies as an observed guiding principle. However, it is safe to say that METI, as an extension of AEI, embraced and worked within the guiding principle. Of course, it is possible to do METs without an AEI approach. But, as one leadership team member said, it is not possible to do AEI without METs. METs are central to an AEI framework. METI made room for and was guided by sustainability with the CCRP. IMEP could also be observed as neutral to sustainability. One could do IMEP in a non-AEI context. But CCRP developed AEI. It did so in part to develop coherence though the process of IMEP. In this way, building sustainability may not have been driven by IMEP, but came out of one of the original purposes of the CCRP, which was to develop program coherence.

**2. Collaborate**. Develop meaningful partnerships where multiple stakeholders from across and within sectors, institutions, and social groups work with and not against each other for each other's good.

***Explicit documentation.*** As an explicit principle, collaborate was referenced in the sets of principles that emerged from the FRN meeting in 2014 and LM 7 in 2015.

***Case observations.*** As a guiding principle, collaborate was observed in all three case studies: IMEP, AEI, and METI. When IMEP was first presented to and processed by the leadership team in 2009, the lack of collaboration emerged as a critique from the leadership team at the time. The leadership team's suggestion at the time was that IMEP evolve as a collaborative effort with other leadership team members. Collaborate was also foundational to putting the practice of the theory of change into place at the project level. The project level theory of change was designed, in part, to help projects function as healthier collaborations.

AEI emerged out of a desire to further define the niche of the CCRP through a collaborative effort with members of the leadership team. Not only did AEI evolve through a collaborative process, but collaboration needed to be a defining feature of AEI. Early on in the process, there were concerns that integration and collaboration needed to cut across all levels of the CCRP. As an ecological and systems approach to agriculture, AEI leveraged collaboration among farmers, researchers, and development institutions as well as collaboration within the different fields of research.

Within the METI case, collaborate was observed as one of the pathways that enabled the creation of METI. Early on in the relationship between Reading University and the CCRP, the program directors requested that the Reading team participate in the CCRP's leadership team meetings. It was the participation and collaboration of the Research Methods team that created the opportunity for METI to be born.

***Case reflection***. Collaborate has been a defining feature of the CCRP since 1994, so it is not a surprise that it was an observable principle in the development of IMEP, AEI, and METI. Almost every project funded through the grant making process in the CCRP included a collaboration of institutions. Collaboration within systems approaches was needed for integrating agricultural systems performance into AEI. The project level theory of change and inception meetings were IMEP processes that were intended to strengthen collaboration among institutions within each project. Also, METI as an initiative emerged as a collaborative effort. It also promoted collaborative work across projects and supported collaborative work between researchers and farmers.

**3. Develop coherence.** Build shared understanding and agreement about the purpose, scope, and nature of the work. Ensure that all initiatives and activities fit within CCRP's values, principles, and theory of change.

***Explicit documentation***. As a guiding principle, develop program coherence was only referenced in the set of principles that emerged from LM 7 in 2015.

***Case observations***. As a guiding principle, develop program coherence was observed in both the IMEP and AEI case studies. In the case of IMEP, develop coherence emerged early in its development. In fact, IMEP's initial vision was that it would "improve performance, coherence, and clarity of purpose across all parts of the CCRP community" (LT 1 Notes, 2009, p. 8). Program coherence as a principle helped drive IMEP to be a system based on learning and adaptation. Develop coherence was also a driving principle behind CCRP's adoption and use of the theory of change process at all levels. As a process for the leadership team, it helped define many aspects of CCRP's work. As a process in inception meetings with projects, the theory of change built coherence about the project's purpose among the implementing partners. In the case of AEI, the potential principle of coherence also guided AEI's development. The explicit decision for the program to work on clarifying the niche of the CCRP emerged from this guiding principle.

***Case reflection.*** Develop coherence was observed in both the IMEP and AEI case studies, but not the METI case study. However, METI was the logical extension and evolution of AEI. METI was born while AEI was solidified as CCRP's niche as a research methods training initiative to produce AEI research. Therefore, METI is a reflection of the principle of develop coherence in action.

**4. Diversify.** Focus research on agriculture systems to include diversity among varieties and across species and management options to optimize ecological principles and resilience.

***Explicit documentation.*** Diversify was never explicitly documented as a guiding principle of the CCRP. Conversations in meeting notes referenced a list of CCRP's guiding principles in the theory of change. One of the guiding principles listed in the theory of change was the diversification of crops and diets.

***Case observations***. The AEI case was the only case study where diversify emerged as a guiding principle. Core to AEI was the belief that diversification in agriculture supported systems productivity and resilience. Diversify as a guiding principle found its way into the AEI levers and outcomes framework. It emerged as an essential guiding principle of AEI during the first sets of meetings where the leadership team discussed AEI and continued through until AEI became a living framework for the CCRP.

***Case reflection.*** Can a guiding principle be a principle of a program when it is not observable in two out of the three cases, but is essential in one of the cases? In the case of the CCRP, I believe it can because neither IMEP nor METI stood in the way of diversification. Just because diversification was not a guiding principle in their development does not mean diversification cannot be part of IMEP or METI. In fact, in all likelihood, the systems thinking in IMEP and METI would often lead RTs to nudge projects to the conclusion that projects need more genetic diversity within a specific crop or more diversification in a cropping system or diet.

**5. Emphasize the multi-dimensionality of outcomes**. All changes in agriculture systems produce multiple outcomes. Collect evidence on the net impact of new agriculture products and knowledge while minimizing risk associated with potentially adverse outcomes.

***Explicit documentation.*** The guiding principle of emphasize the multi-dimensionality of outcomes appeared in both the revised principles following the FRN meeting and the seventh leadership team meeting. The principle from the revised list after the FRN meeting focused directly on the multiple outcomes. The description of the principle guided the CCRP to concentrate on positive outcomes for farmers and farming communities while conserving ecosystem integrity and leveraging ecosystem services. The list from the seventh leadership team meeting included multi-dimensional outcomes, which emerged as an operational principle under the guiding principles of AEI and contextualization.

***Case observations.*** I observed the guiding principle associated with multi-dimensional outcomes in the IMEP and AEI case studies. The theory of change as a process fully embraced this principle. As the program and projects developed, participants reflected on theories of change that recognized multiple outcomes in the work of the projects and the program. The CCRP defined improved performance in AEI multi-dimensionally. It included increased productivity, use of local resources, and increased resiliency and environmental service provision. In essence, AEI emerged as a framework to help organize the CCRP's belief of agriculture as a multi-functional enterprise.

***Case reflection.*** The METI case did not document emphasize the multi-dimensionality of outcomes as a guiding principle. METI, which evolved as a direct response to AEI, fully embraced multiple outcomes. It supported multiple outcomes in that outcomes can vary across contexts and that multi environmental trials can and should measure more than one outcome.

**6. Focus on resource-constrained smallholder farmers**. Direct resources, attention, and advocacy towards forming partnerships and working in collaboration with farmers who are vulnerable, marginalized, and do not benefit from mainstream, commodity-driven movements in agricultural research and development.

***Explicit documentation.*** The written history of the CCRP documented that producing results for smallholder farmers had been central to the mission of the CCRP since at least 1994, if not before. Therefore, it could be viewed as surprising that focus on smallholders was not explicitly included in attempts to generate lists of principles until LM 7. However, one explanation could be that the focus on smallholders was implied up to that point. The observations from across the AEI and METI suggested this was likely the case.

***Case observations.*** Focus on resource-constrained smallholder farmers emerged as an observable principle in both the AEI and METI cases. This principle was implied through much of CCRP's history. But, as AEI matured and became a stable part of CCRP, the focus on smallholders became more explicit. The clear focus was observed in how smallholder utilization of AEI technology was integrated with CCRP's M&E plan. It was also observed in how members of the leadership team talked about why AEI emerged within the CCRP. AEI was a response for smallholders, particularly

smallholders with few resources. In particular, CCRP's attempt to leverage ecological principles was a principle and a pathway to change that was targeted towards smallholder farmers who cannot purchase external inputs to support crop productivity and health. METI emerged out of AEI, but it preceded the Farmer Research Network initiative in the CCRP. As the FRN initiative began to take hold in the CCRP, METI became the vision for the methodological approaches to support FRNs.

***Case reflection.*** There was not an observable pattern in IMEP's history that would indicate focus on resource-constrained smallholder farmers was a guiding principle that guided IMEP's development. But when I asked members of the leadership team to discuss what IMEP was addressing, the lack of results and research utilization both came up as themes. The fact that IMEP was so focused on research use implied that IMEP was focused on improving CCRP's efforts for its primary audience, resource-constrained smallholders.

**7. Focus on use**. Ensure that every inquiry starts and finishes with the potential for use of the process, knowledge, or product in mind.

***Explicit documentation***. The CCRP first documented the focus on use principle as a guiding principle during the seventh leadership team meeting. It also emerged as an operating principle under the research for AEI impact. The principle emphasized that only data that are known how to be used should be collected.

***Case observations.*** IMEP's development in the CCRP was heavily influenced by the focus on use guiding principle. The McKnight Foundation hired the program director because of her background in use-focused evaluation. As IMEP stabilized the model for regional projects, support shifted to regional teams because of the value that the learning

and use of the evaluation process could bring the teams. Also, the IMEP team worked at a program level to elevate evaluation data and findings for the leadership team to help guide their decision making.

***Case reflection.*** Of course, AEI and METI both developed with focus on use of research in mind. In fact, AEI's evaluation question in CCRP's M&E plan directly referenced "utilization of AEI research results" (M&E Plan, 2013). If METI were not so concerned about the use of research products, then there would not be a design methodology that the CCRP promoted that was intent on helping farmers get access to the options that best suited their opportunities and constraints.

**8. Foster the link between social and technical innovation and inquiry**. Support change in agriculture and research and development systems by integrating the social innovation, meaning making, and adaptation processes with the technical innovation and inquiry processes.

***Explicit documentation***. In August 2012, the leadership team spent four days exploring how CCRP would foster the link between social and technical innovation. The program brought in experts from across the world to discuss the issue. Interestingly, when the leadership team first explored its principles during this meeting, the team did not include foster the link between social and technical innovation as an explicit principle. However, in subsequent lists from the FRN topical meeting and LM 7, the principle of linking or fostering social and technical innovation and inquiry were listed.

***Case observations.*** Foster the link between social and technical innovation as a guiding principle was observed in all three case studies: IMEP, AEI, and METI. In the IMEP case, the theory of change as a process and tool was intended to help agriculture

researchers interact with the larger social and economic systems that their biophysical research operated within. AEI as a framework embraced systems thinking both in terms of framing agriculture and agriculture research and development as systems problems, but also understanding agriculture as a technical problem and a social problem. METI emerged as an extension of the research approaches that matched genotypes and environments, but included social contexts, not just physical settings.

***Case reflection***. The link between social systems and physical/technical systems was a tension that continuously surfaced among the CCRP leadership team. It was a principle that guided IMEP, AEI, and METI's development. What was not documented in the case studies, but cuts across all three cases, was how testing and exploring differences in gender preferences and priorities became one of the primary ways CCRP tried to foster the link between social and technical innovation and inquiry. This was a point of discussion that emerged in the seventh leadership team meeting and held traction within the leadership team at that time.

**9. Integrate farmer participation and knowledge**. Integrate farmers, their resources, and their knowledge into the design, implementation, analysis, and reporting and sharing of research results.

***Explicit documentation.*** The CCRP referenced participatory approaches and farmer inclusion in the research process in one way or another in the explicit sets of principles that were discussed in the Linking Social and Technical Innovation meeting, the FRN meeting, and LM 7. In the Linking Social and Technical Innovation meeting, there was debate about whether research should be farmer-centered or include the participation of farmers. From the FRN meeting, the principle emerged as farmer

involvement. During leadership team meeting seven, the principle grew deeper than relationship. It became a principle of integration of farmer knowledge into research.

***Case observations***. Integrating farmer participation and knowledge as a guiding principle was observed in both the AEI and METI case studies. Within the AEI case, it was during the third leadership team meeting that farmer voice and participation became an observable guiding principle of AEI. Leadership team members included elevating the need to ensure farmers' voices in AEI. As AEI developed during the AEI and GIS meeting, farmer participation became a driving theme for AEI. "Farmer involvement is a key feature of AEI. They should be involved in planning, design, implementation, and evaluation" (AEI Notes, 2011b, p. 5). In the METI case study, METs were not necessarily or inherently participatory. But as METS became the vision for an FRN methodology, the vision for METs became more participatory.

***Case reflection.*** As a guiding principle, the integration of farmer participation and knowledge was not central to IMEP. But IMEP embodied participatory principles in its strategy to support the utilization of evaluation, its systems approach, and its work on the theory of change. In fact, as IMEP developed, there were cases where farmers were involved in helping projects shape their theories of change.

**10. Integrate global and local knowledge.** Ensure that global scientific knowledge and principles interact with and are in dialogue with local and indigenous knowledge.

***Explicit documentation.*** This guiding principle surfaced two times in CCRP's lists of guiding principles. During the FRN planning meeting, "integrating theory and practice" was documented as the title of the principle, but the substance of the principle

included integrating global and local knowledge. During the seventh leadership team meeting, the list included integrating global and local knowledge. Integrating local and global knowledge was generated as an operational principle of the broader principles of farmer-researcher co-creation and research for AEI impact.

***Case observations.*** Both IMEP and AEI documented integrate global and local knowledge as a guiding principle. In the case of IMEP, the CCRP wrestled with how to situate the purpose of its evaluation. It served to integrate knowledge across levels of the program from the farm level to the Foundation level. As AEI emerged, it recognized the value of the principles of agroecology and intensification interacting with the farmers' knowledge about their soils, production methods, and so on.

***Case reflection.*** The METI case did not document the integration of local and global knowledge as a guiding principle. But much of what METI developed towards was blending on-farm trials with participatory techniques. This blending combined scientific inquiry with indigenous values, knowledge, and preferences.

**11. Learn for adaptation.** Foster reflective practice and learning. Prepare to change the nature, scope, and focus of the program and projects based on iterative learning, emergence, and changing contexts.

***Explicit documentation.*** The CCRP documented learn for adaptation at the linking social and technical innovation meeting, the FRN planning meeting in August 2014, and during the seventh leadership team meeting. In each meeting, the guiding principle had a slightly different title and articulation, but each was another variation of articulating how CCRP handled adaptation as a guiding principle. During the linking social and technical innovation meeting, adaptation could be observed in the principle

entitled “continuous learning.” Continuous learning was the theme that covered integrating M&E and iterative learning. From the FRN planning meeting, adaptation could be found in the guiding principle “integrate M&E to learn, adapt and evolve.” From the seventh leadership team meeting, adaptation could be observed as an operational principle by practicing reflection using the adaptive cycle, as part of the systemic coherence principle.

***Case observations.*** I found learn for adaptation as a guiding principle in all three case studies. IMEP emerged as an attempt to use evaluation to facilitate adaptation both within the program and within projects. It started through the practice of generative dialogue and continued to be a stable principle of IMEP. Members of the leadership team saw IMEP as a response to an international system of donors and implementers of development who failed to be flexible and adaptive. IMEP also tried to use facilitated processes such as the theory of change to help projects clarify the assumptions and miracles they brought to their work. These processes helped projects adapt and learn as they put plans into action. AEI developed under the assumption that farmers adapted their learning as a core process for research adoption and use. Therefore, AEI technologies and results within AEI were intended to be adapted, rather than adopted. The research methods team’s alignment with the CCRP started with their admission that they fit within and agreed with the CCRP’s guiding principle of learn for adaptation.

***Case reflection.*** Learn for adaptation was a core idea in the CCRP. While the METI case only referenced the RMS team’s alignment with the guiding principle, the RMS team engaged project teams with learning for adaptation in mind. All of the work the RMS team did within METI was to help projects think more broadly and deeply

about the context of their research and the necessary sophistication in research design to achieve deep thinking for learning and adaptation.

**12. Leverage ecological principles.** Use ecological knowledge, patterns, and cycles to support increases in systems productivity while reducing environmental degradation.

***Explicit documentation.*** Leverage ecological principles was never articulated in an explicit list of CCRP's principles.

***Case observation.*** Leverage ecological principles was only observed in the AEI case. Why, then, should it be considered a principle of the CCRP? Because leveraging ecological principles was a non-negotiable part of AEI. AEI offered an alternative approach to smallholder intensification and included ecological approaches to pest management.

***Case reflection.*** Leverage ecological principles was not observed in either the IMEP or METI case. However, in my experience with both components, neither ran counter to the principle. In fact, IMEP was the operating system that supported the niche and was well-greased to use the inception process and theory of change to nudge projects towards more ecological thinking. METI was based on the premise of contextual variation and adaptation. These required the use of ecological principles.

**13. Leverage and communicate contextual variation.** Plan for and integrate variation among biophysical environments, production and management systems, and social systems in the design, implementation, and communication of research products and knowledge.

***Explicit documentation***. As a guiding principle, leverage and communicate contextual variation was referenced in the sets of principles from the FRN planning meeting in August 2014 and during the seventh leadership team meeting. The principle from the FRN meeting was contextualized scaling. The construction of the principle assumed that research products and knowledge were adapted in various contexts and could inspire system and policy change. During the seventh leadership team meeting, leverage and communicate contextual variation emerged on the list of explicit principles as contextualization. Contextualization included using contextual analysis as a way to incorporate planning for going to scaling. As an operational principle, contextualization also included valuing variation (heterogeneity) and focusing on multiple outcomes.

***Case observation.*** Leverage and communicate contextual variation was observed in both the AEI and METI case studies. As AEI developed, leverage and communicate contextual variation could be seen as a guiding principle. AEI was emerging as an approach to agriculture that would "recognize heterogeneity and locality of systems and people" (LM 3 Notes, 2011, p. 32). Also, the leadership team saw AEI as a way to help facilitate processes so that agroecological practices could transfer through adaptation processes across scales. When I asked leadership team members about the problems AEI was addressing, leverage and communicate contextual variation was a prominent theme in those discussions. In particular, AEI emerged in the CCRP in response to the conventional models of thinking about agriculture research and development. AEI was also seen as a means to develop solutions that were the right fit within the specific context of an agricultural setting. From day one, METI was designed to help projects implement research designs and conduct analysis that would account for the natural

agroecological variation in different farming contexts. METI was a response to CCRP projects having limited capacity to produce contextualized results.

***Case reflection.*** Leverage and communicate contextual variation did not emerge as an observed guiding principle of IMEP's development. However, leverage and communicate contextual variation, as I argued earlier, was a principle that was interconnected with systems thinking, and systems thinking was a prominent guiding principle in IMEP's development. Also, IMEP supported projects in thinking about contextualized approaches through the inception meeting and theory of change processes. The issue of contextualization was not one that was salient in my interviews or meeting notes. But much of the work done to support projects with their theories of change was to help them think more deeply about their contexts. In addition, IMEP as a program was guided by leverage and communicate contextual variation. It informed many of the additional frameworks that IMEP included in its work, particularly work related to understanding how research went to scale.

**14. Promote equity.** Focus research and development activities that promote socioeconomic fairness from design to the use and impact of research knowledge and results.

***Explicit documentation***. Promote equity appeared on three lists of guiding principles: the lists from the social and technical innovation meeting, the FRN meeting, and the seventh leadership team meeting. From the linking social and technical innovation meeting, promote equity emerged with a particular focus on gender equity. During the FRN meeting, promote equity emerged as broader than just a focus on gender equity, but to socio-economic equity. During the seventh leadership team meeting,

promote equity emerged as part of an operating principle under the principle of values coherence, i.e., founding all work in CCRP's core values. The list documented equity as a core value of the program.

***Case observation.*** AEI is the only case where I was able to observe promote equity as a guiding principle. During the third leadership team meeting, the leadership team discussed and developed a potential list of AEI principles, and equity sensitive was part of the original list of AEI principles. In addition, as the leadership team developed the AEI framework, equity and empowerment became one of the multiple outcomes that AEI could lead to. Also, as the AEI integrated into the CCRP's M&E plan, farmer equity became a central question, related to the use of AEI research results.

***Case reflection.*** Neither IMEP nor METI case studies documented equity as a guiding principle. However, it is possible to infer from how both cases developed that neither case stands in opposition to a guiding principle of equity. In fact, the teams that were responsible for facilitating IMEP and METI were consistently committed to promoting equity in their work in CCRP.

**15. Think in systems.** Agriculture and development systems are interconnected systems comprised of global and subsystems that interact with and influence how agriculture research knowledge and technologies foster change. Support research and development to document and observe how research components interact in social, environmental, economic, and political systems.

***Explicit documentation.*** A version of the think in systems guiding principle can be found in the lists produced during the linking social and technical innovation meeting, the FRN planning meeting, and the seventh leadership team meeting. In the linking social

and technical innovation meeting, the guiding principle was entitled “systems approach.” The principle included systems thinking and producing options and diversity as a way to manage risk. From the FRN planning meeting, systems thinking emerged in two guiding principles. The first was “using systems diagnosis to support systems change.” The second was “sustainable systems change.” These principles included both using systems thinking to guide and shape emerging work within the program and using a systems-based approach to agricultural work rather than a component-focused approach. During the seventh leadership team meeting, the guiding principle that emerged was entitled “systemic coherence.” This included reinforcing the practice of adaptive action, embracing complexity concepts, and connecting the work of CCRP across all levels.

***Case observations.*** Systems thinking was one of the strongest organizing concepts that could be found in both CCRP’s explicit lists of guiding principles and the IMEP, AEI, and METI case studies. As IMEP emerged, systems thinking was core to its design. As a way to build coherence across the program, IMEP encompassed a process that attempted to connect the multiple levels of CCRP in shared learning. The theory of change process became the primary way the leadership team worked to foster systems thinking within CCRP projects. AEI emerged in the CCRP as a response to the green revolution across Africa and the Andes. One of AEI’s defining features was to provide a “means to improving the performance of agricultural systems” (CCRP, nd). AEI embraced work from a systems perspective rather than a component perspective. As METI developed alongside AEI, it was the main methodological approach promoted by the CCRP to support AEI research. METI had been used to promote an options by context approach and an approach to understanding legume systems.

***Case reflection.*** Think in systems as a guiding principle was documented both in the leadership team's explicit documentation and all three case studies. From my observations as a participant in the program, the CCRP was continuously pushing the edges of where agriculture research should begin and end. It was one way the leadership team grappled with how agriculture research could solve both nutritional, livelihood, and environmental problems.

**16. Strengthen capacity.** Create opportunities to strengthen the work of projects in their design, implementation, management, and communication of AEI research.

***Explicit documentation.*** The principle strengthen capacity was not observed in previous lists of potential principles.

***Case observations.*** All three case studies contained examples of the guiding principle of strengthen capacity. First, in the IMEP case, as IMEP rolled out to projects, it was clear that both RTs and projects needed capacity building support. The first phase of this was to hire local consultants to help RTs with evaluation capacity building within projects. In the AEI case study, capacity building emerged as a cross-cutting element of AEI, including the need to build the capacity to conduct AEI-focused research in students, with project research methods skills, within project M&E skills, among farmers, etc. Finally, METI was an initiative that emerged directly as a response to observations about the limited impact that the Research Methods team was having and the need to offer a better suite of tools to conduct research on and for AEI.

***Case reflection.*** Strengthening capacity has been a core feature of the CCRP since the 1990s, including investments in students and capacity building efforts of research projects. While it was a bit surprising that build capacity was never referenced as an

explicit principle, the fact that it was central to the development of all three cases and that the principle was a core theme of the CCRP dating back to the 1990s makes it clear that build capacity is a guiding principle of the CCRP.

Table 9

*Cross-Case Analysis Table*

| Principle | CCRP's History of Principles | IMEP | AEI | METI |
|---|---|---|---|---|
| 1. Build sustainability | • Linking Social and Technical Meeting (2012)<br>• FRN Meeting (2014) | Sustainability was not documented as a foundational concept in IMEP. But IMEP and AEI were integrated. The core processes of IMEP were intended to help research teams improve their logic and learning of their AEI-focused research; therefore IMEP, in its support of AEI, accounted for sustainability. | Sustainability was a central proposition of AEI. AEI was viewed as an alternative approach to the green revolution, with better environmental payoffs for smallholder farmers. | Sustainability was not observed in METI. However, as an extension of AEI, METI also emerged out of a concern for sustainability. Getting the right fit was viewed as one way to reduce natural resource and environmental damage. |
| 2. Collaborate | • FRN Meeting (2014)<br>• LM 7 (2015) | IMEP was developed as a collaborative process and a way for projects to be more effective through collaboration. The theory of change was a practice to help projects collaborative more effectively. | Collaboration became a defining feature of AEI. It attempted to integrate multiple levels and systems in agriculture. | Collaboration was a pathway that created the conditions for METI to emerge within the CCRP leadership team. |

| Principle | CCRP's History of Principles | IMEP | AEI | METI |
|---|---|---|---|---|
| 3. Develop coherence | • LM 7 (2015) | This emerged as a priority and purpose of IMEP at the program and project level. It contributed to use of the theory of change. | AEI developed because the leadership team was focused on its niche and coherence. | METI was developed as an extension of AEI, a methodological training initiative to support AEI, which became the guiding framework for the CCRP. |
| 4. Diversify | Diversification is a theme in the CCRP's theory of change, but never listed as a guiding principle. | IMEP's integration with systems thinking nudged projects towards diversification. | Diversification was a fundamental principle for AEI and included diversification of diets, crops, management, practices, and so on. | Diversification was implied through the practice of generating multiple options, suited for multiple contexts. |
| 5. Emphasize the multi-dimensionality of outcomes | • FRN Meeting (2014)<br>• LM 7 (2015) | Within the project level and program level theory of change, IMEP facilitated and encouraged awareness of the multi-dimensionality of outcomes as well as the interconnected pathways for change. | AEI emerged as a way to help organize research and development in agriculture while embracing multi-functionality in agriculture systems. | Though it might or might not affect trial designs, trial designs in the MET approach did not stand in the way of focusing on multiple outcomes. |

| Principle | CCRP's History of Principles | IMEP | AEI | METI |
|---|---|---|---|---|
| 6. Focus on resource-constrained smallholder farmers | • LM 7 (2015) | CCRP's history was focused on resource-constrained smallholders. IMEP was developed to help projects produce meaningful results for smallholders. | AEI emerged as framework to orient agroecological principles for smallholder farmers. | METI was the training initiative that supported the development of the FRNs, which oriented the research establishment towards a more participatory approach with smallholders. |
| 7. Focus on use | • LM 7 (2015) | Use-focused evaluation, particularly for learning and adaptation, was a foundational principle of IMEP's development. | AEI did not emerge as a theoretical position of the CCRP. It was an applied research framework, with the use of AEI research results being a central evaluation question of the CCRP. | METI was designed to help projects understand what technologies, varieties, or practices fit within various contexts. The use emphasis was on collecting useful data but also making recommendations informed by farmer context. |
| 8. Foster the link between social and technical innovation and inquiry | • Linking Social and Technical Meeting (2012)<br>• FRN Meeting (2014)<br>• LM 7 (2015) | The theory of change was designed, in part, to help biophysical researchers understand the social systems related to their work. | AEI as a framework for agriculture research tried to connect the biophysical and social aspects of development. | METI developed as an extension of the practice of matching genotypes with physical contexts. It emerged to include the social variables of contexts. |

| Principle | CCRP's History of Principles | IMEP | AEI | METI |
|---|---|---|---|---|
| 9. Integrate farmer participation and knowledge | • Linking Social and Technical Meeting (2012)<br>• FRN Meeting (2014)<br>• LM 7 (2015) | IMEP embodied participatory approaches and encouraged researchers to use more participatory approaches. | Farmer participation and integration of knowledge was a central theme throughout the development of AEI. | METI was not necessarily participatory, but, as it emerged to support AEI and FRNs, it became participatory. |
| 10. Integrate global and local knowledge | • FRN Meeting (2014)<br>• LM 7 (2015) | The integration of local and global knowledge emerged as a foundational concept in IMEP. One of IMEP's central tasks was to figure out how to integrate knowledge from multiple levels to support program learning. | AEI as a framework embraced participatory approaches. But it also embraced the scientific process. In a sense, AEI, when implemented correctly, was a dialogue between the two paradigms. | METI itself did not emerge under the umbrella of this principle. But as it became the main methodology for FRNs, METI became more participatory, blending local knowledge with scientific knowledge. |
| 11. Learn for adaptation | • Linking Social and Technical Meeting (2012)<br>• FRN Meeting (2014)<br>• LM 7 (2015) | Learning for adaptation was a defining principle of IMEP. IMEP served to help the program and projects learn, adapt, and plan using evaluative thinking and findings. | AEI emerged as an approach to agricultural development that assumed farmers learned and adapted on their pathway towards technology and practice adoption. | The foundation of RMS's relationship with the CCRP and with projects was based on learning and adapting. |

| Principle | CCRP's History of Principles | IMEP | AEI | METI |
|---|---|---|---|---|
| 12. Leverage ecological principles | Not observed in explicit lists | IMEP was the operating system that supported the niche and was well-greased to use the inception process and theory of change to nudge projects towards more ecological thinking. | Leveraging ecological principles was a non-negotiable part of AEI. | METI was based on the premise of contextual variation and adaptation. These required the use of ecological principles. |
| 13. Leverage contextual variation | • FRN Meeting (2014)<br>• LM 7 (2015) | IMEP responded to contextualization through the project theory of change process and through its frameworks for understanding how innovation went to scale. | AEI was developed as an approach to agriculture development that focused on the heterogeneity of people and locations. | METI was a direct response to perception that projects were not producing context-appropriate research results. |
| 14. Promote equity | • Linking Social and Technical Meeting (2012)<br>• FRN Meeting (2014)<br>• LM 7 (2015) | I did not observe equity in the IMEP case. But upon reflection I saw equity-driven work in many of IMEP's activities, including its role in facilitating collaboration through the theory of change process. | Equity and empowerment were originally included in the original principles of AEI. As AEI was integrated into the M&E plan, equity was a central question related to AEI. | METI did not emerge directly out of an equity principle. But those who were responsible for managing METI were often advocates for embracing and integrating equity into CCRP's work. |

| Principle | CCRP's History of Principles | IMEP | AEI | METI |
|---|---|---|---|---|
| 15. Think in systems | • Linking Social and Technical Meeting (2012)<br>• FRN Meeting (2014)<br>• LM 7 (2015) | Systems thinking was at IMEP's core when it developed. It was the theory that helped the leadership team to build coherence across the boundaries within the program. | Systems thinking was at AEI's core. AEI emerged as a systems response to agriculture development, which focused on the productivity of the system rather than one or two components. | METI was a systems-informed initiative from the beginning. In particular, the methodological approach was designed to help projects understand how different research technologies and varieties vary across contexts. |
| 16. Strengthen capacity | Not observed in explicit lists | As IMEP rolled out to the regional project level, it was recognized that capacity would have to build to support a new way of thinking and doing monitoring and evaluation. | Capacity building emerged as a cross-cutting theme in AEI, particularly in students on the topic of AEI and research skills. | METI's entire initiative was focused on building the capacity of research teams to conduct more contextually appropriate research. |

## Conclusion

The cross-case analysis explored what guiding principles gave shape to three of the CCRP's program developments. It discussed how those principles varied in each case, both in what I observed through the research process and my own perspective on the various cases. The CCRP was a much bigger program than just IMEP, AEI, and METI. It is safe to say that had I chosen a different program development, I might have documented additional guiding principles. Or I might have documented different variations in how the principles affected the program developments. This is the nature of sampling from a larger program. But the patterns that I observed across cases inclusive of my own reflections can be viewed as a safe approximation of CCRP's foundation of reasoning, otherwise known as CCRP's guiding principles.

# Chapter 5: Discussion, Implications, and Conclusion

## Introduction

The chapter discussed a brief review of the research questions and findings of the study's case and cross-case analysis. I also discussed the significance of the study's contribution to principles-focused, developmental evaluation in both contributing and developing an analytical process for identifying guiding principles and developing the theory of the approach. The field of evaluation is on a new horizon, and I have laid out a series of issues and questions that, with more research, could help inform and develop the principles-focused, developmental approach. Finally, I also discussed how the findings from this research can help other evaluation professionals develop their own practice of developmental evaluation.

## Research Questions

The research questions that guided this study were focused on identifying the guiding principles that have given shape to the development of the Collaborative Crop Research Program (CCRP) and how the guiding principles varied across its program developments. To identify the CCRP's guiding principles, I focused on three separate cases of program developments within the CCRP. The first case I selected was Integrated Monitoring, Evaluation, and Planning (IMEP), the evaluation framework and process designed by the CCRP leadership team. The second case I selected was Agroecological Intensification (AEI), which became CCRP's guiding framework for the focus of its agriculture research and development. The third case I selected was the Multi Environmental Trial Initiative (METI), one of many capacity building initiatives that emerged through the Research Methods Support grant of the CCRP.

The cross-case analysis section at the end of the previous chapter discussed the findings of the research questions. Table 10 in this chapter highlighted the guiding principles I documented in each case and whether the principle played a driving or supporting role in the development of the three programs.

Table 10

*Research Questions with Findings*

| 1. What were the principles that have guided the development of the CCRP? | | 2. How did the guiding principles compare and contrast across CCRP's program developments? | | |
|---|---|---|---|---|
| CCRP's Guiding Principles | CCRP's History of Principles? | Role in IMEP | Role in AEI | Role in METI |
| 1. Build sustainability | Yes | Supporting | Driving | Supporting |
| 2. Develop coherence | Yes | Driving | Driving | Supporting |
| 3. Collaborate | Yes | Driving | Driving | Driving |
| 4. Diversify | Yes | Supporting | Driving | Supporting |
| 5. Emphasize the multi-dimensionality of outcomes | Yes | Driving | Driving | Supporting |
| 6. Focus on resource-constrained smallholder farmers | Yes | Supporting | Driving | Driving |
| 7. Focus on use | Yes | Driving | Driving | Driving |
| 8. Foster the link between social and technical innovation and inquiry | Yes | Driving | Driving | Driving |
| 9. Integrate farmer participation and knowledge | Yes | Supporting | Driving | Supporting |

| 1. What were the principles that have guided the development of the CCRP? | | 2. How did the guiding principles compare and contrast across CCRP's program developments? | | |
|---|---|---|---|---|
| CCRP's Guiding Principles | CCRP's History of Principles? | Role in IMEP | Role in AEI | Role in METI |
| 10. Integrate global and local knowledge | Yes | Driving | Driving | Supporting |
| 11. Learn for adaptation | Yes | Driving | Driving | Driving |
| 12. Leverage ecological principles | Yes | Driving | Driving | Driving |
| 13. Leverage and communicate contextual variation | Yes | Supporting | Driving | Driving |
| 14. Promote equity | Yes | Supporting | Driving | Supporting |
| 15. Think in systems | Yes | Driving | Driving | Driving |
| 16. Strengthen capacity | | Driving | Driving | Driving |

**Significance of this Dissertation**

This dissertation was significant in two ways. First, it tested an analytical process that professional evaluators will be able to use to identify the guiding principles of a complex change initiative. Second, the literature review built on and expanded the theoretical foundation of the principles-focused, developmental evaluation. This section discussed what I have learned related to the process of identifying guiding principles and the theory of the approach.

**How do you identify principles?** The study proposed that it would be possible to infer the implicit principles that guided the CCRP's program development by examining

cases from within the program's development. I discovered that this, indeed, is an analytical process that can be used to identify a program's principles. I've explained my reasoning below.

The CCRP was a unique context for this study to occur. The CCRP leadership team had debated and developed multiple lists of its guiding principles leading up to and while I was conducting my research. I decided to use the presence and evolution of these documents as a way to provide a credible source which allowed me to triangulate the findings of the cross-case analysis. By using independent sources created by the CCRP leadership team, I was able to give credibility to the findings of my cross-case analysis. CCRP's historical work developing upon multiple lists of principles helped validate my findings. In doing so, I was able to contribute to the larger purpose of the study: identifying an analytical process for detecting the implicit guiding principles of a program, policy, or strategy.

***The principles for identifying guiding principles*.** Below I described the principles I used for identifying the guiding principles of a developing or emergent program, policy, or strategy. I used a case study approach, but as I explained in a different section, large-scale case studies are not always possible, so I have reduced the process to a set of five principles that can be further tested and validated through other methods.

*Identify stable aspects of the program, policy, or strategy.* Programs that are developing and emergent will often have aspects that are stable and not up for debate. They are being implemented. Identify a small sample of the stable program components and focus on their origin story.

*Focus on the origin and development stories.* By focusing on the origin stories, one learns why the component came to be. By adding in the development stories, it demonstrates how the component came to be. Addressing why and how a component developed can provide insight into the concepts, values, and evidence that became the foundation of the component, and thus the larger program.

*Emphasize the perspectives of those that developed and used what has been developed.* Murphy's (2014) research focused on the recipients of a developing collaborative with a shared strategy. The purpose of the work was to discover what principles should be guiding the strategy. However, when discovering the implicit guiding principles of an existing program, the perspectives of those implementing and designing the approach are more valuable than those who are receiving the benefits. Those who gave shape to and used the ideas of the program's component, such as IMEP, were the perspectives that gave texture to the foundational concepts of the component.

*Illustrate how principles take on different meanings across diverse contexts*. Principles and their meaning and implications vary across contexts. Capture how the meanings and implications of each principle vary across contexts within the program. How the individuals responsible for IMEP understood the principle of thinking in systems varied from how those who developed METI or AEI thought about it. It didn't mean they disagreed. It was a different application of a similar foundational idea across three aspects of the program.

*Triangulate the conclusions*. The analysis process has to be supported by a credible source. In this dissertation, I used the evolving lists of principles that had been created by the leadership team. In other cases, various forms of member checks could be

used to ensure the principles that are identified are reflective of the group's chain of reasoning.

Through answering the research questions, "What were the principles that have guided the development of the CCRP, and how did the guiding principles compare and contrast across CCRP's program developments?" I was able to address the primary purpose of this study, which was to develop an analytical process for identifying implicit guiding principles of existing programs.

**Expanding the literature and theoretical foundations.** The second purpose of this study was to provide structure and clarity to the theory of the evidence-based, principle-focused approach to evaluation. The following section contained a discussion about what I learned from this study in reference to the major themes from the literature review, including defining and understanding what a principle is and the theoretical components of approach as defined by Shadish et al. (1991), the theory of social programming, the theory of knowledge creation, the theory of use, the theory of value, and the theory of practice.

***Defining and experiencing principles.*** Patton defined a principle as "a fundamental proposition that serves as the foundation for a system of belief or behavior or for a chain of reasoning" (2016, p. 22). Principles, as Patton argued (2011), guide decision makers in complexity. Principles in the CCRP became the mainstays, the braces, the supports, or the home base for the CCRP leadership team in complexity. They functioned, as I argued in the literature review, as sensitizing concepts, "grounded on sense instead of on explicit objective traits" (Blumer, 1954, p. 8), but nevertheless "can be formulated and communicated" (Blumer, 1954, p. 8).

As sensitizing concepts, the principles that were created by the leadership team and the principles I observed shared four features. When put into practice, the meaning of the principle was shaped by the context. The definitions of the principles were broad with opaque boundaries. The principles were interactive across the three program developments. The principles were simultaneously definable and amendable. Take, for example, the principle of systems thinking.

The systems thinking principle was first labeled "systems approach." It blended concepts such as systems thinking and producing options and diversity as a way to manage risk for farmers. Systems thinking was then broadened to focus on "systems diagnosis to support systems change" and "sustainable systems change." It then evolved further and was titled "systemic coherence," which was a principle that referenced reinforcing ideas such as adaptive action and learning across multiple levels. The CCRP leadership team conveyed a similar message and purpose as it evolved in their attempt to describe a principle related to a systems approach. Additionally, as I documented how systems thinking shaped IMEP, AEI, and METI, systems thinking as a principle varied across the contexts of each case. In IMEP, systems thinking was framed as a way to help the levels of the program learn from each other. In AEI, systems thinking shifted the focus of productivity from a component focus in agriculture to focusing on a whole agricultural system. In METI, systems thinking guided the methodological approach to be hypervigilant to the variation of performance and utility across contexts. The history and experience of the systems thinking principle in the CCRP was definable but opaque, amendable, interactive, and variable.

***Theory of social programming.*** Shadish et al. (1991) argued that each approach or theory of evaluation should address how evaluation plays a role in improving social programming. In my research on the CCRP's principles, I observed that the principles played the role of mediating forces at the intersection among the levels of the program and the components of the program. They mediated in the sense that they were what the leadership team relied on to shape program components and to make meaning in complexity. This process of program development is necessitated by advancing into the unknown with a reference point attached to something. That something were the implicit principles. The implicit principles went together, hand in hand, with attempting to develop the CCRP. The guiding principles, as the mainstays of the leadership team, ultimately gave life to development of the CCRP.

***Theory of knowledge creation.*** Shadish et al. (1991) argued that an evaluation theory should attend to how knowledge is constructed and what is special about it. In my observations of the CCRP, the theory of knowledge creation and theory of social programming were tied together. The change, evolution, and development of CCRP's components (IMEP, AEI, and METI) and principles occurred through an interpretive process. For instance, IMEP started with the practice of generative dialogue. As the leadership team experimented with the practice, they found it did not fit what IMEP was trying to do. But out of that process came the principle of learning for adaptation. The learning for adaptation principle became embedded in IMEP. It also took on new meanings as it was woven into AEI and METI. The knowledge that was created about the principle occurred through the experience and interpretation of it in various contexts.

***Theory of use.*** Shadish et al. (1991) argued that theory of use should describe the different types of use, the time frames for use, and how a professional evaluator would facilitate use within each respective theory. In my research on the CCRP, I found the theory of use was tied to the theory of social programming and knowledge creation. Patton argued that the developmental evaluator should become part of the program's design team (2011). As a member of the design team, the evaluator's role is to help identify the principles and collect evidence on the principles' consequences to facilitate ongoing learning development. In my documentation of CCRP's history, I noted that CCRP's development was guided by a developmental evaluation team. Each iteration of CCRP's principles was a reframing of the nuances of what the program was trying to achieve and how. The use of the explicit lists of principles by the evaluation team was intended to ground the leadership team in its roots as it attempted to expand and develop its approach. But the leadership team itself used the principles much more implicitly, as I documented in both the AEI and IMEP cases. The principles found their way into the debates and discussions the leadership team had about which direction the program should go.

***Theory of value.*** A complete evaluation theory should state which kinds of values it attends to, why, how, and its justification for making judgments based on those values (Shadish et al., 1991). In the literature review, I made the case that utility was the value that program teams hung their hat on when determining whether an evidence-based principle was effective. In other words, a principle's usefulness in helping it develop was the basis for judging its effectiveness. In a sense, utility is the justification for valuing (Shadish et al., 1991). In addition, guiding principles are similar in nature to that of

values. For example, some would place equity in the category of a value rather than a guiding principle. In many ways, principles-focused, developmental evaluation should not only describe the guiding principles of programs but also the values of the program. But, at the end of the day, the principles-focused, developmental evaluation approach has not yet settled on the values that it will promote other than values and standards promoted by AEA.

***Theory of practice.*** Shadish et al. (1991) argued that the theory of practice of an evaluation theory should enable professionals to make decisions about which approaches to use in which evaluation settings. The evidence-based, principles-focused approach is appropriate in complex settings where there is a need to develop strategic agreement, but also a need for flexibility in how practice is developed in context. The CCRP as a program fit the situation in which an evidence-based, principles-focused approach to evaluation was best suited. It operated in 12 different countries, working with dozens of institutions across multiple agroecological, cultural, and linguistic boundaries. Not only was CCRP's context highly diverse, it worked in a space where there were paradigm wars centered on the question of how to prioritize research funding. Not only did the CCRP require a nimble approach to work across heterogeneous contexts, it also had to find its niche in the world of international agriculture research and development. The principles-focused approach matched the CCRP's needs by helping define how it worked to both internal and external audiences.

## Implications and Directions for Research

Patton (2016) argued that the most significant area of growth in developmental evaluation has been in the area of principles-focused, developmental evaluation. This growth and interest in the approach represents a juncture in the field where professionals increasingly need to be prepared for facilitating principles-focused program design and evaluation work. As a field, there is still a dearth of theoretical grounding and practical grounding in this approach. This section discussed areas of potential interest for additional research on principles-focused, developmental evaluation, including blending in critical approaches, understanding the tensions between individually held and collectively held principles, communicating principles, conflicting principles, going to scale with principles, and the hierarchy of principles.

**Critical approaches.** In the first chapter, I argued that it's important for decision makers to know and to reflect on their guiding principles by asking whether or not their decisions mirror their expressed principles; hence, the justification in spending so much energy developing an analytical process for evaluators to discover the principles behind a series of decisions. The qualitative approach that I used focused on how and why initiatives developed. This method has the potential to be blended with critical theories that explore power, race, gender, and class structures. The approach could be useful in critiquing institutions and their policies and programs, especially when their espoused principles don't match the principles in practice. Granted, this work would likely be difficult, given that developmental evaluation professionals are often integrated within a team of decision makers. One interesting question would be whether developmental evaluators could simultaneously be inside a design team and apply a critical approach to

the evidence-based, principles-focused approach to evaluation? A second interesting question would be whether policy critics and analysts outside a program could evaluate a program's development in the same way? The focus would not be to support development, but to critique the guiding principles of policy by discovering why and how its subsequent practices were developed.

**Individual vs. collectively held principles.** Another issue that captured my attention during this study was the tension between the principles that individuals hold and the principles they agree to share with others. The potential tension was not a focus of my research, but the tension gave me several questions to consider. Do new leadership or program team members co-opt the collective principles? How do new team members reshape existing principles? What happens when collective principles conflict with an individual's principles? Can one accept the premise of a guiding principle, but not buy into its utility? Furthermore, what is the role of power in deciding what guiding principles will be the most important and salient guiding principles of a program?

**Conflicting principles.** Not only might individual guiding principles come into conflict with an organization's guiding principles, but the guiding principles of a strategy might come into conflict with those of the larger organization. In addition, the principles that a program articulated might come into conflict with the practices purported to be aligned with the program's principles. In addition, a program might articulate principles that are in conflict with each other. There are multiple possibilities within the principles-focused, developmental evaluation approach for there to be conflict among principles and the effects of their application. How groups manage through this conflict and defining the role of the evaluator through conflict would be an interesting and useful area of research.

**How do we communicate principles?** Developmental evaluation is an outgrowth of utilization-focused evaluation. Therefore, anything to do with developmental evaluation has to consider use. When evaluation professionals plan for use, they have to think about their responsibility in shaping how they communicate principles and what they communicate to maximize engagement. I see this as another important area that needs more attention. Guiding principles can help programs develop coherence. But the principles might be a list of principles that are not very useful. Rather, to maximize use, the developmental evaluation professional could think about using principles to narrate the story of the program. In the CCRP, there were many moments that I observed where there was so much complexity that it was hard to find coherence. How to best portray the principles so they serve the purpose of reframing the coherence of the program is a question that also needs more focus.

**Going to scale**. Patton (2011) referenced principles-focused programming as a way to help programs that work across contexts maintain coherence. The CCRP is an example of a program that works in four different regions, 12 countries, and countless agroecological zones and cultures. As a principles-focused program, principles gave regional teams the flexibility they needed to design research projects and capacity building efforts within their contexts. This idea has raised new questions for me about how models or practices get replicated from one context to another. It has raised questions for me about how models are interpreted and applied. Do teachers hear about a successful classroom management practice and follow the procedure exactly? Or do teachers hear about a successful classroom practice and adapt the procedures? Do farmers learn about a successful crop protection practice and adopt it directly or adapt it? If the

tendency is towards adaptation instead of adoption, maybe we need to think differently about the objects that are being scaled. Maybe people are more likely to hear about a model or successful practice and interpret the principles of the practice? Maybe the objects that go to scale are more apt to be the principles of a practice rather than the practice itself? If that is the case, then it seems that evaluators should always be highlighting, describing, and evaluating the guiding principles of a model as the evaluand, not just the model or practice.

**Hierarchy of principles.** One of the issues that emerged in the leadership team's development of the program's guiding principles was the potential for there to be a hierarchy of guiding principles. The guiding principles that came out of LM 9 had two levels of principles: guiding and operational principles. Both served the same purpose, to provide coherence and guidance in shaping program variation across contexts. But they varied in the level of specificity, with guiding principles articulated in broad brushes and operational principles as specific applications that still needed interpretation, but weren't specific to the level of a practice. How teams from organizations, programs, and strategies think and act through different constructions, formations, and hierarchies of principles is unknown and could be an interesting focus of research in the future.

## Implications for the Practice of Developmental Evaluation

**Principles for identifying guiding principles.** The most significant contribution this dissertation has made is in developing an analytical process for identifying the guiding principle of a program in development. These principles can be used by other evaluation professionals to discover what guiding principles gave shape to a developing program.

- Identify stable aspects of the program, policy, or strategy.
- Focus on the origin and development stories.
- Emphasize the perspectives of those that developed and used what has been developed.
- Illustrate how principles take on different meanings across diverse contexts.
- Triangulate the conclusions.

**Getting to the principles quickly.** This research on the CCRP was a testing ground. The principal purpose was to evaluate whether a qualitative case study and cross-case analysis could identify the guiding principles of a large, complex program. My conclusion was yes. But rarely can an evaluation professional conduct a large-scale dissertation project for a client. Rather, the process needs to be quicker and more user-focused. There are several ways that evaluation professionals can help program teams illuminate their implicit guiding principles. What I have learned through this process is that the nature of the questions that participants reflect on are most important.

First, if you as practitioners ask a group of people, who never thought about the program's principles, you are likely only going to get generic and unsubstantive answers. It is better to ask questions that get program teams discussing how a part of the program developed, why, what it is trying to achieve, and what problems or opportunities is that initiative addressing? These questions can be asked in a group interview. Mind mapping and other processes can be used to document information as it comes to the evaluation professional in real time. The job of the evaluator is to listen for what program teams leaned on when developing the initiative, that is, when you can begin to infer what principles helped shape it. It is important to do this process for more than one part of the program. In my study, the principles I observed in the case differed across initiatives. It is important to focus on multiple facets of the program because each part will rely on

principles differently. Getting to the results quickly or slowly will be dependent on the program the developmental evaluator is working with. What matters is finding the right process that will account for the principles above.

**The interconnectedness of principles**. As I collected documentation on CCRP's historical articulations of their principles and conducted my analysis, I began to see how many of CCRP's principles were interconnected with each other. For example, systems thinking, contextualization, multi-dimensional outcomes, and linking social and technical innovation all aligned with each other. The interconnectedness of guiding principles makes intuitive sense. As Patton (2011) argued, principles help programs develop coherence and can provide clarity across contexts. Few people would intentionally design programs where their guiding principles came into serious conflict with each other. Highlighting how principles are or are not aligned with each other is an important task for the developmental evaluation professional.

## Conclusion

This dissertation undertook the task of identifying the analytical process for identifying the guiding principles of a program. The practice of principles-focused, developmental evaluation has given evaluation professionals and program teams a new way to think about how to take on complex problems that are often seen as intractable. Principles-focused program design and evaluation is a bold way of thinking. My hope is that more programs, attempting to take on the world's most difficult problems, begin to implement a principles-focused approach to program design and evaluation. It is time to push out simple-minded thinking and elevate the consciousness of those with the power to act to be guided by principles and promote continuous learning and development as the

way to take on our world's most serious problems and injustices. Gone are the days where most of our problems could be solved with practices a study labeled "best." Our world is too diverse, changing rapidly, and in need of a different approach to program design and evaluation. Developmental evaluation and evidence-based, principles-focused approaches have the possibility to be the effective alternative.

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