Chapter 6

FACTORS INFLUENCING THE EFFECTIVENESS OF PRODUCTIVITY-ENHANCING INTERVENTIONS: AN ASSESSMENT OF SELECTED PROGRAMS

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Introduction

The preceding chapter has shown that agricultural intensification paths differ markedly in different farming systems and are influenced significantly by population density; yield-enhancing technologies, such as fertilizer, may have been used more as instruments for expanding cultivated area, rather than for increasing yield; and further in-country analysis is needed to sharpen the policy implications of these findings. This chapter assesses selected productivity-enhancing interventions across Africa, with the aim of distilling lessons on key factors contributing to the effectiveness of such interventions. *Intervention* as used here stands for programs, projects, strategies, or other agricultural development initiatives, and *effectiveness* refers to the extent to which the objectives of the intervention were achieved, taking into account their relative importance (OECD 2010).

Several agricultural interventions have been implemented across the continent over recent decades, with the aim of addressing constraints to agricultural productivity. Some interventions performed relatively well and were able to achieve their objectives to a large extent, whereas others barely achieved their intended objectives. Differences in performance could be attributed to variations in adherence to important factors that need to be considered during the design and implementation of the interventions, as well as to the sustainability of their effects. There is a lot to learn, not only from interventions that were effective or successful in achieving their objectives, but also from those that were not effective or failed to achieve their objectives. The lessons summarized in this chapter are expected to inform the design and implementation of future agricultural productivity-enhancing interventions in Africa. They

are also expected to be useful to highlight areas where ongoing interventions may require adjustment to enhance their effectiveness. Unlike the preceding chapters, in which quantitative methods are used, a qualitative approach is used here to synthesize information from different literature sources about measures of the effectiveness of the interventions.

In the next section, we describe the conceptual framework that we used in guiding our assessment of the effectiveness of interventions. This is followed by a detailed discussion of the methodology used, after which the findings are presented and discussed. The final section presents conclusions and recommendations.

Conceptual Framework for Understanding Factors for Assessing the Effectiveness of Interventions

This subsection is divided into three parts: (1) a discussion of the definition of success of productivity-enhancing interventions; (2) our conceptual framework, which uses multiple criteria to assess the performance of productivity-enhancing interventions; and (3) the components of the conceptual framework.

Defining the success of productivity-enhancing interventions

Defining the success of agricultural productivity-enhancing interventions is a fundamental conceptual issue to be addressed in the process of developing a conceptual framework for assessing the performance of such interventions. Various indicators are used to define this success, including measures of whether the intervention has led to increased production and yields as a result of alleviation of productivity constraints. Interventions that increase agricultural labor productivity also fall into this category.

A different and broader perspective considered involves measures of whether the productivity-enhancing programs or projects contributed to (1) introducing enterprises (for example, new high-value enterprises); (2) improving standards of living of the beneficiaries through increased income, employment opportunities, food availability, and dietary diversification; (3) promoting value addition and market linkages; and (4) reducing postharvest losses.

Although these definitions of success are clear, the evaluation of whether or how extensively an intervention has actually led to an increase in the relevant indicator of success is outside the scope of this chapter. Thus, while the interventions selected were also those whose impacts were partly evaluated, they

have different levels of rigor in their counterfactual designs and identification strategies to demonstrate a causal link between the intervention and measure of success. This chapter discusses this later when presenting the methodology and selected interventions.

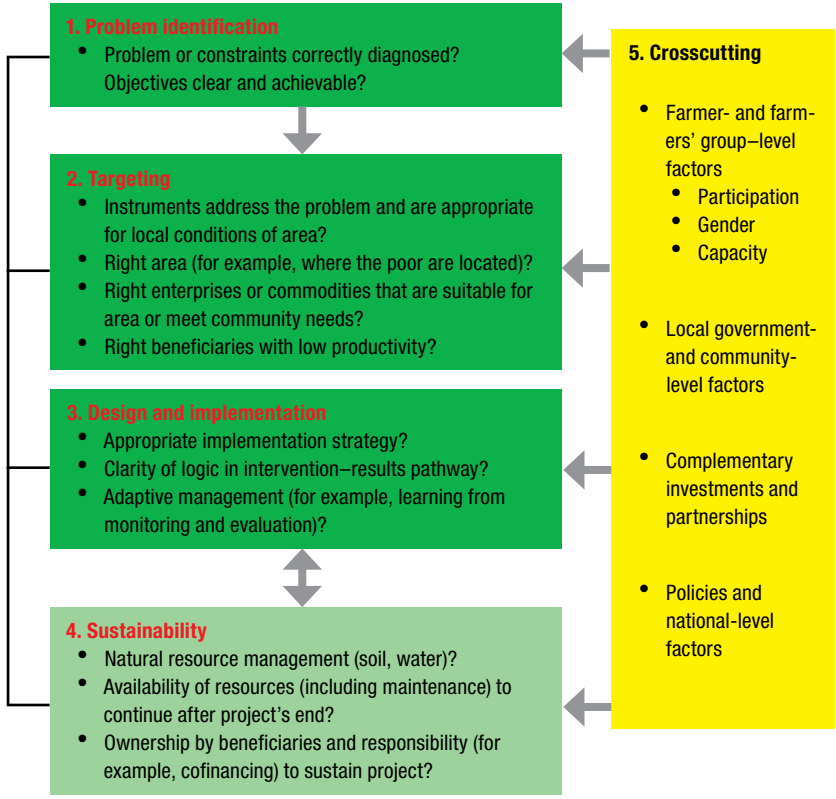
Conceptual framework

The use of such terms as "success stories" is becoming increasingly common in development discourse. However, one needs to be cautious when classifying an intervention as "successful" or "failed," given the analytical rigor that is required to demonstrate causation or lack of it in order to reliably categorize interventions into either of these two classes. Because any particular intervention often has multiple objectives, the analysis can quickly become cumbersome if one assumes that (1) "successful" interventions are those that performed well in all dimensions necessary for achieving and sustaining productivity gains, or (2) "failed" interventions are those that performed poorly in all dimensions. Hence, the conceptual framework (Figure 6.1) used here for assessing the "success" or "failure" of productivity-enhancing interventions focuses on key nodes along the broader project implementation pathway, rather than achievement of the final outcomes themselves.

Development of the conceptual framework was informed by a wide range of literature on development theories and rural development (Uphoff 1986; Rondinelli 1986; Baccarini and Collins 2003; Fonchingong and Fonjong 2003; Boussard et al. 2005; Gawler 2005; NFSD 2005; Poulton and Dorward 2008; Sahee Foundation 2008; Spielman and Pandya-Lorch 2009; TANGO International 2009; Haggblade and Hazell 2010). Consultations with several national agricultural and rural development practitioners in different countries were also conducted to generate greater confidence in the results. This is discussed further in the methodology section of this chapter.

Five thematic areas are considered in the conceptual framework for examining the performance of a productivity-enhancing intervention: (1) definition of the productivity problem or constraint; (2) targeting; (3) design, focusing on such areas as intervention strategy, implementation mechanism, and related factors; (4) sustainability; and (5) overarching supportive factors or crosscutting or conditioning factors. The arrows in Figure 6.1 indicate influence across thematic areas. A one-way directional arrow indicates one-way influence (that is, a factor influences another only), while a two-way directional arrow indicates that a factor influences another and vice versa. Although not distinguished in the framework presented in Figure 6.1, it is important to note that whereas some crosscutting factors, such as

FIGURE 6.1 Factors influencing the success or failure of agricultural productivity-enhancing interventions



Source: Authors' conceptualization based on literature review and consultations.

participation of beneficiaries, may directly influence all the other four thematic areas, other crosscutting factors, such as funding and complementary interventions, may directly influence a subset of the other four thematic areas only.

We now discuss each of the thematic areas in the conceptual framework to flesh out how they interact with each other and influence the overall "success" or "failure" of productivity-enhancing interventions within the broader project implementation pathway.

PROBLEM IDENTIFICATION

The problem identification stage is fundamental to the entire implementation process, whether it is for a productivity-enhancing intervention or for any other development project (Touwen 2001). Some key questions for consideration here are whether the problem was well understood and defined before designing the intervention, and whether the objectives that were set are relevant and achievable. Because the intended beneficiaries are expected to be better informed about their situation and local conditions, their participation at this stage in diagnosing the problems and constraints is particularly critical. Therefore, some of the criteria to consider in the evaluation are how the beneficiaries were engaged at this stage and the sources of information used. For example, was a survey conducted to collect baseline information on relevant factors that affect farmers' production decisionmaking and productivity?

As we have seen from the preceding chapters, there is substantial heterogeneity in the paths of intensification, technology adoption, and productivity, which results from differences in the production environments faced by different farmers in different areas. Because of such variations across different groups of beneficiaries, even in the same locality, another consideration in the evaluation is how the objectives of the project account for the needs and constraints of different groups of beneficiaries (Touwen 2001; NFSD 2005; Sahee Foundation 2008), which significantly influences the design of the intervention and targeting.

TARGETING

Appropriate targeting is a crucial factor for the success of productivity-enhancing interventions. In the preceding chapter's review of input subsidy programs (ISPs) in Africa, for example, we saw that poor targeting of ISPs has not led to an overall increase in fertilizers (which is a major objective of ISPs), because the subsidized fertilizer has crowded out commercial fertilizer (Jayne et al. 2013). Therefore, how the intended beneficiaries are reached (whether through the commodities or enterprises they are involved in, where they are geographically located, or other mechanisms) is an important issue to deal with in a manner that accounts for differences in socioeconomic, agroecological, and other relevant factors of the target population (Nubukpo and Galiba 1999; Boussard et al. 2005).

As the preceding chapters suggest, technologies that can work in high-potential areas, for example, are different from those suited to low-potential areas. Production of high-input, perishable products, such as milk and

horticultural products, for example, are more amenable to areas with high market access, while production of low-input, nonperishable commodities may be more suitable in remote areas (Pender, Place, and Ehui 2006).

DESIGN AND IMPLEMENTATION

The design of the intervention includes definition of the overall goal, objectives, beneficiaries, and implementation strategy (NFSD 2005; Rondinelli 1986; Sahee Foundation 2008; TANGO International 2009). Several issues need to be considered here, including (1) the technical, managerial, and financial capacities to implement and sustain the intervention; (2) the roles and responsibilities of different actors involved in implementing the project; and (3) the existence or lack of incentives to undertake the intervention.

Important questions here include:

- What is the basis on which the project was developed?
- Was a feasibility study or situation analysis conducted, and were the results used in designing the project?
- Is the project feasible?
- Does the implementing agency have the capacity to run the project as planned?
- Are the beneficiaries able to absorb the benefits from project activities?
- Are the overall project timelines clearly defined and realistic?
- Are the cost estimates accurate and realistic?
- How well is the project suited to achieve the desired outcome?
- Were the appropriate design and strategy used?
- Is the theory of change well constructed?
- Is the intervention based on reasonable assumptions?
- What are the coordination mechanisms during and after the project's life?
- What challenges are likely to affect the project, and what are the appropriate strategies to address them?
- Are any activities planned to ensure future sustainability (Baccarini and Collins 2003; NFSD 2005; Sahee Foundation 2008; Tango International 2009)?

Overall management is an important aspect too, as problems of poor management are often cited as being responsible for program failure in Africa (White 1986).

SUSTAINABILITY

An intervention can be said to be sustainable if there is indication that it will have lasting benefits for an extended period after the main part of the implementation has been completed (Gawler 2005; TANGO International 2009). Sustainability has social, economic, and environmental dimensions. A project is socially sustainable if it is supported by the existing social structures and institutions, and if it guarantees the health and safety of individuals, households, and communities. It is economically sustainable if it is economically viable over time, adaptable with minimal cost, affordable, and supported by local and external economic realities. Environmental sustainability, however, implies that the project avoids overexploitation of renewable resources, protects and enhances biodiversity, optimizes soil and water conservation, reduces pollution, manages wastes effectively, or guarantees energy and/or water and energy efficiency (TANGO International 2009). Therefore, a key question for the evaluation is, what factors are in place to sustain the benefits of the intervention?

Various aspects of the social and economic dimensions include balance or complementarity in the use of locally available resources and materials versus external capital and inputs, which is important for local ownership and participation (Fonchingong and Fonjong 2003; Sahee Foundation 2008). Regarding financial sustainability, projects that are expected to generate financial income (or internally generated revenue) are expected to be self-sustainable. Some of the issues to look at will be the type of approaches that have been put in place to ensure the financial sustainability of the intervention (Sahee Foundation 2008; TANGO International 2009).

On environmental sustainability, a key question is, what complementary interventions have been put in place to address any negative or damaging environmental side effects, which may or may not reduce the benefits of the agriculture productivity-enhancing intervention itself, in either the immediate or the long run? A typical scenario in the case of an irrigation intervention, for example, is soil salinity or increased incidence of waterborne diseases and pests for both humans and animals.

CROSSCUTTING FACTORS

The following crosscutting factors, which are expected to influence performance in the themes discussed above, are presented under four main

categories: farmer- and farmers' group–level factors, local government- and community-level factors, complementary investments and partnerships, and policies and national-level factors.

Farmer- and farmers' group–level factors

We discuss several factors, including participation of beneficiaries, particularly gender and capacity. Participation of beneficiaries has been found to be crucial for the different stages of project implementation (Uphoff 1986; Baccarini and Collins 2003; Gawler 2005; Noble et al. 2005; Sahee Foundation 2008; TANGO International 2009). Including the needs and preferences of beneficiaries during the design and implementation of development interventions enhances local acceptability and the long-term sustainability of the interventions (Uphoff 1986; Gawler 2005; Noble 2005). Therefore, the quality of participation, which is more than merely informing the beneficiaries of what is happening or going to happen, is important (Pretty 1995).

Several questions to be considered include:

- Who are the right beneficiaries to be involved?
- What is their capacity to engage effectively in the intervention?
- If their capacity is weak, what improvements are feasible within the scope of the intervention?
- What form will the participation process take?
- When is the right time to involve the beneficiaries?

The issue of gender is important, because evidence shows that there are differences in household welfare outcomes because of gender differences in access to factors of production, inputs, technologies, and other productive resources that affect output, productivity, and related development outcomes (Tadelle and Ogle 2001; Mapiye et al. 2008; Kristjanson et al. 2010; Peterman et al. 2010). A common observation manifested from such differences is choice of agricultural enterprise between men and women. Gender differences in productivity constraints are observed across Africa (SOFA Team 2011; SOFA Team and Doss 2011), suggesting that female farmers face more constraints, resulting in lower yields than those of their male counterparts (Seeley et al. 2004; Kristjanson et al. 2010; Peterman 2010; SOFA Team 2011; SOFA Team and Doss 2011; Croppenstedt, Goldstein, and Rosas 2013). Thus, a key question for the evaluation is how the different constraints faced by men and women are internalized in the productivity-enhancing

intervention to maximize its benefits and their distribution. The gender issue can be extended to include other groups of beneficiaries, children and youths, the aged, etc.

How well farmers or beneficiaries are able to participate depends on their capacity to understand the various aspects of the project and engage effectively (Sahee Foundation 2008). Thus, developing the skills and competencies of the beneficiaries to take greater control of the project may be an important aspect to consider, even if capacity building is not an explicitly stated objective of the intervention. The source of capacity building (central government, development agent, or local authority) may not be of consequence, but tapping into indigenous knowledge could prove useful. Building the capacity of the beneficiaries to be able to effectively manage the project may contribute to a strong exit strategy (Baccarini and Collins 2003; NFSD 2005; Noble et al. 2005; Andersen et al. 2006; Hyvari 2006; Muller and Turner 2007; Khang and Moe 2008; Sahee Foundation 2008).

Many development projects are implemented through farmers' groups (organic or induced) as achieving collective action to provide support or diffuse technology. This may be argued as a way of achieving economies of scale or reducing transaction costs (Poole and de Frece 2010), or certain activities may require some level of collective action, such as integrated watershed development, canal irrigation, and conservation of common property resources (Uphoff 1986; Noble et al. 2005). However, the question of what benefits farmers' groups and collective action bring to such interventions is ultimately complex and empirical. For example, a farmers' group may suffer from elite capture and social exclusion problems (Feder et al. 2010), which may lead to choices that may be inconsistent with considerations of equity. Based on Feder et al. (2010) and Mansuri and Rao (2013), key questions for the evaluation here include:

- Do group leaders act in ways that support or undermine the larger interests of the farmers they claim to represent?
- Do they maximize rents, or do they lead with the collective welfare of the farmers in mind?
- Are there specialized groups, such as those exclusively for female farmers or disadvantaged people?
- Are such farmers represented in the leadership council or other decision-making bodies for the group?

Local government- and community-level factors

Several of the issues discussed under the farmers' groups also apply here. However, because the composition of the community is much larger than farmers' groups, the problems of elite capture and social exclusion are likely to be more prevalent at this level. Thus, having strong and committed local government officials and community leaders may be critical for the success of productivity-enhancing interventions (Penning de Vries 2005). In particular, such leadership may be necessary for mobilizing people and resources and ensuring the best use of those resources (Spielman and Pandya-Lorch 2009). These committed and dedicated leaders are sometimes referred to as "champions," implying how they can make a difference in society in several ways, including pushing an issue to the forefront of the public's consciousness, demonstrating what can be done in the face of seemingly insurmountable challenges, or mobilizing the political and financial capital to overcome inertia (Spielman and Pandya-Lorch 2009).

Issues of the participation and capacity building of farmers discussed earlier are also relevant at this higher community and local government level, in terms of empowerment of the community to own the project. As Mansuri and Rao (2013) find, however, inducing local community participation is a difficult, often unpredictable, and potentially contentious undertaking and, because several factors come into play, a successful project in one context may fail miserably in another. Therefore, some of the issues to consider are the specific modalities put in place for inducing participation and the willingness and ability of the community to adapt to changes in expected funding and state support and expected outcomes.

Complementary investments and partnerships

The main issue here is considering how other ongoing or planned investments or projects may mitigate (compete against) or complement (enhance) the intervention. For example, a project that seeks to promote high-value horticultural production in a remote area with poor access to markets, limited post-harvest-handling facilities, and lack of agroprocessing plants may not likely be successful. Therefore, a key question to consider in the evaluation here is, what investments or partnerships may enhance or undermine achievement of the objectives of the intervention?

Increasingly, many interventions tend to adopt an integrated approach, whether for addressing one or multiple constraints. Therefore, planners and implementers have had to leverage strategic partnerships and use multistakeholder approaches, ideally involving actors who have comparative advantage

in different aspects of the intervention (Diagne et al. 2010). Public–private partnerships are one such approach being used in agriculture and rural development (Sahee Foundation 2008; Druilhe and Barreiro-Hurlé 2012). Because of the complexities and difficulties in coordinating across agencies, there are many examples of such integrated interventions that have failed to achieve their objectives. Therefore, other key questions to consider, especially in the case of integrated, multistakeholder development intervention are, what are the modalities for coordinating the different partners, and how do the different parts that are integrated contribute to achieving each objective?

Policies and national-level factors

The success or failure of an intervention also depends on policies and other national-level factors. Although such factors as national land tenure policy or infrastructure development may exert the same force everywhere in the country, they may have different effects on different interventions in different locations, depending on how each intervention or locality relates to policy.

For example, land tenure policy may have little bearing on an intervention that seeks to promote technologies for maize (annual crop) production on farmers' own fields compared with one that seeks to promote technologies for tree crop production whether on farmers' own fields or previously uncultivated lands. Another example of the differential effects of a national policy is with the ISPs, which are typically characterized as being chronically late in the delivery of program fertilizer (Jayne and Rashid 2013). Because of different planting seasons associated with different agroecologies in a country, it is likely that the delivery will be late for some and timely for others. This example also highlights the importance of timing, which is especially critical in seasonal agriculture (Dorward et al. 2006). Therefore, some key questions to consider in the evaluation of the influence of national-level factors include: How will different policies, programs, regulations, or reforms affect achievement of the objectives of the intervention, and how can community leaders be empowered to provide relevant local public goods where national policies or programs fall short of the community needs?

Methodology

We employed both quantitative and qualitative methods of collecting and analyzing data. We used *quantitative* methods to collate and analyze data on the *outcomes* of productivity-enhancing interventions, and *qualitative* methods to synthesize information on the *effectiveness* of the interventions from

different literature sources. Because most of the available information on the performance of the interventions was in narrative form, a higher proportion of the analysis in this chapter was achieved through qualitative approaches. By combining quantitative and qualitative analysis, we are able to examine some potential impacts of the interventions that were analyzed in the literature based on group interviews of beneficiaries of the interventions (Khandker, Koolwal, and Samad 2010). The qualitative methods also are more suitable in situations that involve a small number of case studies (Patton 1986), and can provide a deep understanding of the impact pathways (Copestake, Johnson, and Wright 2004).

As stated in the introduction to this chapter, the performance criteria of the "success" or "failure" of productivity-enhancing interventions used here focus on key nodes along the broader project implementation pathway, rather than on achievement of the final outcomes themselves. Nevertheless, the issue of attribution is important, and we note that qualitative methods generally on their own may not provide robust information about attributing the observed performance to the intervention (Catley et al. 2008; Petticrew and Roberts 2006). Defining and measuring the appropriate counterfactual are at the core of a rigorous impact evaluation, for which qualitative methods on their own are generally less effective. Although qualitative analyses are suitable for in-depth analysis of small numbers of case studies, small sample sizes may place limits on the extent to which the findings can be generalized to the larger population.

For the combined quantitative and qualitative analysis used here, we employed a multicriteria evaluation (MCE) technique (Voogd 1982) based on the project implementation pathway nodes presented in the conceptual framework. MCE techniques have been used widely for different policy purposes in different contexts, such as (1) identifying the best manager for a project (Zavadskas et al. 2008); (2) identifying effective options or solutions in natural resource management (Munda, Nijkamp, and Rietveld 1994; Abdul et al. 2011); (3) identifying the best location for an investment (Lin et al. 1997); (4) identifying strategic options at the planning stage of a project (Linton, Walshand, and Morabito 2002; Raju and Kumar 2005; De Brucker, Macharis, and Verbeke 2011); and (5) monitoring and evaluating progress in implementing development projects (Karamouz et al. 2002). The MCE technique can be applied as an *ex ante* evaluation tool, particularly for making strategic choices, or an ex post evaluation tool, particularly for evaluating multiple outputs and outcomes.

In this chapter, the MCE technique is applied as an ex post evaluation tool on the multiple criteria presented in the conceptual framework, assuming

equal weights for each criterion. Although different weights may be used (Saaty 1987; Wang, Jing, and Zhang 2009), we chose equal weights for simplicity, because the data (interventions considered) were from different studies conducted at different times on different countries, which complicates the choice of an unequal weighting system.

Data and sources of information

The main sources of data on productivity-enhancing interventions were from a wide range of peer-reviewed published literature and gray literature in the form of project implementation progress reports, technical reports, project evaluation reports, documentation of case studies, briefs on success stories, and external evaluation reports. About 110 potential projects representing interventions that aimed to address a broad range of agricultural productivity issues (for example, inputs, extension, irrigation and water management, crop and animal health) were identified, and then relevant literature on them was assembled. After reviewing the literature, we dropped the majority of the projects (95 in total), because of lack of adequate information on the different criteria presented in the conceptual framework. Therefore, we retained 25 projects for the analysis. (Table 6A.1 in the appendix to this chapter contains detailed descriptions of the projects, including their location.)

Even among the 25 projects, the analytical rigor on the effectiveness of the intervention varied. For example we found that stronger analyses and more credible evidence on the effectiveness of interventions were generated by independent evaluations than those based on self reporting by project implementers. For 17 of the projects out of the total 25 analyzed, we were able to access external evaluation reports, in addition to independent analytical and scientific papers, peer-reviewed journal articles, and other forms of external technical reviews. Only in 3 projects were the dominant sources of information from internal evaluations and self-reporting by project implementers or funders.

In our review of all the 110 potential projects, we found a general tendency to document "success" stories more often than unsuccessful or "failed" cases. For the few cases that were deemed failures, there was not much information to evaluate them according to the criteria presented in the conceptual framework. To avoid having only "successful" projects in the sample without variation in the indicators to be analyzed, we considered different levels of success.

To complement the literature review that was used in developing the conceptual framework in Figure 6.1, a short questionnaire was sent to several in-country experts on national agricultural and rural development. (Appendix Table 6A.2 presents details on the survey and instrument.) These experts

were asked to identify three productivity-enhancing interventions that were considered to have worked well in their countries and three that did not do well. They were then asked to provide reasons for their performance ratings of the identified interventions. Later, the experts were convened at a workshop in Nairobi, Kenya, to brainstorm further on the topic of using a checklist of questions regarding performance of past agricultural productivity projects. (Appendix Table 6A.6 presents details on the checklist and the experts consulted.) The research team also visited one of the productivity-enhancing project sites in Yatta district in Kenya—the Operation *Mwolyo*[1] Out (OMO) project (Table 6A.1), to gain a practical sense for evaluating the performance of the various interventions.

Measurement of project effectiveness

Guided by the analytical framework depicted in Figure 6.1, we evaluated the performance of the 25 productivity-enhancing interventions on 13 criteria or indicators—representing the four main themes and the four crosscutting factors. Table 6.1 outlines the relationship between the empirical indicators and the conceptual factors, and appendix Table 6A.3 presents details on the pathways through which these indicators influence productivity.

Based on our assessment of the extent to which the issues associated with each indicator were dealt with, we defined two levels of performance for each indicator: (1) well done to very well done, and (2) moderate to low performance. (Appendix Table 6A.4 provides details on the information considered for scoring each of the 13 indicators.) We used a Likert scale to convert the qualitative information to numerical values. Assuming that the strength or intensity of opinions, perceptions, or attitudes can be measured and is linear—that is to say, on a continuum from, for example, strongly positive to strongly negative—the Likert scale was used to convert the ordinal measures to numeric values, as summarized in Table 6.2.

To assess performance in meeting the overall productivity objective or target, we compared what was achieved against stated targets. In cases where there was no stated target for the project, we used the national productivity target, as stated in the government's agricultural strategy. Overall productivity performance was rated as follows:

1 *Mwolyo* means relief food in the local Kamba language spoken in Yatta district, Kenya.

TABLE 6.1 Conceptual factors and empirical indicators used in performance assessment

Conceptual factors	Empirical indicators
Main themes	
1. Problem identification	1. Problem definition
2. Targeting	2. Choice of instruments (commodity, solution)
	3. Suitability of instruments
3. Design and implementation	4. Design and timing of implementation
4. Sustainability	5. Environmental sustainability
	6. Financial sustainability
Crosscutting themes	
5. Farmer- and farmers' group–level factors	7. Community participation
	8. Gender consideration
	9. Capacity building
	10. Organized groups
6. Local government- and community-level factors	11. Leadership and dedication
7. Complementary investments and partnerships	12. Investments and partnerships
8. Policies and national-level factors	13. Policies and political stability

Source: Authors' construction based on literature review and consultations.

TABLE 6.2 Likert scales and associated scores

Likert level	Description	Score	Symbol
1	Good to very good	2	++
2	Moderate to low	1	••

Source: Authors' construction based on literature review and qualitative performance assessment.

- If less than 50 percent of the target was met, performance was rated as "very poor."
- If between 50 and 74.9 percent of the target was met, performance was rated as "poor."
- If between 75 and 99.9 percent of the target was met, performance was rated as "moderate."
- If between 100 and 149.9 percent of the target was met, performance was rated as "good."
- If the target was exceeded by more than 150 percent, performance was rated as "very good."

TABLE 6.3 Interventions selected for assessment by countries and farming systems

Name of project/intervention	Countries	Farming systems
Agricultural Sector Development Programme—irrigation component (ASDP-irrigation)	Tanzania	Maize mixed, tree crop
Agriculture Productivity Enhancement Programme (APEP)	Uganda	Highland perennial, maize mixed
Animal Health Services Rehabilitation Programme (AHSRP)	Kenya	Maize mixed, highland perennial
Cassava Enterprise Development Project (CEDP)	Nigeria	Tree crop, coastal, root crop
Conservation Agriculture Project 1 (CAP1)	Zambia	Maize mixed, cereal-root crop mixed
Crop Crisis Control Project (C3P)	Burundi, Democratic Republic of the Congo, Kenya, Rwanda, Uganda, Tanzania	Maize mixed, root crop, highland perennial, forest based
East Africa Dairy Development Project (EADD)	Kenya, Uganda, Rwanda	Maize mixed, highland perennial
FARM Africa Dairy Goat Improvement Project (FADGIP)	Burundi, Ethiopia, Kenya, Rwanda, Tanzania, Uganda	Maize mixed, highland mixed
Farm Input Subsidy Program (FISBP)	Malawi	Maize mixed
Farmer Input Support Program (FISPP)	Zambia	Maize mixed, cereal-root crop mixed
Fodder Trees and Shrubs Project (FTSP)	Kenya, Rwanda, Tanzania, Uganda	Cereal-root crop mixed, maize mixed
Fuve Panganai Irrigation Scheme (FPIS)	Zimbabwe	Maize mixed
Kaleya Irrigation Project (KIP)	Zambia	Maize mixed

Results and Discussions

Description of case study interventions

Table 6.3 provides a summary of the case study interventions and the countries and farming systems within which they were implemented based on classification in Chapters 3 and 4. (Appendix Table 6A.1 provides more details.) The maize mixed farming system was predominant, because it accounts for a large area in East and southern Africa, where the majority of the case studies are located. In fact, only 5 of the 25 projects exclusively fell outside the maize mixed system, including the Cassava Enterprise Development Project (CEDP) in Nigeria, the System of Rice Intensification (SRI) project in Rwanda, the Specialty Coffee Program (SCP) in Rwanda, the National Agricultural

Name of project/intervention	Countries	Farming systems
Kenya Dairy Development Programme (KDDP)	Kenya	Maize mixed
National Agricultural Advisory Services (NAADS)	Uganda	Highland perennial, maize mixed
National Agricultural Extension Intervention Program (NAEIP)	Ethiopia	Highland perennial, highland temperate mixed, pastoral-agropastoral
New Rice for Africa (NERICA) upland rice	Uganda	Highland perennial
Operation *Mwolyo* Out (OMO)	Kenya	Maize mixed
Participatory Irrigation Development Programme (PIDP)	Tanzania	Maize mixed, root crop
Push–Pull Technology (PPT)	Kenya, Tanzania, Uganda, Ethiopia	Root crop, pastoral-agropastoral, maize mixed, highland temperate mixed
Regional Land Management Unit (RELMA)	Eritrea, Ethiopia, Kenya, Tanzania, Uganda, Zambia	Maize mixed, root crop, highland temperate mixed
Sasakawa Global 2000 Agricultural Program (SG2000-AP)	Ghana, Sudan, Tanzania, Benin, Togo, Mozambique, Eritrea, Guinea, Burkina Faso, Malawi, Mali, Nigeria, Ethiopia, Uganda, Zambia	Maize mixed, highland temperate mixed, pastoral
Specialty Coffee Program (SCP)	Rwanda	Highland perennial
System of Rice Intensification (SRI)	Rwanda	Highland perennial
Wei Wei Integrated Development Project (WWIDP)	Kenya	Maize mixed

Source: Authors' construction based on literature review and farming system classification in Chapter 4.

Extension Intervention Program (NAEIP) in Ethiopia, and the New Rice for Africa (NERICA) upland rice program in Uganda. We attempted to use the farming systems to make inferences about project targeting, but given the large geographical scope of each farming system, doing so proved to be difficult. Furthermore, because most of the projects were addressing similar constraints across different farming systems, lessons on project effectiveness could apply to a broad range of farming systems.

Performance of the interventions

PERFORMANCE AGAINST 13 INDICATORS OF EFFECTIVENESS IN IMPLEMENTATION

Table 6.4 summarizes the qualitative scores for each of the 13 indicators (appendix Table 6A.5 provides more details), and Table 6.5 provides the

TABLE 6.4 Performance of the interventions in meeting criteria for effectiveness in implementation

Project/ intervention	Problem definition	Choice of instruments	Suitability of instruments	Design and timing of implementation	Environmental sustainability	Financial sustainability	Community participation	Gender consideration	Capacity building	Organized groups	Leadership and dedication	Complementary investments and partnerships	Policies & national-level factors	Total score	Percentage score
AHSRP	••	++	••	••	••	••	••	••	++	••	••	••	••	15	58
APEP	++	++	++	++	••	••	++	++	++	++	++	++	••	23	89
ASDP-irrigation	++	++	++	••	••	••	••	••	••	••	++	••	••	17	65
C3P	++	++	++	++	••	••	++	••	++	++	++	++	++	23	89
CAP1	++	++	++	++	••	••	++	••	++	++	++	••	••	21	81
CEDP	++	++	++	++	++	••	++	++	++	••	••	++	••	22	85
EADD	++	++	••	••	••	••	++	++	++	++	••	++	••	20	77
FADGIP	++	++	++	++	++	••	++	++	++	++	++	++	••	24	92
FISBP	++	++	••	••	••	••	++	++	••	••	++	••	••	18	69
FISPP	++	++	••	••	••	••	••	••	••	••	++	++	++	18	69
FPIS	++	++	++	••	••	••	••	++	••	••	++	••	••	18	69
FTSP	++	++	++	++	++	++	++	++	++	++	++	++	••	25	96
KDDP	++	++	++	++	••	••	++	++	++	••	++	++	••	22	85
KIP	++	++	++	++	••	••	++	++	++	++	++	++	++	24	92
NAADS	++	++	••	••	••	••	++	••	••	++	••	••	++	18	69
NAIEP	++	++	••	••	••	••	••	••	••	••	++	++	••	17	65
NERICA	++	++	++	++	••	••	++	++	++	++	++	++	••	23	89
OMO	++	++	++	++	++	++	++	++	++	++	++	••	••	24	92
PIDP	••	++	••	••	••	••	++	++	++	++	++	++	••	20	77
PPT	++	++	++	++	++	++	++	++	++	++	++	++	••	25	96
RELMA	••	++	++	••	++	••	••	++	++	++	++	++	++	22	85
SCP	++	++	++	++	••	••	++	++	++	••	++	++	••	22	85
SG 2000-AP	++	++	++	++	++	••	++	++	++	++	++	++	••	24	92
SRI	++	++	++	++	++	••	++	••	••	++	++	••	••	21	81
WWIDP	++	++	++	++	++	++	++	++	++	++	++	++	••	25	96
Total	**1.9**	**2.0**	**1.7**	**1.6**	**1.4**	**1.2**	**1.8**	**1.7**	**1.7**	**1.6**	**1.8**	**1.7**	**1.2**	**21**	**82**

Source: Authors' construction based on literature review and qualitative performance assessment.

Notes: See Table 6.3 for the full names of the projects. ++ = 2 points and •• = 1 point. Percentage score is the "Total score" as a percent of the highest possible total score of 26 (13 indicators multiplied by 2) (Table 6.3).

TABLE 6.5 Overall performance in implementing the interventions

Quartile	Performance	Number of interventions
1st	75.0 percent and above	18
2nd	50.0–74.9 percent	7
3rd	25.0–49.9 percent	None
4th	Less than 25 percent	None

Source: Authors' compilation based on literature review and qualitative performance assessment.

overall performance based on aggregate scores by quartiles. Together, the results show that the majority of the projects performed well, with 18 of the total 25 interventions having an overall score of 75 percent and above. The remaining 7 interventions were in the 50–75 percent quartile (Table 6.5).

The results in Table 6.4 show that choice of commodity/instrument was the criterion on which all of the interventions performed perfectly; followed by problem definition, with an average score of 1.9; and community participation and leadership and dedication, with scores of 1.8 each. Two of the criteria had the lowest average score of 1.2—financial sustainability and policies and national-level factors. Environmental sustainability was also a challenge for many of the projects, with only nine projects receiving a score of 2.

Looking at the total scores obtained, the Push–Pull Technology project of the International Centre of Insect Physiology and Ecology (ICIPE), the Fodder Trees and Shrub Project implemented by the World Agroforestry Centre, the Farm Africa Dairy Goat Improvement Project in Meru, Kenya, and the Wei Wei Integrated Development Project scored the highest, with 96 percent. In contrast, the Animal Health Services Rehabilitation Programme scored the lowest, with 58 percent.

PERFORMANCE IN MEETING OVERALL PRODUCTIVITY TARGET

As the results summarized in Table 6.6 indicate, eight of the projects had a good or very good performance rating in terms of meeting or surpassing the stated productivity targets, nine had a moderate performance rating, and eight had a poor or very poor rating. (Appendix Table 6A.6 provides details on the productivity achievements for each project.) The key question now is, how does performance in implementation vis-à-vis the 13 criteria examined earlier influence performance in meeting the overall productivity target? This is the topic of the upcoming subsection.

TABLE 6.6 Distribution of projects in meeting the overall productivity target

Criteria	Performance rating	Project/intervention	Number of projects	Percentage of projects
Less than 50% of target	Very poor	AHSRP, KDDP, FPIS, NAEIP	4	16
50.0–74.9% of target	Poor	CAP1, FISPP, PIDP, SCP	4	16
75.0–99.9% of target	Moderate	APEP, ASDP-irrigation, EADD, FADGIP, FISBP, FTSP NAADS, NERICA, RELMA	9	36
100.0–149.9% of target	Good	C3P, CEDP, KIP, SRI	4	16
150% or more of target	Very good	SG 2000-AP, OMO, PPT, WWIDP	4	16
Total			25	100

Source: Authors' compilation based on literature review and performance assessment.
Note: See Table 6.3 for the full names of the projects and appendix Table 6A.6 for details on the productivity achievements for each project.

FACTORS INFLUENCING PERFORMANCE IN MEETING THE OVERALL PRODUCTIVITY TARGET

To better understand how the 13 criteria contribute to performance in meeting the overall productivity target, we organized the projects into three groups, calculated the average score for each indicator within each group, and analyzed the differences across the groups. Group 1 (G1) is made up of the eight projects that performed poorly or very poorly, group 2 (G2) consists of the nine projects that performed moderately, and group 3 (G3) contains the eight projects that met or exceeded the overall productivity target. The results presented in Table 6.7 show that interventions that achieved their intended overall productivity objectives generally performed better in each criterion compared, except in one criterion—choice of instruments—where the performance was the same across the three groups. In fact, the largest difference in average performance across the groups was in environmental sustainability, suggesting this is a serious problem for most agricultural projects that do not perform well.

Comparing the average scores across the three groups in Table 6.7, six of the criteria stand out in terms of having large differences of at least 0.4 points in the average scores among the groups: suitability of instruments, design and timing of implementation, environmental sustainability, financial sustainability, community participation, and organized groups. Therefore, how well implementation of a productivity-enhancing intervention performs in these six criteria seems to exert the largest influence on the overall performance of the intervention in meeting its productivity target. The small differences in the average scores across the two groups in the other criteria (particularly

TABLE 6.7 Performance in indicators of implementation by performance in overall productivity

Group scores and comparisons	Problem definition	Choice of instruments	Suitability of instruments	Design and timing of implementation	Environmental sustainability	Financial sustainability	Community participation	Gender consideration	Capacity building	Organized groups	Leadership and dedication	Investments and partnerships	Policies and political stability
Average score													
G1: Poor or very poor (8)	1.8	2.0	1.5	1.4	1.0	1.0	1.5	1.5	1.6	1.3	1.9	1.6	1.1
G2: Moderate (9)	1.9	2.0	1.7	1.4	1.3	1.1	1.8	1.8	1.7	1.8	1.8	1.7	1.2
G3: Good or very good (8)	2.0	2.0	2.0	2.0	1.8	1.4	2.0	1.8	1.9	1.9	1.9	1.8	1.3
Difference in average scores between:													
G1 and G2	0.1	0.0	0.2	0.1	0.3	0.1	0.3	0.3	0.0	**0.5**	–0.1	0.0	0.1
G2 and G3	0.1	0.0	0.3	**0.6**	**0.4**	0.3	0.2	0.0	0.2	0.1	0.1	0.1	0.0
G1 and G3	0.3	0.0	**0.5**	**0.6**	**0.8**	**0.4**	**0.5**	0.3	0.3	**0.6**	0.0	0.1	0.1

Source: Authors' computations based on literature review and qualitative performance assessment.

Notes: Figures in parentheses are the number of projects in the group (Table 6.6 provides a list of projects by rating). Numbers in bold face show the criterion for which there exists a difference of at least 0.4 points in the average scores among pairs of the three groups.

choice of instrument, leadership and dedication, complementary investments and partnerships, and policies and political stability) suggest that they may not be as influential in the success of projects.

Generally, most productivity-enhancing interventions perform well in defining the problem and selecting relevant instruments to use in addressing the productivity constraints, which explains why there were little or no differences in the average scores across the groups with regard to these criteria. Overall, the poor performance in the environmental and financial sustainability criteria in G1 and G2 (which is 17 out of the 25 projects studied) raises the question as to whether the productivity gains attained by the projects can be sustained in the long run.

Lessons on environmental sustainability can be drawn from the eight projects that scored the highest points on this analysis. Taking the OMO project, for example, its implementation relies on locally available resources and technologies that are based on indigenous knowledge and are amenable to the

local community. The project uses low-cost and readily available technologies, such as foot pumps, *zai* pits,[2] manure, and water pans or small dams.

We now discuss in a bit more detail the six factors that seem to exert the largest influence on overall productivity performance: suitability of instruments, design and timing of implementation, environmental sustainability, financial sustainability, community participation, and organized groups. The OMO project represents a very good intervention, not only in terms of performance of the individual factors, but also in terms of how the interactions and interdependence among the factors are critical for overall success. The theory of change for this intervention seems to have been well grounded on addressing the primary constraint of access to water for agricultural production, which before the project resulted in unpredictable yields and frequent crop failure. With effective water-harvesting technologies from the project, farmers have been able to cultivate their plots more than once a year and increase their yields. In addition to increasing their land productivity, farmers are now growing high-value crops that enable them to generate greater income (Box 6.1). Other factors that seem to have helped significantly include motivating the community to participate actively and working in groups or cooperatives, in addition to obtaining necessary financial support for value-addition activities, including a development agency's donation of bakery equipment, an oven, and a solar dryer for the community (Murgo 2015).

For several of the projects that did not perform well, we found that underestimation of the cost of the intervention; delays in implementation processes, including late disbursement of funds, lengthy tendering processes, and delays in completing contractual agreements; low capacity of implementing officials; and weak monitoring and evaluation (M&E) systems were the major factors contributing to low performance (appendix Table 6A.5 provides details). The overall poor performance of the Animal Health Services Rehabilitation Programme in Kenya is an example of the negative influence that lack of commitment from different levels of government can have on overall project implementation (Box 6.2). In this example, the theory of change was based on the implementing government agency's commitment to change, its management structure, and its mode of operations. However, the agency continued to conduct business as usual and, with the central government failing to provide its counterpart funding as planned, several key items needed for operating the project (for example, vehicles, staff, and equipment) could not be procured.

2 A *zai* pit is basically a planting hole that is created with manure, grass, and topsoil in a manner that collects rainwater to sustain the plant for a long period of time.

BOX 6.1 Operation *Mwolyo* Out intervention and selected performance indicators

Operation *Mwolyo* Out (OMO) promoted water-harvesting and related technologies to help farmers intensify their production on a 0.4-hectare (ha) piece of land: 0.2 ha for food security (maize) and 0.2 ha for wealth creation (high-value crops). Before the project, mostly only maize was grown, and harvest was uncertain, with an average maize yield of 112.5–225.0 kg/ha. With the OMO project, farm households are now growing both food and high-value cash crops, and their food security and incomes have substantially improved, as shown in the table below.

Average returns to a modest project member

Plot size (in hectares)	Crop	Harvest per season	Seasons per year	Value (KES)
0.20	Maize	12 (90-kg bags)	2	72,000
0.05	Onions	KES 120,000	3	360,000
0.05	Watermelon	KES 50,000	2	100,000
0.05	French beans	KES 45,000	3	135,000
0.05	Sweet potatoes	KES 50,000	2	100,000
0.40	All crops			767,000

Source: Authors' compilation based on literature review and field interviews (December 5, 2011).
Notes: KES = Kenyan shilling; kg = kilogram.

Consequently, most of the targets were not met. For example, vaccinations against endemic diseases were carried out in only 50 percent of the target communities, only 15 percent of the projected cattle stock was dipped, and clinical cases recorded as treated were a mere 10 percent of project estimates.

Some key observations affecting the findings

In our search for productivity-enhancing interventions, we came across more and better documentation of success stories than failures. This trend has several plausible explanations.

First, for obvious reasons, there may be bias toward reporting successful projects among funders and implementers of projects. This creates a situation where the opportunity to learn from failures is limited—likely resulting in repetition of past mistakes, and in turn leading to failures that could have been avoided or reduced. Increasingly, the importance of learning from failures as well as from successes is coming to the fore in the literature on

BOX 6.2 Kenya Animal Health Services Rehabilitation Programme

Project description. The Kenya Animal Health Services Rehabilitation Programme aimed to improve the delivery of animal health services to smallholder livestock owners nationwide. This goal was to be achieved by strengthening the management structure and operations of the Department of Veterinary Services (DVS). Four international agencies—the International Fund for Agricultural Development, International Development Association, Organization of Petroleum Exporting Countries, and United Nations Development Programme—contributed funds to the project.

Overall performance rating. A detailed review of the project concluded that it had performed poorly.

Reasons cited for failure. The main reasons cited for the poor performance were delays in project start-up, shortages of Government of Kenya counterpart funds, delays in procurement of goods and services, and inadequate staff and capacity of the Project Management Support Unit (PMSU). Regarding delays in procurement, for example, only 51 percent of the total project funds was used, even after a two-year extension was granted.

Theory of change and resulting lack of change. The major underlying cause for the poor performance seems to be the lack of change in DVS's management structure and operations—that is, DVS conducted business as usual. The main interventions targeted were to (1) introduce modernized management practices in DVS to provide improved animal health services to livestock owners, (2) establish an effective monitoring and evaluation system, (3) provide appropriate training to staff, and (4) make DVS's overall operations cost-effective. Specific staff appointments were to be made within DVS to make this work, and PMSU was to receive additional staff and equipment to provide the necessary oversight of these management innovations. The design of these innovations was to be based on studies carried out at the beginning of the project. Almost all of the studies were delayed, and when eventually completed, were often not accepted by DVS. As such, recommended staff appointments were not made, PMSU staffing or capacity was barely changed, and no useful project monitoring took place.

Underachievements. Vaccinations against endemic diseases were carried out in only 50 percent of the targeted population, 15 percent of the projected cattle stock was dipped, and clinical cases recorded as treated were a mere 10 percent of project estimates. There was no increase in the diagnostic and surveillance work of the veterinary laboratories. Only the tsetse control trials showed a marked positive response to project interventions.

External factors. External factors that were likely not taken into account and may have influenced project performance include the poor state of Kenya's

rural roads (which contributes to higher transport cost) and the ability of farmers to pay for the services (which affects the program's cost recovery). The ability of farmers to pay for the services may have been affected by the timing of payment by the Kenya Cooperative Creameries for farmers' milk supplies.

Source: IFAD (1993).

development studies, M&E, and accountability. As such, creating a culture where it is acceptable to admit failure, learn, and innovate in order to continuously progress is critical (Lewis 2011). Therefore, in addition to understanding and replicating what worked well, it will be important for development analysts, funders, and implementers to also focus on and learn from what did not work well, or what could have been done differently to enhance program performance.

The second point is that, although there are more and better-documented cases of successful productivity-enhancing interventions than failures, a key question that arises is to what extent these successful interventions can be replicated in different locations, in order to sustainably raise the levels of agricultural productivity in different parts of Africa. Perhaps there are just too few projects with credible impact evaluations across the continent that constitute a critical mass of good things to reliably scale up and out.

For example, we started out with 110 potential projects and then settled on 25 that we assessed to have reliable impact data, although the analytical rigor of the impact evaluation methods varied. The majority of the 25 projects are located in East and southern Africa, and in the maize mixed farming system, with only 5 of the 25 projects falling exclusively outside it. The maize mixed farming system accounts for only 15.7 percent of the total population in Africa south of the Sahara and 11.5 percent of the total crop area (Table 4.2 in Chapter 4). This suggests that more projects with rigorous impact evaluations in different parts of the continent are needed to generate the necessary critical mass of knowledge on scalable practices, technologies, and interventions.

Conclusions and Implications

Several agricultural productivity-enhancing interventions have been implemented in different parts of the continent. This chapter presented lessons on

key factors contributing to the success (or lack of it) in implementing such interventions. Of 110 potential projects identified to be used in this study, we selected 25 that had better documentation on their implementation, but different levels of impact evaluation rigor. The interventions addressed a wide range of constraints, such as extension, institutional capacity, input subsidies, environmental degradation, and water resources. We used mostly qualitative methods to (1) assess performance based on 13 factors capturing different stages along the broad project implementation pathway, and (2) evaluate the influence of the factors in achieving the overall productivity target.

We find that projects that scored high in most of the factors performed better in achieving the overall productivity target, compared with projects that had low scores for the majority of the factors. The likelihood of achieving the overall productivity target seems to be influenced most by six of the factors—suitability of instruments, design and timing of implementation, environmental sustainability, financial sustainability, community participation, and organized groups. A common feature across many projects that did not score well was performance in environmental sustainability, suggesting this may be a serious problem for most agricultural projects implemented in the continent. We find that the overall environmental and financial sustainability of the interventions is dependent on the long-term commitment of actors (farmers, communities, local and higher levels of government, donors, and other development stakeholders).

To extend the findings to different biophysical and socioeconomic environments, we tried to analyze the data for different farming systems, as defined in Chapter 4. However, most of the 25 interventions analyzed were implemented in the maize mixed farming system. Thus, the findings are likely to be limited to this farming system only, and to the extent that the rigor of the impact evaluations of the projects was sufficient. While there are more and better-documented success stories than failures, because most the potential projects (77 percent) were dropped from our analysis (because of poor documentation or lack of analytical rigor), the issue of the applicability of the findings to other contexts is critical. There is need to learn from failures as well as from successes. A solid recommendation emanating from the findings and observations in this chapter is that more investment in project M&E systems is required to enable more rigorous impact analysis to be undertaken for more projects ("successful" or "failed") in different parts of the continent, so as to generate the necessary critical mass of knowledge on scalable practices, technologies, and interventions.

Appendix for Chapter 6

TABLE 6A.1 Productivity-enhancing interventions, their locations and objectives, and sources of information

Name*	Objectives (main constraint addressed or instrument used to increase productivity)	Remarks (origin and replication)
Animal Health Services Rehabilitation Programme (AHSRP) Kenya Sources: World Bank (1990); IFAD (1993)	To strengthen the capacity of the Department of Veterinary Services (DVS) for effective delivery of animal health services.	Replication has occurred in animal health interventions in Kenya, Tanzania, Ethiopia, South Sudan, and Uganda, with adjustments to correct for the weaknesses observed in AHSRP.
Agriculture Productivity Enhancement Programme (APEP) Uganda Source: USAID (2007)	To enhance agricultural productivity by promoting use of improved agricultural inputs and addressing marketing challenges by linking smallholder farmers to markets.	Replication has occurred in other agriculture projects in Uganda (for example, the Kaweri Coffee Farmers Alliance Support Project and the Livelihoods and Enterprises for Agricultural Development Project). Replication is also taking place in Ethiopia.
Agricultural Sector Development Programme—Irrigation component (ASDP-irrigation) Tanzania (dry areas) Sources: MAFC (2010); URP (2011)	To rehabilitate existing irrigation systems and establish new ones.	Replication is taking place in other parts of the country in the rehabilitation of existing irrigation schemes there.
Cassava Enterprise Development Project (CEDP) Nigeria (south and southeast) Source: PCU (2007)	To increase the productivity of cassava by reducing the impact of cassava mosaic disease and enhancing marketing and post-harvest handling of cassava.	Replication has occurred in other cassava-producing countries, such as Uganda and Tanzania.
Conservation Agriculture Project 1 (CAP1) Zambia (maize and cotton belts) Source: Haggblade and Tembo (2003)	To address low soil fertility and water constraints.	Replication has occurred in Kenya, Tanzania, Malawi, Uganda, and Zimbabwe.
Crop Crisis Control Project (C3P) Burundi, Democratic Republic of the Congo, Kenya, Rwanda, Uganda, and Tanzania (Association for Strengthening Agricultural Research in eastern and central Africa region) Source: Kimenye and Bombom (2009)	To control the spread of cassava mosaic and banana wilt diseases.	Uptake and adoption have been reported in Burundi, Democratic Republic of the Congo, Madagascar, Rwanda, and Tanzania.
East Africa Dairy Development Project (EADD) Kenya, Uganda, and Rwanda Sources: Gaitano (2011); Mutinda (2011); TANGO International (2011); Baltenweck and Mutinda (2013)	To increase milk yield, reduce milk perishability, and address milk-marketing problems.	Phase 2 of the project is being implemented. Tanzania has been included in the second phase.

(continued)

TABLE 6A.1 (continued)

Name*	Objectives (main constraint addressed or instrument used to increase productivity)	Remarks (origin and replication)
FARM Africa Dairy Goat Improvement Project (FADGIP) Burundi, Ethiopia, Kenya, Rwanda, Tanzania, and Uganda (semiarid lands and high-potential areas with crop livestock mixed systems) Sources: Ayele and Peacock (2003); Peacock (2005); Farm Africa (2007); Ojango et al. (2010)	To improve milk yield and the growth rate of the East African indigenous goat through introduction of improved breeds.	Replication has occurred in other mixed systems and semiarid lands in Kenya.
Farm Input Subsidy Program (FISBP) Malawi (all zones) Sources; Poulton and Dorward (2008); Denning et al. (2009); Dorward, Chirwa, and Jayne (2010)	To increase access to and use of yield-enhancing agricultural inputs.	Has been replicated with adjustments in countries such as Zambia, Tanzania, and Kenya.
Farmer Input Support Program (FISPP) Zambia (all zones) Sources: CSPR, Zambia (2011); Jayne et al. (2011); Burke (2012)	To increase access to and use of yield-enhancing agricultural inputs.	Has been replicated from Malawi.
Fodder Trees and Shrubs Project (FTSP) Kenya, Rwanda, Tanzania, and Uganda Sources: Franzel and Wambugu (2007); Place et al. (2009)	To improve the quality and quantity of feed resources by developing and disseminating high-protein fodder species for dairy animals.	Replication is taking place through dairy development projects. EADD phases 1 and 2 are examples of projects that are replicating this technology.
Fuve Panganai Irrigation Scheme (FPIS) Zimbabwe Sources: Mazungu (1999); Mangwezi (2011); Chazovachii (2012)	To address water constraints caused by recurrent droughts.	Replication is taking place through other irrigation projects in Zimbabwe.
Kaleya Irrigation Project (KIP) Zambia (Kafue River Basin in the south) Sources: AfDB (2010); EU (2010); Bangwe and van Koppen (2012); Illovo Sugar (2014)	To increase smallholder sugarcane production under irrigation.	Has been replicated in the Magobbo and Manyonyo projects in Zambia.
Kenya Dairy Development Programme (KDDP) Kenya Sources: Land O' Lakes (2008); USAID (2008); Ouma et al. (2007)	To improve the dairy value chain (including milk yields, dairy product demand, and industry efficiencies).	Has been replicated in another project, the Kenya Dairy Sector Competitiveness Program (2008–2013), funded by the same donor and implemented by Land O' Lakes.

Name*	Objectives (main constraint addressed or instrument used to increase productivity)	Remarks (origin and replication)
National Agricultural Advisory Services (NAADS) Uganda (all zones) Sources: ITAD (2008); Benin et al. (2007); Benin et al. (2011); EPRC (2011); Okoboi et al. (2011)	To improve the delivery of extension services by developing a demand-driven, farmer-led agricultural service delivery system targeting the poor subsistence farmers, so as to increase access to and use of yield-enhancing technologies.	Replication is occurring through the activities of nongovernmental organizations, with adjustments to correct for identified weakness.
National Agricultural Extension Intervention Program (NAEIP) Ethiopia Sources: Gebreselassie (2006); Byerlee et al. (2007)	To improve extension services and increase access to and use of yield-enhancing agricultural inputs.	Developed on the documented success of the Sasakawa Global 2000 Agricultural Program.
New Rice for Africa (NERICA) upland rice Guinea, Côte d'Ivoire, Sierra Leone, and Uganda Sources: WARDA (2001); Kijima, Sserunkuuma, and Otsuka (2006); Kijima (2008); Diagne et al. (2010)	To increase adoption of a hybrid variety of rice adapted to local conditions.	Developed by the West Africa Rice Development Association (WARDA) and adopted in various countries.
Operation *Mwolyo* Out (OMO) Kenya (Mwala district and semiarid parts of Kenya) Sources: Masika (2011); Field interview (December 5, 2011)	To address water constraints through adoption of water-harvesting technologies (water pans or small dams, *zai* pits).	Replication is happening in other villages in the Machakos district.
Participatory Irrigation Development Programme (PIDP) Tanzania (dry subhumid zone in maize mixed farming system) Source: IFAD (2007)	To address water constraints through irrigation.	Interventions under other rice projects in the country have been developed based on lessons from this project.
Push–Pull Technology (PPT) Ethiopia, Kenya, Tanzania, and Uganda (East Africa in areas where cereals are produced) Sources: ICIPE (2003); Khan et al. (2006); Fischler (2010)	To address biotic (insect pests, parasitic weed *Striga*) and abiotic (land degradation and poor soil fertility) constraints.	Replication has occurred in several districts within East Africa, where conditions and challenges are similar to those of the original project sites.
Regional Land Management Unit (RELMA) Eritrea, Ethiopia, Kenya, Tanzania, Uganda, and Zambia (arid and semiarid areas in East and southern Africa) Sources: RELMA (2005); Gathiru and Ong (2006); Erikson (2008)	To address water scarcity through a range of improved land management practices and water-harvesting technologies.	Replication with adjustments is occurring in Tanzania, Kenya, Botswana, Malawi, Mozambique, Rwanda, Uganda, and Zimbabwe.

(continued)

TABLE 6A.1 (continued)

Name*	Objectives (main constraint addressed or instrument used to increase productivity)	Remarks (origin and replication)
Sasakawa Global 2000 Agricultural Program (SG2000-AP) Ghana, Sudan, Tanzania, Benin, Togo, Mozambique, Eritrea, Guinea, Burkina Faso, Malawi, Mali, Nigeria, Ethiopia, and Uganda Sources: Nubukpo and Galiba (1999); Dowswell (2011)	To increase adoption of yield-enhancing inputs and improved farming practices.	Initially started in the subhumid zones of West Africa (Ghana and Benin) and expanded to the semiarid areas. Replication took place in the other project countries. The NAIEP in Ethiopia (see above) was developed on the documented success of the SG2000-AP.
Specialty Coffee Program (SCP) Rwanda Sources: Chemonics International (2006); Boudreaux (2010) Abramovich and Zook (2015)	To improve the quality of coffee produced and the value chain.	Initially, new coffee-washing stations were built in a few districts (for example, Maraba, Karaba, and Gashonga districts). Maraba coffee growers received fair trade certification and began to grow shade-grown coffee, which has become a model for the Rwandan coffee industry and has been replicated countrywide. Replication is also taking place in Ethiopia.
System of Rice Intensification (SRI) Rwanda (marshland areas of Kibaza in Bugesera district and Rwabutazi in Kihere district) Source: IFAD (2009)	To increase rice yields by promoting adoption of the SRI, which involves changing the management of plants, soil, water, and nutrients.	Originated in Madagascar. Replication has occurred in other parts of Rwanda, in Sierra Leone, and in the Gambia.
Wei Wei Integrated Development Project (WWIDP) Kenya (arid areas in west Pokot district) Source: Mugova and Mavunga (2000)	To address food insecurity problems through improved soil and water management.	Has been replicated in the Arror irrigation scheme in the Marakwet district of Kenya.

Source: Authors' compilation.

***** Name of intervention, countries, agroecology or production environment, sources.

TABLE 6A.2 Instrument used to collect information from agricultural and rural development practitioners

To facilitate effective discussions during the workshop, you are kindly requested to address the questions below.

1. Please list three to five cases/examples of interventions that successfully increased agricultural productivity in your country.
2. Please list three to five cases/examples of interventions that were unsuccessful (failed) in increasing agricultural productivity in your country.
3. In your opinion, why did the projects you have identified in question 1 above succeed? (Please fill in the table below.)

Name of the program/project	Factors for success
1.	
2.	
3.	
4.	
5.	

4. In your opinion, why did the projects you have identified in question 2 above fail? (Please fill in the table below.)

Name of the program/project	Reasons for failure (lack of success)
1.	
2.	
3.	
4.	
5.	

TABLE 6A.3 Agricultural productivity impact pathways: How the 13 factors identified in the conceptual framework affect productivity

Factor	Pathway of influence
1. Problem definition	Identifying the problem correctly raises the probability of using the appropriate productivity-enhancing instruments or technologies. Also, with proper diagnosis, stakeholders may be better informed, may help set the relevant objectives and targets, and may demand the appropriate instruments for achieving the objectives and targets.
2. Choice and suitability of instruments	Because farmers in different locations face different biophysical and socioeconomic constraints, and different approaches have different impacts in different locations (Chapter 5), when instruments (technologies, commodities, enterprises, institutional capacity building, etc.) that suit the production environment and needs of the local communities or beneficiaries are used, then the chances of the project having a positive influence on productivity are higher.
3. Target population	Related to the choice and suitability of instruments, this factor has to do more with reaching a specific target population. For example, a universal input subsidy (that is, subsidizing the price of the input sold in the market) is not likely to increase overall use of the input, because farmers who would have purchased the fertilizer without the subsidy may likely substitute what they would have purchased commercially with what they obtain via the subsidy (that is, crowding out—Jayne et al. 2013). It may be more effective to provide the input directly (for example, via coupons) to farmers who would not have purchased the input without the subsidy.
4. Design and timing of implementation	Design refers to having a plan of what will be done when and with what resources, based on a sound logical framework and including monitoring and evaluation to help make informed mid-course changes in implementation. Thus, having a good plan and implementing activities in a timely fashion raise the probability of staying on course to achieve intended impacts. Delays in procurement, for example, may lead to unused or underused resources and may cause suboptimal achievements.
5. Environmental sustainability	This is a long-term concept, whose effect may manifest after completion of the project. For example, an irrigation project may not be environmentally sustainable if it causes salinization of the soil that negatively impacts yield by more than the positive productivity or income effect of the irrigation. Thus, having measures in place that sustain productivity gains during and after completion of the project is critical.
6. Financial sustainability	Although having adequate financial resources to implement the intervention is critical (which means having a solid budget and funding commitments), like environmental sustainability, what happens after the project is important. For example, most of the productivity-enhancing interventions include providing farmers with free or subsidized inputs to demonstrate their profitability, so that farmers can purchase and use them on their own when the project is complete. If farmers are unable to purchase the inputs on their own because of lower-than-expected profitability, then the project is not financially sustainable. Thus, ensuring financial availability during the project and financial viability after project completion is critical, which ties in with the choice and suitability of instruments.
7. Community participation	Because farmers and communities are expected to be better informed about their own constraints, potentials, and production environments, involving them in all stages of the project will likely enhance the accuracy of defining the problem, the choice of solutions, their ownership of the project, and their commitment to implementing it accordingly. This also influences the sustainability of the project.

Factor	Pathway of influence
8. Gender consideration	Because there are gender differences in agricultural production and productivity, primarily because of differences in access to productive assets and markets, taking such gender differences into account in the project design and implementation enhances the chances of addressing the constraints that each homogeneous group faces, thereby increasing the likelihood of attaining the overall productivity objective. This is closely related to the target population factor, which is more general.
9. Capacity building	The capacity (especially technical and managerial skills) of farmers and communities influences several of the factors discussed above. Whereas farmers may be better informed about their production environment, etc., they may not have the technical skills to analyze complex interrelated factors and to manage them accordingly. Therefore, building their capacity in a manner that complements their indigenous knowledge will likely not only increase the speed of innovation and adoption, but also strengthen their commitment to manage the project sustainably.
10. Organized groups	Collective action by farmers (through farmers' groups, associations, cooperatives, etc.) has several benefits, including reduction in transaction costs, better access to credit and markets, and better negotiation outcomes, which in turn reduce production costs and increase the output and value of production. Because groups that form organically are more likely to work well and last longer (primarily because of trust issues), they are more likely to have sustainable productivity effects than those that form only to take advantage of the project handouts.
11. Leadership and dedication	Having in place a strong and dedicated leadership in the community is important in several aspects, particularly in implementing the project according to plan, making informed decisions to stay on course to achieve the intended impacts, and ensuring fair participation of members in the project and equitable distribution of the benefits. Because of issues of elite capture (Feder et al. 2010) and the history of mismanagement by cooperatives (Kherallah et al. 2002), having a leadership council with representation of different and marginalized groups is more likely to have greater buy-in to the project and sustainable productivity effects than those that represent a few or a homogeneous group. This also influences the relationship with and support from higher levels of government, which are discussed later.
12. Complementary investments and partnerships	Because many factors affect the performance of agriculture in complex ways, and because projects tend to focus on or address a few of those factors only, the outcomes of the project will depend on how the factors outside the control of the project influence or interact with the project components. The effects of those influences or interactions may be positive or negative. Therefore, projects that internalize these effects and put in place measures that minimize the negative effects and enhance the positive effects are more likely to be successful at raising agricultural productivity than those that do not. For example, increasing the access of farmers to yield-enhancing inputs (such as expensive inorganic fertilizers) will likely result in higher output and yield. However, if farmers do not get favorable markets for their produce and lose out, then they will likely not continue to use the fertilizers. The same logic holds for forging partnerships.
13. Policies and political stability	Policies and national-level factors, including infrastructure development, macroeconomic management, and political stability, affect farmers' decisions and their outcomes. The major policies and factors include land tenure and natural resource management; input (fertilizer, seed, mechanization, etc.) policies; and market development (price support, buffer stock, etc.). Here too, projects that internalize these factors and put in place measures that enhance the positive effects and minimize the negative effects are more likely to be successful at raising agricultural productivity than those that do not.

Source: Authors' compilation from literature review and consultations.

TABLE 6A.4 Description of methodology used in rating performance against the criteria of successful project implementation

Indicator 1: Problem definition
Measures:
- Clear and concise description of the problem or productivity constraint and objectives of the intervention.
- Indication that the project responds to local and national priorities, as identified by national planning documents, policy and strategy documents, etc.
- Problem definition is informed by technical analysis (baseline study, feasibility study, cost-benefit analysis, etc.).
- Participatory needs assessment is undertaken with the intended beneficiaries.

Performance rating: High to very high if there are at least three of the above; very low to moderate otherwise.

Indicator 2: Choice of the commodity/instruments
Measures:
- Evidence that the project is focused on priority commodities for food security and income generation in the area, based on what people are already doing.
- Evidence that the proposed productivity solution (commodity/enterprise) is suitable for the area (agroecological conditions are appropriate).
- Indication that the commodity is identified as a priority in the national strategy documents or in empirical studies.

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 3: Suitability of instruments
Measures:
- Evidence that the right beneficiaries are targeted and reached (the vulnerable, the poor, women, etc.).
- Indication that the project considered the local-level socioeconomic factors (for example, local demand, culture, religion, beliefs, preferences in the project design).
- Evidence that the intervention can address the productivity constraint identified under the problem definition phase.

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 4: Design and timing of implementation
Measures:
- Clear articulation of the suitability of the project intervention in addressing the identified productivity problem.
- Clear roles and responsibilities of the different project implementers and partners.
- Timely implementation.
- Implementation agency has the necessary technical, managerial, and financial capacities to implement the intervention.
- Built-in mechanisms address challenges likely to affect project performance.
- Evidence that monitoring and evaluation were used to inform project implementation.

Performance rating: High to very high if there are at least three of the above; very low to moderate otherwise.

Indicator 5: Environmental sustainability
Measures:
- Evidence that the project undertook an environmental impact assessment.
- Evidence that intervention is environmentally friendly or incorporates environmental protection measures (for example, avoids overexploitation of natural resources, reduces pollution of water and air).
- Indication that the intervention resulted in significant improvement in natural resources.

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 6: Financial sustainability
Measures:
- Evidence that financial resources are adequate to implement the project as planned.
- Indication of transparent and accountable use of financial resources.
- Indication of adequate managerial capacity after the end of the project.
- Presence of a well-defined exit strategy (that is, adequate measures/activities are in place to sustain the activities after the project ends).
- Indication that the target communities are still accessing the benefits of the project after its lifetime.

Performance rating: High to very high if there are at least three of the above; very low to moderate otherwise.

Indicator 7: Community participation
Measures:
- Evidence of participation/involvement of the local communities (beneficiaries) at the planning, design, and implementation phases.
- Presence of strong support and commitment to project objectives by local government officials and community leaders.
- Willingness and ability of the community to adapt to changes as a result of the intervention.

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 8: Gender consideration
Measures:
- Evidence of gender consideration in project design and implementation through clear articulation of involvement of men, women, and youths (as seen in the project documents).
- Evidence that gender issues were mainstreamed in activities.
- Evidence of benefits that were accessed by women, men, and youths (for example, access to services, capacity-building support).

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 9: Complementary investments and partnerships
Measures:
- Evidence that the project sought/established effective partnerships with others in implementing the project (based on the number of partners and funders).
- Indication that a multidisciplinary approach was adopted in implementing the project.
- Evidence of the availability of complementary interventions (for example, an irrigation project shows evidence of the availability of seeds, fertilizers, and markets by the project or project partners).
- Clear modalities for coordinating different partners.
- Clear roles and responsibilities of the different partners.

Performance rating: High to very high if there are at least three of the above; very low to moderate otherwise.

Indicator 10: Capacity building
Measures:
- The project has an explicit objective to build the capacity of beneficiaries (through technical or institutional support).
- Evidence that the project trained beneficiaries and other relevant partners.
- Evidence that knowledge transfer products, such as videos, training manuals, and brochures, were disseminated.

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 11: Organized groups
Measures:
- Evidence that the project tapped into and built upon social networks and groups.
- Presence of an objective to build or strengthen farmers' groups.
- Evidence that the beneficiary groups had the capacity to engage effectively in the project.

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Indicator 12: Leadership and dedication
Measures:
- Evidence that the project sought and obtained the support of the local leaders in the implementation process.
- Evidence that the government provided a conducive environment for the intervention.
- Evidence that community leaders were empowered to provide relevant local public goods to support the intervention.
- Evidence of government support for the initiative through financial or in-kind support.
- Evidence that the local communities contributed to the project (for example, through in-kind support).

Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

(continued)

TABLE 6A.4 (continued)

Indicator 13: Policies and national-level factors Measures: • Evidence that national policies and regulations supported the project or provided an opportunity for the project's objectives to have an impact. • Evidence that the existing climate supported the project's implementation. • Existence of conducive macroeconomic conditions. • Existence of a conducive political environment. Performance rating: High to very high if there are at least two of the above; very low to moderate otherwise.

Source: Authors' compilation from literature review and consultations.

TABLE 6A.5 Summary of review of performance in implementation of selected agricultural productivity-enhancing interventions in Africa south of the Sahara

Here, each of the 25 productivity-enhancing interventions evaluated in the study are presented in relation to the 13 project implementation performance indicators. The methodology used in rating performance relative to each indicator is presented in Table 6A.4.

A: Animal Health Services Rehabilitation Project (AHSRP), Kenya

Problem definition: Aimed to address institutional challenges affecting the delivery of animal health services, which was in a poor state and a constraint to production and productivity. Innovations were to be carried out based on the studies that were commissioned at the beginning of the project. However, most of the studies were delayed, and when eventually completed, they were often not accepted by the responsible government agency because of their poor quality.
Rating: Low to moderate

Choice of the commodity/instruments: Instruments used included disease-control campaigns, provision of clinical services and field extension services, rehabilitation and re-outfitting of veterinary laboratories, and enhancement of surveillance activities and support to pilot trials of tsetse-fly and tick-borne disease control. These instruments were appropriate for improving animal health services delivery.
Rating: High to very high

Suitability of instruments: Targeting was not properly done and the project did not reach the poor and vulnerable populations. Most of the beneficiaries were the more influential members of the communities. Implementation of the project also faced challenges resulting from wrong assumptions. For example, it was assumed that animals could be vaccinated throughout the year; however, it later was discovered that herds could be vaccinated only at specific times of the year because of the nomadic lifestyle of the livestock owners.
Rating: Low to moderate

Design and timing of implementation: The project faced various implementation problems, including poor management capacity, delays in project start-up and procurement, and failure to adequately staff and equip the Project Management Support Unit. Project disbursement was very slow. A two-year extension was granted, but only 51 percent of total project funds was used.
Rating: Low to moderate

Environmental sustainability: There was no articulation of how any environmental issues were to be handled.
Rating: Low to moderate

Financial sustainability: The costs of the project were underestimated: the initial International Fund for Agricultural Development (IFAD) appraisal projected a total cost of $19.3 million, whereas the final International Development Association (IDA)/World Bank appraisal finished at $70.5 million. The government's agreed contribution of $41.52 million did not materialize because of budgetary constraints.
Rating: Low to moderate

Community participation: Evaluation findings indicate that the beneficiaries were not consulted adequately at the design and implementation stages, and this negatively affected the project. For example, failure to consult smallholders and pastoralists on the period of vaccination resulted in a low number of cattle vaccinated.
Rating: Low to moderate

Gender consideration: There is no explicit information that the project paid attention to gender aspects.
Rating: Low to moderate

Complementary investments and partnerships: Four international agencies (IFAD, IDA, the Organization of Petroleum Exporting Countries, and United Nations Development Programme [UNDP]) committed to contribute funds to the project. There were no clear modalities of coordinating different partners.
Rating: Low to moderate

Capacity building: The project aimed to enhance the capacity of the animal health workers. A total of 170 staff members of the Department of Veterinary Services (DVS) were trained, and four fellowships were provided for veterinary officers to study for Master of Science degrees in veterinary epidemiology and economics.
Rating: High to very high

Organized groups: The design of the project mainly focused on supporting DVS. Minimal efforts were targeted at supporting livestock keeper groups.
Rating: Low to moderate

Leadership and dedication: Efforts by many District Veterinary Officers and field staff to implement project activities did not materialize because of inadequate operational support (for example, vehicles and resources to cover operating expenses) from the central office.
Rating: Low to moderate

Policies and national-level factors: The introduction of cost recovery, coupled with the privatization of communal dips and clinical veterinary services, seems to have negatively influenced use of these services by livestock owners, which contributed to more and extensive disease outbreaks. Other external factors, such as droughts and market forces, also contributed to a decline in the production of meat and milk during the project period.
Rating: Low to moderate

B: Agricultural Productivity Enhancement Program (APEP), Uganda

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Problem definition: The program aimed at expanding rural economic opportunities and creating economies of scale to catalyze transformation of agriculture from low-input and low-output subsistence farming to higher-yielding and commercially competitive agriculture. This was informed mainly by lessons from the Investment in Developing Export Agriculture project that had been implemented in Uganda for 10 years from 1995 to 2004. It focused on addressing key agriculture challenges in Uganda—that is, low productivity, high-postharvest losses, and poor marketing. The project was consistent with the Government of Uganda's Poverty Eradication Action Plan, Plan for Modernisation of Agriculture, and Medium-Term Competitiveness Strategy.
Rating: High to very high

Choice of the commodity/instruments: The program focused on priority commodities for food security and income generation in Uganda, such as cotton, maize, coffee, sesame, upland rice, sunflowers, barley, flowers, vanilla, and bananas. These commodities were identified as priority commodities in strategy documents for Uganda.
Rating: High to very high

Suitability of instruments: The program targeted producer organizations for each of the commodities. A wide range of instruments was used to meet project objectives, including production-to-market transactions, improvements in input distribution and technology transfer, strengthening of producer organizations, and development of competitive agricultural and rural enterprises. These strategies are known to contribute to enhancing productivity and stimulating agricultural trade.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Design and timing of implementation: The program was well designed and adequately staffed by qualified staff to deliver on its work plan. It had adequate resources for project implementation. Monitoring and evaluation (M&E) was used as a tool for learning throughout the project. In addition to the funding from the United States Agency for International Development (USAID), the project was allocated $665.5 million by the Government of Uganda, the Danish International Development Agency (DANIDA), IFAD, the European Union, the West Africa Rice Development Association (WARDA), and IDA.
Rating: High to very high

Environmental sustainability: Procedures for environmental sustainability were adhered to for coffee-related activities. There is no clear evidence on strategy for environmental sustainability in other crops.
Rating: Low to moderate

Financial sustainability: Financial sustainability was not ensured after the life of the project. Although there were efforts to ensure the sustainability of the project's services after the life of the project through partnering with local organizations, there are still sustainability challenges. The activities of the producer groups have not been sustainable after the end of the project because of financial constraints. Agriculture commercialization is still a challenge among the smallholder farmers.
Rating: Low to moderate

Community participation: Local communities participated during planning and implementation of the project. For example, the program effectively used a producer organization's model in technology transfer. It identified a lead farmer who could direct the farmer field schools (FFS), which acted as a substitute for formal agricultural training. The commitments of the local communities to adopt the new technologies promoted by the program were clear. They implemented the improved farming techniques promoted by the program and organized themselves into groups for the purpose of bulking their produce to facilitate marketing.
Rating: High to very high

Gender consideration: Participation of women was encouraged in all aspects of building the farm enterprise, including being lead farmers, site coordinators, and farm committee executives. Women producers also benefited from training. For example, the program organized training workshops on gender mainstreaming in agriculture, and females constituted 58 percent of 3,000 farmers who were exposed to improved banana production and maintenance practices.
Rating: High to very high

Complementary investments and partnerships: A wide range of partnerships was forged and exploited to further the program's objectives. In addition to the government and other partners, APEP attracted the support of other donors and leveraged some of their resources to finance program activities. The program had more than 15 partners from both the public and the private sectors, including the Government of Uganda, the Japan International Cooperation Agency (JICA), the Royal Netherlands Embassy, DANIDA, IFAD, the National Cooperative, the Business Association, and the National Agricultural Advisory Services (NAADS). The roles of the partners were clearly defined. The program addressed various constraints along the crop value chain. The activities were implemented by different actors in a coordinated manner.
Rating: High to very high

Capacity building: The program provided technical and financial assistance to farmers' groups (including producers as trade groups) and associations. It trained farmers in various areas, such as crop production techniques, soil and water management, formation of groups, marketing, gender awareness, postharvest and storage practices, business planning, financial management, and improved market information using such approaches as demonstration plots, lead farmer training, and extension visits. Extension manuals and videos were produced and disseminated. APEP's approach created a "critical mass of capable local producers (smallholder farmers) and support industries, such as input suppliers, and [linked] them to local, regional, and international markets."
Rating: High to very high

Organized groups: The program strengthened producer organizations. Farmers were encouraged to form producer organizations to enhance their abilities to access input credit, undertake bulk marketing, and improve net farmgate prices.
Rating: High to very high

Leadership and dedication: The local communities (individual farmers and community leaders) supported the program and were dedicated to undertake program activities. Group leaders were trained and championed program activities in collaboration with the program team.
Rating: High to very high

Policies and national-level factors: The implementation of the program benefited from favorable political stability in the country. However, the program suffered a setback because of extreme climatic conditions. It was affected by droughts and occasional heavy rains and floods that damaged infrastructure in several places in the country. There was an outbreak of a fungal disease, which affected cotton production. The program was also affected by inadequate implementation of agricultural policies and regulations and lack of adequate storage facilities for crops. Although the prices of food staple commodities were high during the program period, the prices for high-value commodities promoted by the program, such as vanilla and flowers, were depressed.
Rating: Low to moderate

C: Agricultural Sector Development Programme—irrigation component (ASDP-irrigation), Tanzania

Problem definition: The program aimed at increasing water availability for agricultural production, mostly following the Agricultural Sector Development Strategy (ASDS) participatory process, which prioritized enhancement of crop production through irrigation development and improvement.
Rating: High to very high

Choice of the commodity/instruments: Instruments included rehabilitation and management of low-cost smallholder irrigation schemes for producing food security crops (for example, rice and maize), which could also serve as cash crops and also be considered as strategic commodities. There are concerns that the program paid too much attention to rice and left out horticulture, which could have added value to increasing income and food security.
Rating: High to very high

Suitability of instruments: By design, ASDP is well aligned to National Strategy for Growth and Reduction of Poverty targets. Therefore, it is meant to target poor districts. Assessment of placement of the ASDP irrigation scheme shows that ASDP investments were well targeted to districts with severe poverty. On average, the per capita area of ASDP irrigation schemes was 92 square meters (m^2) in districts with very severe poverty, compared with only 52 m^2 in districts with low poverty. Additionally, 40 percent of the ASDP irrigation scheme area was located in districts with very severe or severe poverty, even though such districts accounted for only 35 percent of the total population.
Rating: High to very high

Design and timing of implementation: There were various challenges with coordination of program activities and implementation, including delays in procurement, financial management, and low capacity of the implementing agencies at both the Agricultural Sector Lead Ministries and the local level. These challenges caused delays in implementation of activities. ASDP was mainstreamed in the existing government system of financing public expenditures, but detailed assessment to identify bottlenecks in the system was not undertaken at appraisal. Staffing in the Prime Minister's Office–Regional Administration and Local Government was sufficiently strengthened.
Rating: Low to moderate

Environmental sustainability: Although an environmental impact assessment (EIA) was conducted, measures to mitigate the negative effects of irrigation have been inadequate. An EIA conducted on the program indicates that salinity is building up in some schemes, leading to decline in yields. This problem is yet to be addressed effectively.
Rating: Low to moderate

Financial sustainability: About 75 percent of the resources was allocated at the Local Government Authority level and 25 percent at the national level. Most of the resources were invested in infrastructure development and rehabilitation, with little allocation for strengthening the weak operation and maintenance (O&M) mechanisms in the irrigation schemes. For example, the third ASDP implementation report observed no or a very small O&M budget in most of the schemes visited. Most of the success of the ASDP interventions seems to have largely resulted from input subsidies, whose sustainability is questionable.
Rating: Low to moderate

(continued)

TABLE 6A.5 (continued)

Community participation: Irrigation schemes are owned, managed, and operated by the targeted beneficiaries, but there are no clear measures for financing the irrigation costs. Some community groups have outlined plans for regular maintenance of the infrastructure through membership fees. Limited market opportunities limit their ability to contribute to the fees effectively. Furthermore, private-sector participation in the delivery of agricultural services at the local level was generally low.
Rating: Low to moderate

Gender consideration: Although males, females, and youths are involved in the irrigation activities, gender mainstreaming in ASDP interventions has been inadequate.
Rating: Low to moderate

Complementary investments and partnerships: The National Input Voucher System (NAIVS), an input subsidy program, has contributed to the success of the irrigation project. However, implementation challenges and targeting problems of the NAIVS have limited the project's ability to realize its full potential. There is indication that the quantity of fertilizer available to farmers is less than the amount required, and targeting tends to exclude the poor.
Rating: Low to moderate

Capacity building: Although some capacity-building activities have been conducted, program planning and implementation capacity at district and subdistrict levels are still weak, and training provided to farmers, extension officers, and the private sector is limited. An impact evaluation study showed that even though about 35 percent of ASDP funds allocated was used for farmer training and extension services, the funds were limited to production activities only, leaving out training on marketing and postproduction activities.
Rating: Low to moderate

Organized groups: Although farmers organized into groups, not all of them have taken full advantage of learning from their colleagues in the group, as most farmers do not appreciate the benefits of proper use of inputs. (They use either too little fertilizer or none at all.) As a result, these farmers are hardly benefiting from the irrigation interventions. Similarly, several marketing constraints prohibit farmers from benefiting from collective action.
Rating: Low to moderate

Leadership and dedication: This program was implemented at a time when there was a high level of government commitment and attention to agriculture in support of ASDS and other key initiatives in Tanzania, including Kilimo Kwanza, Big Results Now, and the Southern Agricultural Growth Corridor of Tanzania. These initiatives have support from various stakeholders, including the local communities. Studies have indicated that the performance of traditional, improved traditional, modern, and rainwater harvesting-based schemes in Tanzania can be improved at the field level through building the capacity of farmers and empowering and enabling them to secure full ownership of the schemes. The government is working to empower local communities.
Rating: High to very high

Policies and national-level factors: There are good policies to support irrigation, but their implementation is inadequate due to lack of government resources at the national level. The government has developed a national irrigation policy to provide direction to the implementation of irrigation interventions and to ensure the optimal availability of land and water resources for agricultural production and productivity, so as to contribute effectively to food security and poverty reduction, as stipulated in the National Strategy for Growth and Reduction of Poverty (or MKUKUTA) (URP 2011). According to the National Irrigation Policy, 2009, the national target of increasing the area under irrigation has not been met because of inadequate financial resources. Also, various policies constrain agricultural marketing, especially for maize and rice, affecting the profitability of farmers. Frequent export bans and unpredictable importation of rice have been cited to distort the marketing of these key commodities. Finally, water availability during the dry season has been a perennial problem in the irrigation schemes.
Rating: Low to moderate

Source: Authors' evaluation based on URP (2011) and Nkonya et al. (2013).

D: Cassava Enterprise Development Programme (CEDP), Nigeria

Problem definition: This program was nationally important, given that Nigeria is the largest producer of cassava in the world. The program aimed at addressing the problem of low cassava productivity by reducing the impact of cassava mosaic disease in selected communities in the southern states of Nigeria. Problems of limited marketing opportunities and inadequate postharvest-handling options were also targeted. A baseline study, which was carried out in a participatory manner, was useful in identifying the prevailing productivity constraints, which include diseases, poor agronomic practices, and low use of agrochemicals.
Rating: High to very high

Choice of commodity/instrument: Various instruments were used: introduction of disease-resistant and high-yielding cassava varieties, training on improved agronomic practices to increase production, disease-control interventions to reduce the impact of cassava mosaic disease, development and expansion of postharvest processing, and marketing and agroenterprise development.
Rating: High to very high

Suitability of instruments: The program targeted the poor, who are mostly located in impoverished states situated in the Niger Delta region. Interventions were targeted to resource-poor producers (mostly women), micro- and small-scale processors, fabricators, traders, agribusiness entrepreneurs, and consumers.
Rating: High to very high

Design and timing of implementation: The International Institute of Tropical Agriculture (IITA) had a qualified coordinator to coordinate implementation of program activities. The program had appropriate staff for program implementation. A program management committee consisting of representatives of the three partners (USAID, SPDC, and IITA) oversaw the program activities. The advisory arm of CEDP was a seven-member stakeholder committee/cassava enterprise association.
Rating: High to very high

Environmental sustainability: The program aimed at addressing unsustainable land management practices. Farmers were trained on soil fertility management and sustainable soil management.
Rating: High to very high

Financial sustainability: CEDP trained local nongovernmental organizations (NGOs), and most of the funding for this program was from development partners. Farmers who were subsidized heavily during the program's lifetime found difficulties in making a profit in the absence of program support. Most of the processing factories that were set up with support from the program are not operational (they have broken down). Some groups have financial problems because of the unprofitable nature of the product they were producing and its disconnect from the end markets.
Rating: Low to moderate

Community participation: Local communities were involved adequately in program implementation and decisionmaking. This was evident from the composition of the program steering committee, which was made up of representatives from the Federal Ministry of Agriculture and Rural Development, state governments, the National Agricultural Research and Extension System, producers' associations, NGOs, and the private sector. Participatory tools and techniques were used to explore relevant issues on cassava enterprise. The technologies promoted by the program were well received by many farmers, who adopted improved techniques for cassava production and postharvest handling.
Rating: High to very high

Gender consideration: CEDP targeted women and youths, who play important roles in cassava processing and marketing. The program had a gender specialist who made sure that gender issues were mainstreamed in CEDP activities. The project supported enterprises that created new jobs for women and youths.
Rating: High to very high

Complementary investments and partnerships: Public–private partnership was highly applied in this program, which was funded by USAID and the Shell Petroleum Development Company, and was implemented by IITA. Many partners were involved in the program, as mentioned above, and they were well coordinated and had clear roles.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Capacity building: The program focused on strengthening the human and institutional capacities of different groups of beneficiaries to produce, process, and market cassava efficiently, as well as on increasing private-sector investment in cassava production, processing, storage, and marketing. Extension materials and other knowledge products were distributed to the project beneficiaries.
Rating: High to very high

Organized groups: CEDP supported collective action by providing technical and financial support to producers', processors', and traders' groups. However, not all groups did well; some suffered from internal group disagreements, management problems, and poor accountability.
Rating: Low to moderate

Leadership and dedication: The level of government support for the cassava subsector was high. It was spearheaded by the Presidential Initiative on Cassava, which was launched in Nigeria in 2003 and brought cassava and its potential to the limelight. However, there were challenges in obtaining contributions from the local communities, and there was resistance from some youth groups.
Rating: Low to moderate

Policies and national-level factors: The cassava industry has been affected by inconsistent government market policy. Prices for cassava are very unstable. There is weak market information: farmers do not know where their products are sold or for how much, or which are the best links for disposing of produce. Enterprises faced difficulties in selling cassava to flour millers because of nonenforcement of the policy to use 10 percent of cassava flour in bread. The country was affected by political problems and poor infrastructure, especially in the Niger Delta region.
Rating: Low to moderate

E: Conservation Agriculture Project 1 (CAP1), Zambia

Problem definition: The project aimed to address the constraints of low productivity caused by water problems and poor soil quality by using conservation agriculture (CA) technologies and practices. Promotion of CA is a priority activity in Zambia, and is stipulated within the 2004–2015 Zambian National Agricultural Policy. The project was informed by various studies that had indicated that CA technology does work in Zambia and could contribute to productivity enhancement.
Rating: High to very high

Choice of the commodity/instruments: The project focused on maize and cotton, key crops for food security and income generation. Different tillage methods, such as basins and ripping were promoted; tuber, grain, and legume plant materials were distributed; and tree planting (*Faidherbida albida* and *Jatropha curcas*) was promoted. The poorer segments of the population benefited most from CAP1.
Rating: High to very high

Suitability of instruments: The above instruments, which are known to improve soil properties and increase productivity, are appropriate for the geographical location, specifically agroecological zones suitable for maize production.
Rating: High to very high

Design and timing of implementation: The project was well designed and had adequate funding from the Norwegian Embassy in Zambia. The project was implemented by the Conservation Farming Unit (CFU) of the Zambian National Farmers Union. It had adequate staff. It built up an extension system based on regional coordinators who were CFU staff, farm coordinators, contact farmers, and associate farmers. NORAGRIC (a department of International Environment and Development Studies at the Norwegian University of Life Sciences) was given the role of monitoring the project's implementation. The project had a good extension strategy and benefited from the extensive knowledge of CA within CFU. M&E was used to guide the project's implementation.
Rating: High to very high

Environmental sustainability: The project aimed to contribute to environmental sustainability through adopting conservation farming and reforestation, increasing carbon content, and having each farmer plant 200 *Faidherbida albida* trees after five years. However, these goals were not fully achieved. Adoption of CA still faces challenges resulting from labor constraints, inadequate access to improved inputs, the need to use crop residues as animal feeds, etc. The survival rate for the trees planted has been only 33 percent. Also, only 18 percent of the farmers planted *Jatropha curcas* as a live fence around their farms. The interest in planting *Jatropha* declined over time.
Rating: Low to moderate

Financial sustainability: Most of the adoption of CA in Zambia is supported by the donor community and international development agencies. This poses a challenge to the project's sustainability, because the government's contribution to the intervention was minimal. Farmers do not have adequate resources to buy required inputs (such as seeds, herbicides, and fertilizer). Without herbicides, there has been pressure for using hired labor for land preparation.
Rating: Low to moderate

Community participation: Farmers were involved in the implementation. A study by Aune, Nyanga, and Johnsen (2012) indicated the project had good rapport with farmers, created incentives for the farmers to adopt CA, and as a result managed to facilitate increased adoption of CA technologies and practices.
Rating: High to very high

Gender consideration: One of the objectives of the project was to increase the number of women involved in CA. Evaluation results showed that this objective was partly achieved, because women faced several limiting factors (for example, lack of labor, lack of land, and lack of access to such inputs as seeds and fertilizers). Women also find it hard to use some of the equipment promoted, such as *chaka* hoes, which require significant strength to use.
Rating: Low to moderate

Complementary investments and partnerships: Various actors have been involved in promoting CA in Zambia, including large-scale private actors, NGOs, the government, and donors. However farmers face challenges to adopt CA due to lack of access to complementary inputs, such as seeds, land, and fertilizers. The government fertilizer and seed subsidy schemes only benefited a few smallholder famers.
Rating: Low to moderate

Capacity building: Training was a major component of the project. The project selected farm coordinators who were trained by CFU field officers. Each farm coordinator trained contact farmers, and each contact farmer trained associate farmers and additional farmers or nonassociated farmers. The project built up an extension system based on regional coordinators (CFU staff), farm coordinators, contact farmers, and associate farmers.
Rating: High to very high

Organized groups: Farmers are organized in various groups that facilitated learning and experience sharing.
Rating: High to very high

Leadership and dedication: CFU has been instrumental in developing CA in Zambia. Formed in 1995, CFU is an independent organization having a collaborative agreement with the Zambian National Farmers Union. Local farmers' organizations promoted CA.
Rating: High to very high

Policies and national-level factors: CA was introduced at the right time, when Zambia needed an intervention to reverse the declining trend in agricultural productivity. The Ministry of Agriculture and Co-operatives has a climate change adaptation and mitigation agenda, and potential adaptation areas have been identified—CA being one. Agricultural policies in Zambia stimulate maize production through input subsidies and purchasing maize at a price higher than given at the regional market. Despite supporting policies, adoption and sustainability of CA in Zambia face a number of constraints, including high prices of inputs, such as herbicides and fertilizers; natural disasters, such as termites and fires; and marketing problems for agricultural produce. These constraints reduce the benefit of the intervention.
Rating: Low to moderate

Source: Authors' evaluation based on Aune, Nyanga, and Johnsen (2012).

(continued)

TABLE 6A.5 (continued)

F: Crop Crisis Control Project (C3P)

Problem definition: The project aimed to address the problem of low productivity of cassava and bananas resulting from cassava mosaic disease (CMD) and banana *Xanthomonas* wilt (BXW), which were priority agricultural constraints for the study countries. Evidence was gathered from various studies, including research by the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the National Agricultural Research System (NARS), in the design of the project and throughout its implementation. For example, food security surveys and analyses were commissioned under C3P to help practitioners better understand the relationship between both CMD and BXW and food security, so as to design the right approaches to reach vulnerable populations.
Rating: High to very high

Choice of the commodity/instruments: The main instruments used were introducing and distributing disease-resistant strains of cassava planting materials to control CMD, and promoting agronomic measures to counter BXW.
Rating: High to very high

Suitability of instruments: C3P aimed at targeting the poorest smallholder farmers who were identified by project staff, opinion leaders, and farmers' group members. Typically, farmers without clean planting materials and vulnerable households (those with members infected with HIV, sick members, elderly, widows, widowers, orphaned children, etc.) were the main beneficiaries. The interventions used by the project were appropriate for addressing productivity constraints identified in the problem definition.
Rating: High to very high

Design and timing of implementation: The project's design included an integrated strategy to intensify and coordinate efforts to combat CMD and BXM. The project was led by an experienced chief of party, with a multidisciplinary team involving agronomists, a social scientist, cassava and banana breeders, a socioeconomist, a plant pathologist, a virologist, and a geographic information system specialist. Technical capacity to implement the project was through a collaborative mechanism via International Institute for Tropical Agriculture, Association for Strengthening Agricultural Research in Eastern and Central Africa, national agricultural research system, nongovernmental organizations, and many other partners, and there were only minor delays in some aspects.
Rating: High to very high

Environmental sustainability: There is no explicit evidence on how environmental sustainability issues were considered.
Rating: Low to moderate

Financial sustainability: The project's solutions relied heavily on project funding from USAID. It became difficult to continue with the production and distribution of clean planting materials after the project's completion. Furthermore, some of the varieties developed have been found to be susceptible to a new threat—cassava brown streak disease.
Rating: Low to moderate

Community participation: Local communities adopted successful measures to control CMD and BXW. They were also involved in various project activities, such as multiplication and distribution of improved varieties and training fellow farmers. *Rating: High to very high*

Gender consideration: There was no specific gender consideration or targeting.
Rating: Low to moderate

Complementary investments and partnerships: C3P involved more than 40 implementing partners across the Great Lakes region, and the roles of the different partners were clear. An evaluation of the project, however, observed that partner communication and coordination could have been improved.
Rating: High to very high

Capacity building: Multiplication and dissemination efforts were accompanied by training and education aimed at achieving better growing techniques and methods of disease prevention. Training activities were conducted through workshops and through on-farm and field visits. Various knowledge products, such as manuals, briefs, and posters, were produced and disseminated. A combination of multicountry learning and lesson sharing and a regional framework fostered by C3P enabled these lessons to be documented and implemented across most of the C3P countries.
Rating: High to very high

Organized groups: The project supported farmers' groups and community-based organizations (CBOs) to participate in managing secondary sites for multiplication of disease-resistant varieties. It also encouraged the formation or strengthening of farmers' groups to facilitate bulking of their cassava and knowledge sharing.
Rating: High to very high

Leadership and dedication: The project was well received within the target countries. National research organizations, farmers' organizations, and individual farmers participated in furthering project objectives. The leadership of ASARECA under the Eastern Africa Root Crops Research Network brought together various partners to implement the intervention.
Rating: High to very high

Policies and national-level factors: There was political will to support the project. The project was implemented at a time when the target countries had committed to revive neglected crops, such as cassava. The project was initiated when national governments were also working to find ways of fighting the two diseases.
Rating: High to very high

G: East Africa Dairy Development Project (EADD)

Problem definition: The project aimed to address issues of low milk productivity, milk perishability, and milk marketing, consistent with constraints identified in national strategy documents in the study countries. The design of EADD was informed by detailed background studies and the incorporation of lessons learned from similar projects by Heifer International in various countries.
Rating: High to very high

Choice of commodity/instruments: Milk is an important commodity for food security and income generation. The project targeted suitable agroecological zones for milk production—namely, dairy-producing areas in Kenya and Rwanda. In Uganda, project sites were predominantly in pastoralist areas.
Rating: High to very high

Suitability of instruments: Although the project aimed at reaching poor smallholder farmers, there were concerns that some of the beneficiaries were not truly poor, because of the approach of focusing on producer organizations. Most poor farming communities may not have qualified to be members of the producer organizations.
Rating: Low to moderate

Design and timing of implementation: The project had a team of highly qualified staff in different technical areas, such as dairy technology, livestock production, and business management. The project had some design problems. For example, implementation started before the problem analysis was comprehensively undertaken. In Kenya, however, there were problems of delayed or slow start-up, mostly caused by postelection violence there. Although baseline studies were conducted, the results were insufficiently used in the design and implementation activities.
Rating: Low to moderate

Environmental sustainability: There is no explicit evidence on how environmental sustainability issues were considered.
Rating: Low to moderate

Financial sustainability: Most of the resources for the project were from the donor (Bill & Melinda Gates Foundation), which can be a threat to sustainability when the donor support is no longer available.
Rating: Low to moderate

Community participation: Local communities were involved heavily during the project's implementation. They participated in the development of dairy hubs and training activities. They were keen to adopt various technologies promoted by the project, including rearing of improved breeds and feed management.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Gender consideration: Gender considerations were not adequately taken into account initially. During the second year of the project (in 2009), however, an effort was devoted to identifying emerging internal gender gaps, including the responsiveness of the institutional setup for the promotion of gender equality. Gender focal points were identified at different levels (country and regional office, partners, etc.), and a gender working group was established. A mid-term evaluation noted that EADD had been effective in achieving gender balance among project staff, executive committees in dairy farmer business associations, and dairy service providers.
Rating: High to very high

Complementary investments and partnerships: EADD involved a wide range of partners. It was led by Heifer International in partnership with the International Livestock Research Institute (ILRI), TechnoServe, the World Agroforestry Centre (ICRAF), and the African Breeders Service Total Cattle Management. Several complementary investments were in place through partnerships among governments, the private sector, and milk-processing companies. EADD's business-based approach to development attracted multinationals, such as Nestlé and Tetra Pak, to collaborate with the project. Microfinance associations, village banks, commercial banks, and the chilling plants' check-off system of credit against milk deliveries gave farmers, youth entrepreneurs, and business men and women opportunities to engage in a range of enterprises that extended well beyond the dairy sector.
Rating: High to very high

Capacity building: Capacity building was carried out in various areas, including dairy husbandry, business practices and operation, milk management practices, feeding, and fodder production. A wide range of approaches was used in training and knowledge dissemination, including exchange visits, demonstration plots, and community radio.
Rating: High to very high

Organized groups: Farmers were mobilized into groups to set up and run producer companies. The companies were assisted to set up infrastructure to market milk and deliver inputs to members through the dairy hubs.
Rating: High to very high

Leadership and dedication: This project was implemented at a time when there was a high level of government commitment and attention to agriculture through the Comprehensive Africa Agriculture Development Programme (CAADP) process.
Rating: High to very high

Policies and national-level factors: Although all implementing countries have prioritized promotion of livestock production at the policy level, several factors affected the project. Most milk-producing areas were hit by drought at some point during the project's implementation. This affected the availability of feed and water for livestock. Insecurity in some parts of Uganda (particularly in northern Uganda) was a challenge. In Kenya, the project was affected by the postelection violence in 2007–2008. Transport and marketing challenges, such as poor roads, low access to cooling facilities in milk surplus areas, and lack of appropriate milk transport equipment, negatively affected the project.
Rating: Low to moderate

Source: Authors' evaluation based on TANGO International (2010) and Mutinda (2013).

H: FARM Africa Goat Dairy Improvement Project (FAGDIP)

Problem definition: The project sought to address the problem of the low productivity and growth of the East African indigenous goat as a means of improving milk production and increasing the nutrition, income, and overall livelihoods of the majority of the rural poor with a limited livestock asset base. It was designed to address the problems of small-scale, resource-poor livestock keepers in sustaining a cross-breeding program by themselves, resulting from their small flock sizes and consequent unavailability of good-quality genetic breeding material, as well as their lack of access to government services. The design of the project was informed by the documented experiences of Farm Africa in piloting agricultural interventions that are appropriate for the needs of the poor farmers in East Africa. A participatory planning and project design was undertaken with the community leaders.
Rating: High to very high

Choice of the commodity/instruments: Goats are very important in the highland mixed crop–livestock system, as well as in the pastoral system. They provide meat, milk, manure, skin, asset, security, and sociocultural benefits. Goat rearing is suitable in the production systems where the intervention was promoted. Goats are relatively cheap, and the poor are more likely to be able to afford them than cows.
Rating: High to very high

Suitability of instruments: The project targeted smallholder and resource-poor livestock keepers, especially the vulnerable, such as households affected by HIV/AIDS and headed by women. Instruments used included promotion of improved breeds, training in animal healthcare, and improved feeding technologies. The project imported exotic dairy goat breeds to crossbreed with the indigenous goats.
Rating: High to very high

Design and timing of implementation: The project was implemented through a series of activities that were targeted to specific geographical areas. Implementation of these activities benefited from the long-term experience of the organization in supporting livestock-related activities in mixed and pastoral systems.
Rating: High to very high

Environmental sustainability: The project promoted better goat management strategies to avoid environmental degradation. One example of the strategies was to encourage dairy goat keepers to grow fodder on soil and water conservation structures. Although goats are generally known for environmental destruction, the model promoted by Farm Africa proved that natural resource management can be possible when better goat management techniques are employed.
Rating: High to very high

Financial sustainability: Farm Africa managed and facilitated the operations of the project from the start, and then handed it over in 2004 to the communities through a new umbrella organization, the Meru Goats Breeders Association, which was created as part of the project. Funding to implement project activities was adequate. The poor households have not been able to sustain the technology after the end of the project. Evidence from Kenya and Tanzania suggests that the households that have been able to adopt the technology are those with higher per capita incomes and more effective asset-accumulation strategies than nonadopters.
Rating: Low to moderate

Community participation: Local communities were involved in project activities. Community leaders, extension staff, development workers, and Farm Africa were used to identify resource-poor farmers who were to benefit from the project. They also participated in training other farmers. The willingness to adopt new technologies promoted by the project was evident among the farmers.
Rating: High to very high

Gender consideration: Both men and women were involved in and benefited from the project, although the women were involved more in production but less in the formal marketing of milk, as men had more access to marketing information than women.
Rating: High to very high

Complementary investments and partnerships: Considerable effort was put in place to leverage partnerships among local communities, the private sector, animal health workers, and agrodealers. There was also support for savings and credit funds for small enterprise development.
Rating: High to very high

Capacity building: Capacity building was a key component of the project. It produced and disseminated training materials, and trained beneficiaries on basic animal husbandry, housing, fodder production, management and utilization, group dynamics, record keeping, and conservation. Selected members of the community were nominated to receive further training on basic animal health and breeding techniques. These members became the local providers of animal health and breeding services to the community.
Rating: High to very high

Organized groups: Through the project a local breeder association, MGBA, was established. This association drew membership from registered farmers' groups, whose members have interest in dairy goats. Farmer-managed organizations were established to coordinate and extend services during and after the intervention period.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Leadership and dedication: Farmers and group leaders were keen to learn about and adopt the technology. Group leaders participated in leadership training supported by the project. The project was supported by the Ministry of Livestock Development.
Rating: High to very high

Policies and national-level factors: National policies that accommodate community-based livestock improvement initiatives were lacking. Cattle milk was the only officially marketable milk in Kenya during the project's lifetime. Kenya changed its policy only in 2008 to include goat milk in the list of official milk products.
Rating: Low to moderate

Source: Authors' evaluation based on Bradstock (2007) and Davis and Negash (2007).

I: Farm Input Subsidy Program (FISBP), Malawi

Problem definition: To address the problems of recurring food deficits, low maize productivity, high grain prices, and high dependence on food aid, FISBP's main objective is to raise the income of smallholder farmers through improvements in agricultural productivity and food security. The program was informed by past studies that identified low input use as a key constraint in the agriculture sector. The subsidy program has built on and emerged from Malawi's innovative experience in implementing universal starter pack and targeted input programs from 1998 to 2005.
Rating: High to very high

Choice of the commodity/instruments: The target was maize (and smallholder farmers), which is critical to the economy and the livelihoods of most farmers.
Rating: High to very high

Suitability of instruments: Although, the program intended to reach the poor smallholder maize farmers, it faced substantial logistical challenges and systemic development with large-scale registration and targeting of those farmers. Various innovations have been used, but targeting problems are still prevalent. A study by Talip, Whitney, and Paul (2013) found that the poor are not reached and that the failure to target the poor is pervasive at all levels of government (national, district, and community).
Rating: Low to moderate

Design and timing of implementation: The program faced various operational challenges, including shortages of and delays in delivery of inputs, and cumbersome coupon-processing and -redemption systems. The government has limited human and financial capacities to meet the operational demands of the program. There are challenges in input procurement, particularly fertilizer, caused by late completion of the tendering and bid awards. This resulted in some fertilizers being procured at high prices, with large variation in prices and increased input costs.
Rating: Low to moderate

Environmental sustainability: There is no evidence of adequate measures to address environmental impacts.
Rating: Low to moderate

Financial sustainability: This is a very costly program. The government is having challenges in financing program activities, and has limited human and financial capacities to meet the program's operational demands.
Rating: Low to moderate

Community participation: Local community representatives have been used to identify the recipients. Within districts, traditional authorities, local government staff, and Ministry of Agriculture and Food Security staff have had varying roles in coupon allocations, working with village development committees and other local stakeholders to identify recipients. Communities have welcomed the interventions and have applied the inputs.
Rating: High to very high

Gender consideration: The program targets both female- and male-headed households. Some previous programs in Malawi have found that female-headed households are less likely to receive coupons than male-headed households (Chirwa, Matita, and Dorward 2011) and, where female-headed households receive subsidy coupons, they tend to receive fewer compared with their male counterparts (SOAS et al. 2008; Dorward, Chirwa, and Jayne 2010). Recent guidelines issued by the government encourage communities to give priority to female-headed households.
Rating: High to very high

Complementary investments and partnerships: Households received different combinations of maize seed and fertilizer coupons. Some of the operational challenges in input distribution were addressed by involving the private sector. In 2006–2007, for example, the private sector distributed all of the seed and 28 percent of the fertilizer. Because of slow private-sector development, however, there is a shortage of private agrodealers in rural remote areas.
Rating: Low to moderate

Capacity building: There are concerns that information sharing with the beneficiaries of the program is inadequate. There is also need to strengthen the capacity of the private sector to participate in input distribution.
Rating: Low to moderate

Organized groups: There is no evidence of support for building or strengthening the capacity of farmers' groups.
Rating: Low to moderate

Leadership and dedication: The government committed and showed strong political will to implement the subsidy program. The government is also committed to addressing the operational problems facing the program. The traditional leaders and village development committees have demonstrated their commitment and dedication.
Rating: High to very high

Policies and national-level factors: Extreme climatic conditions, such as droughts and floods, and high variability in maize prices have contributed to risks in input use. The high price variability in maize prices, for example, has encouraged the government to intervene in maize markets (for example, setting minimum and maximum prices and banning exports and private trade).
Rating: Low to moderate

J: Farmer Input Support Program (FISPP), Zambia

Problem definition: The program aimed at addressing the low access of smallholder farmers to fertilizers and improved seeds to improve productivity, increase food insecurity, and reduce poverty. The program was identified as being a cornerstone of the country's poverty reduction strategy.
Rating: High to very high

Choice of the commodity/instruments: The program targeted maize, which is an important food and cash crop in Zambia. The crop has received considerable government attention over the years in terms of financial investment to support smallholder farmer access to seed and fertilizer. The need to diversify resulted in the program being expanded to include rice, groundnuts, sorghum, and cotton. The program was implemented in all agroecological zones where these crops are grown within the country.
Rating: High to very high

Suitability of instruments: Although the original objective of the program was to target small-scale maize famers with the capacity to grow 1–5 hectares (ha) of maize and pay 25 percent of the cost of inputs, some studies found that inputs were targeted to the least poor rural households, and that wealthier small- and medium-scale farmers also benefited from the program. Some studies have indicated corruption at the distribution centers to be one of the factors affecting the distribution process (CSPR, Zambia 2011). The low volume of inputs distributed to the farmers has affected the effectiveness of the intervention.
Rating: Low to moderate

(continued)

TABLE 6A.5 (continued)

Design and timing of implementation: Inputs are supplied to districts by private traders selected through a national tender. Local distributors deliver inputs to satellite depots, and issue these inputs to cooperatives and other farmers' organizations. The District Agricultural Committee selects local distributors and farmers' cooperatives. Selected farmers' cooperatives and other farmers' organizations deposit 25 percent of the value of the inputs. The major concerns raised with regard to the implementation of the program have been late delivery of the inputs and inadequate quantities supplied. The problem of poor access to inputs is more serious for small-scale farmers, who have not been adequately reached. The program also supported access to agricultural credit, but this did not do well because of problems of credit defaulting. There were large leakages of project funds, however.
Rating: Low to moderate

Environmental sustainability: There is no articulation of environmental issues or how they may be addressed.
Rating: Low to moderate

Financial sustainability: This program has a heavy financial burden. It consumed the vast majority of the Government of Zambia's agricultural budget. In 2011, for example, 73 percent of the poverty reduction budget was allocated to the program (Burke 2012). Farmers have become dependent on FISPP, which is problematic for sustainability. The program is designed in such a way that every two years beneficiaries should graduate (once they have generated sufficient income); however, this has not been happening.
Rating: Low to moderate

Community participation: Though efforts were made to involve local communities, their level of engagement has been questioned. This is likely because of the low involvement of the private sector in the input supply chain of the program.
Rating: Low to moderate

Gender consideration: Not apparent.
Rating: Low to moderate

Complementary investments and partnerships: The Food Reserve Agency buys maize from farmers at a guaranteed price above market prices. A multidisciplinary approach is promoted. For instance, in addition to enhancing access to inputs, the government encourages extension workers and researchers to support farmers. It is also supportive of the Conservation Agriculture Program.
Rating: High to very high

Capacity building: Awareness has been created by local extension officers explaining at farmers' meetings the rules and modalities governing the program. However, there are some concerns that the capacity enhancement and sensitization activities have not been adequate.
Rating: Low to moderate

Organized groups: Cooperatives and farmers' organizations are the main channels in the distribution of inputs to beneficiary farmers. However, some of the cooperatives have been formulated only for the purpose of accessing inputs from more than one input provider.
Rating: Low to moderate

Leadership and dedication: The Zambian government has demonstrated strong commitment to agriculture and rural development through its allocation of more than 10 percent of the country's total budget to the sector, as per the CAADP targets. There is also support from local leaders, as well as village farmers' committees and farmers' organizations.
Rating: High to very high

Policies and national-level factors: The Fifth and Sixth National Development Plans support agricultural production, and indicate agriculture, livestock, and fisheries to be main priority growth sectors, together with mining, tourism, manufacturing, and commerce and trade. The agriculture budget has been increased in line with CAADP's objectives.
Rating: High to very high

Sources: Authors' evaluation based on CSPR (2011); Jayne et al. (2011); and Burke (2012).

K: Fodder Trees and Shrubs Project (FTSP)

Problem definition: Having identified the problem of limited access to affordable animal feed among smallholder farmers, the intervention aimed to develop fodder technology and promote its adoption across East Africa (Kenya, Uganda, Tanzania, and Rwanda). The intervention was informed by several studies that have established that feed is a major constraint to livestock production in eastern and central Africa.
Rating: High to very high

Choice of the commodity/instruments: The project targeted areas that are most affected by feed problems, in particular under intensive animal production systems where improved animal breeds are kept for dairy production. It promoted fodder trees and shrubs (for example, calliandra, leucena, and mulberry) that provide multiple benefits, such as milk production, animal health, and soil conservation. The shrubs are relatively easy to manage, and fodder trees do not compete with food crops, can be intercropped and, once mature, can be fed to livestock for several years.
Rating: High to very high

Suitability of instruments: The project reached more than 200,000 smallholder dairy farmers in eastern Africa. It considered local demands by promoting fodder shrubs that suited local agroecologies and preferences. Fodder trees and shrubs research and scaling up were motivated mainly by demand for quality dairy feed to increase milk production in the smallholder dairy farming systems of the region, as they offer an affordable alternative source of high-protein supplementary feed for dairy animals.
Rating: High to very high

Design and timing of implementation: Implementation has been taking place through a series of different projects that add value to each other. The World Agroforestry Center has been implementing these projects in partnership with other CGIAR centers, NGOs, national governments, development partners, and other stakeholders.
Rating: High to very high

Environmental sustainability: The project was promoting agroforestry, which has various environmental benefits, including preventing soil erosion by creating soil cover and improving soil fertility by fixing atmospheric nitrogen. Fodder trees and shrubs are also used as fuelwood and, hence, minimize pressure on natural forests.
Rating: High to very high

Financial sustainability: The project's sustainability is very likely, because farmers have taken charge of the intervention, as it does not seem to require significant financial investment and is, hence, easier to maintain.
Rating: High to very high

Community participation: Communities are very involved in dissemination of the technology and training. Farmer-to-farmer dissemination has been a key approach. Communities have embraced the new technologies, and fodder shrubs are now planted by many farmers in eastern Africa.
Rating: High to very high

Gender consideration: There has been considerable gender consideration in promotion of fodder trees and shrubs. Women comprised about 50 percent of farmers planting them in various project sites. Women also were involved in the establishment of demonstration sites and were hired as facilitators.
Rating: High to very high

Complementary investments and partnerships: Collaborative partnerships were developed between research institutions (national and international) and governments. Other organizations promoting fodder trees include farmers' groups, NGOs, CBOs, and private companies. The partners have played different roles based on their comparative advantage. Various studies have been undertaken to monitor and evaluate the interventions. Fodder shrubs have been promoted along with other interventions, such as the East Africa Dairy Development Project.
Rating: High to very high

Capacity building: Training of farmers was a major component of the project. Farmers were trained on feed management. Knowledge products, including brochures and briefs, were produced and disseminated.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Organized groups: Farmers were organized in groups to facilitate the dissemination and widespread adoption of the fodder technologies.
Rating: High to very high

Leadership and dedication: There was clear indication of commitment and dedication from all partners (governments, the private sector, and farmers). Farmers were keen to participate in on-farm experiments and learned how to incorporate fodder shrubs into daily feed ratios.
Rating: High to very high

Policies and national-level factors: Growing demand for dairy products is encouraging dairy production. However, the dairy industry faces various policy and institutional constraints that affect milk marketing and, subsequently, the process of fodder adoption, which is dependent on milk marketing trends. Heavy losses of seedlings have resulted from frequent and unpredictable rainfall patterns in the region.
Rating: Low to moderate

Source: Authors' evaluation based on Wambugu et al. (2006).

L: Fuve Panganai Irrigation Scheme (FPIS), Zimbabwe

Problem definition: The scheme aimed to improve the income, food security, and living standards of smallholder rural households by addressing the problem of recurring drought. Technical studies conducted prior to the start of the scheme included soil analysis and physical and socioeconomic analysis. A project feasibility report was also produced.
Rating: High to very high

Choice of commodity/instruments: The project focused on cotton, beans, maize, and groundnuts. It also encouraged farmers to grow vegetables. The interventions under the scheme were suitable for the agroecological zones where the project took place.
Rating: High to very high

Suitability of instruments: Demand for the irrigation system was evident. The scheme was established as a precaution against the inherent variability in rainfall, as well as to ensure year-round cultivation. It targeted small-scale farmers, and reached disadvantaged rural populations, including those living with HIV/AIDS.
Rating: High to very high

Design and timing of implementation: There was no clarity on how the information collected from socioeconomic studies was used in the project's design. There seemed to be a top-down approach in implementation, and there were delays in commencement of the scheme because of financial constraints. The project was planned in the 1970s, but only materialized in the late 1980s, when the German government provided the financial support to the project. However, this financial support was not adequate to sustain the project.
Rating: Low to moderate

Environmental sustainability: Efforts to address the negative impacts that resulted from irrigation, such as the decline in fertility and increase in salinity, were inadequate. The scheme also suffered from high water leakages.
Rating: Low to moderate

Financial sustainability: Farmers lack resources to purchase inputs and maintain the irrigation infrastructure. Also, the benefits have not been sustained. Farmers participating in the scheme have negative cash flow outcomes and find it difficult to cope with rising water charges and disrupted irrigation schedules.
Rating: Low to moderate

Community participation: Though the project seems to have made efforts to involve beneficiaries in its design, it faced resistance from local communities initially. As such, community members were more involved in the project's implementation phase.
Rating: Low to moderate

Gender consideration: Both men and women were key players in the program. For example, women who participated in the scheme reported improvements in their income status as a result of income from crops produced.
Rating: High to very high

Complementary investments and partnerships: There were poor linkages to input supply and no reliable product markets. Previously, farmers accessed markets through the Grain Marketing Board or Cotton Marketing Board. Market deregulations led to the loss of secure market opportunities.
Rating: Low to moderate

Capacity building: Extension provides training on food security crops (maize, beans, groundnuts, and wheat). In the initial years of the project, capacity-building activities were limited. This has changed in recent years.
Rating: Low to moderate

Organized groups: There were no explicit efforts to organize farmers into groups.
Rating: Low to moderate

Leadership and dedication: The project received considerable resistance from the local communities in the initial stages of implementation; however, this resistance subsided with time. The Ministry of Agriculture provided leadership. The government's attention to the development of small-scale irrigation schemes was in a bid to meet its objectives toward decentralizing irrigation schemes, mainly in rural areas for empowerment.
Rating: High to very high

Policies and national-level factors: Economic meltdown led to high water charges and debts.
Rating: Low to moderate

Sources: Authors' evaluation based on Manyame (1998) and Chazovachii (2012).

M: Kaleya Irrigation Project (KIP), Zambia

Problem definition: This intervention was informed by the evidence of inadequate use of irrigation potential in Zambia. The literature indicates that although Zambia has large irrigation potential, less than 30 percent of the land suitable for irrigation has been developed. A needs assessment conducted in the target areas indicated that unemployment was a significant problem. The project aimed at creating jobs for the rural poor.
Rating: High to very high

Choice of commodity/instrument: The target was sugarcane, which is a high-value crop with a ready market at the sugar mill.
Rating: High to very high

Suitability of instruments: The project considered local demand, as the sugarcane it produced was sold to the Zambia Sugar Company (ZSC), which milled the cane into sugar for the local and export markets.
Rating: High to very high

Design and timing of implementation: Kaleya Smallholders Company Limited (KASCOL), as an outgrower, oversaw 1,080 ha of smallholder sugarcane growers (organized under farmers' associations) and 1,100 ha on its own estate farms. Good governance was a key success factor. KASCOL had a board of directors that was elected every three years. KASCOL's approach to business was a combination of its own production and contract farming. A key enabling factor in the initial stages of the KASCOL project was the configuration of expertise and contributions provided by the different shareholders. The Commonwealth Development Corporation (CDC) and ZSC brought production and management expertise, while two banks brought financial resources to the new company.
Rating: High to very high

Environmental sustainability: Not apparent.
Rating: Low to moderate

Financial sustainability: There were adequate financial resources to support the project, through funding by the World Bank, Development Bank of Zambia, ZSC, Barclays Bank, and CDC. But the financial management and administrative capacities of smallholders were limited, because of a strict management agreement between KASCOL and smallholders. Low initial development costs and low debt levels were a plus.
Rating: Low to moderate

Community participation: The KASCOL model involved equity participation and board representation for smallholder outgrower farmers. The Kaleya Smallholder Farmers' Association (KASFA) sits on KASCOL's board of directors.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Gender consideration: The KASCOL smallholder scheme, while dominated by men, was deemed accessible by women, albeit with some limitations because of workloads and intrahousehold decisionmaking dynamics. This was illustrated by only 28 percent of the outgrowers being women. Women had a strong voice in decisionmaking within households where women were registered as outgrowers.
Rating: High to very high

Complementary investments and partnerships: Farmers' associations get inputs on credit from KASCOL. KASCOL negotiates fertilizer prices with ZSC. Transport services are outsourced. KASCOL is responsible for infrastructure maintenance and distribution of irrigation water. KASCOL provides social services (health programs on HIV/AIDS, clinics, primary schools, and recreation facilities). The market for farmers' produce was ensured.
Rating: High to very high

Capacity building: A participatory approach was used in agronomic training of farmers in sugarcane production practices. KASCOL provided farmers six months of agronomic training and paid them for managing the land as apprentices. Farmers who were capable are settled on 4 ha of land on a renewable 14-year lease. The scheme has created employment for the community, thus enhancing the financial empowerment of the beneficiaries.
Rating: High to very high

Organized groups: KASFA mediates in all issues pertaining to its farmer members, especially those related to prices.
Rating: High to very high

Leadership and dedication: The project has strong government- and local-level support. The government provided free land for the project. Farmers participated in the project as outgrowers. Their leaders were dedicated and represented the farmers by serving on the KASCOL board.
Rating: High to very high

Policies and national-level factors: The project site was located on an aquifer, which proved to be an invaluable source of irrigation water. Favorable rains and fertile soils in the Mpongwe district also contributed to the project's success. Government support to the agriculture sector is high. There were reforms to encourage private investments in agriculture.
Rating: High to very high

Source: Authors' evaluation based on Mujenja and Wonani (2012).

N: Kenya Dairy Development Programme (KDDP), Kenya

Problem definition: The program aimed to increase livestock productivity, so as to address problems of food insecurity and poverty. It responded to the national priorities of using livestock as a pathway out of poverty. The importance of livestock is emphasized in various government policy documents. The project was informed by past studies that have articulated the constraints facing the dairy industry in Kenya and the huge opportunity for growth through investments in addressing those constraints.
Rating: High to very high

Choice of the commodity/instruments: The program targeted dairy production, an important activity in Kenya for food production and income generation. Dairy products (milk) account for 30 percent of livestock gross domestic product and more than 22 percent of livestock gross marketed products in Kenya. KDDP focused its activities in 16 districts that are highly suitable for dairy production.
Rating: High to very high

Suitability of instruments: Dairy farmers were selected in different geographical regions in the country based on such factors as cattle population and the number of milk market points.
Rating: High to very high

Design and timing of implementation: As the implementer, Land O' Lakes delegated specific functions to such organizations as ILRI, Nairobi Veterinary Centre, Pioneer Technologies, and Kenya Agricultural Research Institute (KARI). All actors played their roles well to implement the project. Resources to implement project activities were adequate. Implementation of the project at the cooperative level faced a number of challenges, such as high turnover of management staff and slow decisionmaking by cooperatives.
Rating: High to very high

Environmental sustainability: Although the program had a component of natural resource management, its implementation was inadequate. There is no explicit information on how the program planned to address any environmental impact resulting from the interventions.
Rating: Low to moderate

Financial sustainability: The beneficiaries have continued with the improved dairy techniques acquired through the program. However, the level of financial resources available to address dairy-related constraints has been limited since the end of the program.
Rating: Low to moderate

Community participation: Use of the learning-by-doing technique to encourage adoption of the promoted technologies and practices and farmer participation in the livestock FFS raised farmers' commitment to the project.
Rating: High to very high

Gender consideration: The rate of program participation by women was about 35 percent.
Rating: High to very high

Complementary investments and partnerships: KDDP developed and strengthened partnerships with several organizations, including the Ministry of Livestock and Fisheries Development, ILRI, the Kenya Dairy Board Dairy Training Institute, Pioneer Technologies, Nairobi Veterinary Centre, KARI, the University of Nairobi, and Kenya Broadcasting Corporation. The partners played different roles in the program based on their comparative advantage.
Rating: High to very high

Capacity building: More than 100,000 farmers were trained on improved dairy management practices and technologies. The program enhanced farmers' accessibility to reliable and efficient artificial insemination (AI) services by training service providers and facilitating establishment of AI service points. The project also disseminated various knowledge products, including bulletins, journals, and education materials.
Rating: High to very high

Organized groups: Farmers were organized into 60 livestock FFS and dairy cooperatives. The program provided technical assistance to the cooperatives and dairy institutions. It established new and strengthened existing cooperatives and dairy institutions. However, the cooperatives have been facing challenges. The high turnover of management staff and slow decisionmaking in cooperatives continue to pose a challenge in turning them into effective service providers to farmers.
Rating: Low to moderate

Leadership and dedication: Farmers were dedicated to adopting the skills they learned. They demanded and used dairy information provided to them.
Rating: High to very high

Policies and national-level factors: Most milk-producing areas were hit by protracted dry spells, especially the droughts in 2004 and 2005. The program was affected by the postelection violence that hit Kenya in 2007–2008. Transport and marketing challenges, such as poor roads, low access to cooling facilities in milk-surplus areas, and lack of appropriate milk transport equipment, negatively affected the project.
Rating: Low to moderate

Sources: Authors' evaluation based on Land O' Lakes (2008).

(continued)

TABLE 6A.5 (continued)

O: National Agricultural Advisory Services (NAADS), Uganda

Problem definition: NAADS aimed to address the challenge of limited access to agriculture extension and advisory services by farmers. The program had inadequate focus on other farmer constraints that must accompany an extension intervention, such as labor, access to inputs, ineffective extension services for crop and animal farmers, and unresolved market access issues (UNFFE 2011). Local communities were involved in the selection of enterprises. NAADS goals and objectives have been relevant, as reflected by the National Development Plan and National Development Strategy.
Rating: High to very high

Choice of the commodity/instruments: Enterprises were selected by community members and extension officers. Interventions were selected according to their agroecological suitability.
Rating: High to very high

Suitability of instruments: Targeting the right beneficiaries was an issue. For example, Okoboi et al. (2011) note that, contrary to NAADS' aim to prioritize support to marginalized households, the proportion of targeted marginalized households was low compared with other households.
Rating: Low to moderate

Design and timing of implementation: Although various implementation guides were developed, they were hardly adhered to, which has been a major challenge to the quality of the program's implementation. Other challenges include late disbursement of funds to districts and subcounties where activities are implemented, embezzlement of funds, distribution of poor-quality inputs, and government disruption of activities (Okoboi et al. 2011).
Rating: Low to moderate

Environment sustainability: NAADS appears to be having more success in promoting adoption of improved varieties of crops and some other yield-enhancing technologies than in promoting improved soil fertility management. This raises concern about the sustainability of productivity increases that may occur, since such increases may lead to more rapid soil nutrient mining, unless comparable success in promoting improved soil fertility management is achieved (Benin et al. 2007).
Rating: Low to moderate

Financial sustainability: Farmers' groups are unable to raise the desired amount of capital from membership contributions to adequately support their activities.
Rating: Low to moderate

Community participation: In general, participation of farmers in group or community activities was considered to be very good or good by most of the groups/communities. Besides attending general meetings, local communities were involved in such activities as enterprise selection, demonstration and training, management of technology development sites, and development of a constitution and/or bylaws.
Rating: High to very high

Gender consideration: According to the NAADS Act, 2001, the program was created to pay more attention to women, people living with disabilities, and youths who were considered marginalized from mainstream economic activity. The program completion report indicated gender imbalances in farmer institutions, with men leading most of the groups. An impact assessment study indicated that the objective of generating gender-responsive services has not been achieved fully.
Rating: Low to moderate

Complementary investments and partnerships: The program involved a public–private extension service delivery approach encouraging farmers to demand and control agricultural advisory services. Despite having diverse partnerships with the National Union of Coffee Agribusinesses and Farm Enterprises, IDA, the Department for International Development, and DANIDA, farmers still faced some constraints. Benin et al. (2011), for example, found that shortage of capital and credit facilities was often cited by farmers as a critical constraint facing them, in addition to scarcity of agricultural inputs, lack of adequate farmland, unfavorable weather patterns, and problems of pests and diseases.
Rating: Low to moderate

Capacity building: Although NAADS supported demonstrations and supply of materials, it has been reported that limited professional and skills competence to guide the capacity development of farmers' institutions is still a challenge. Recent studies indicate that despite investment in capacity-building activities, farmers' understanding of NAADS operations is still limited (UNFFE 2011). There were also concerns about the quality of extension services for crop and animal farmers.
Rating: Low to moderate

Organized groups: NAADS supported formation of farmers' groups to select agricultural activities on which they need information and advice. The groups benefited from NAADS technologies.
Rating: High to very high

Leadership and dedication: NAADS was created in 2001 by an act of parliament. Various government ministries and institutions were involved in its implementation, including the ministries of Agriculture, Finance, Planning and Economic Development; local government; and farmers' institutions.
Rating: High to very high

Policies and national-level factors: The program had substantial support from the government. Agriculture sector reforms implemented by the government culminated in the 25-year NAADS program. The intervention, however, is constrained by unfavorable weather patterns and problems related to pests and diseases.
Rating: High to very high

P: National Agricultural Extension Intervention Program (NAEIP), Ethiopia

Problem definition: The program focuses on extension to address low agricultural productivity, with the goal of improving food security and reducing poverty. It is a scale-up of the Participatory Demonstration and Training System (PADETES) approach to boosting cereal yields and output. PADETES was an integrated program of extension, seed, fertilizer, and credit that was piloted by Sasakawa Global 2000 (SG 2000).
Rating: High to very high

Choice of commodity/instrument: The program is mainly focused on cereals, such as maize, wheat, sorghum, teff, and barley, which are identified in government documents to be a priority commodity for food security and poverty reduction.
Rating: High to very high

Suitability of instruments: The program directly reached about half a million farm households over a 10-year period. It targeted high-potential areas and paid inadequate attention to the vast majority of resource-poor farmers. The program has been considered to follow a supply-driven approach, as it did not adequately incorporate the beneficiaries' needs and demands.
Rating: Low to moderate

Design and timing of implementation: Although the program reached many people, efforts to scale up PADETES were less successful than the pilot demonstrated by SG 2000. Various implementation challenges affected the program. For example, an inadequate number of field-level extension officers constrained the effectiveness of the transmission of recommended packages of technology to farmers. A large expansion of the extension program has taken place, increasing the number of extension workers; however, the number of farmers per extension worker is still very high.
Rating: Low to moderate

Environmental sustainability: No clear articulation of how any environmental issues would be addressed.
Rating: Low to moderate

Financial sustainability: The government has made extensive investments in extension. The program distributed massive amounts of production inputs, including improved seeds, fertilizer, and credit. However, because the government was not able to sustain these services, the productivity gains were short lived.
Rating: Low to moderate

Community participation: There have been concerns that local communities were not as adequately involved in the program's planning as they were its implementation, and that the program used a top-down approach.
Rating: Low to moderate

(continued)

TABLE 6A.5 (continued)

Gender consideration: There is no indication as to whether there was any gender targeting.
Rating: Low to moderate

Complementary investments and partnerships: Examples of complementary interventions include improved seeds, fertilizers, and credit. Some of the partners include the International Food Policy Research Institute, the Government of Ethiopia, and the private sector.
Rating: High to very high

Capacity building: Capacity building has been affected by an inadequate number of extension staff. This had led to passive transmission of recommended messages to farmers, with little technology adaptation to local contexts. It has also eroded the credibility of the frontline extension workers among the smallholder farmers.
Rating: Low to moderate

Organized groups: Farmers' groups were not popular. Farmers were trained in the training centers collectively.
Rating: Low to moderate

Leadership and dedication: The Government of Ethiopia spearheaded the implementation of the program, with help from stakeholders (both private and public) in the agriculture sector. Sector and national policies and plans are supportive of the program.
Rating: High to very high

Policies and national-level factors: Unfavorable climatic conditions, such as droughts, negatively affected crop production. Crop production has also been negatively affected by the government's many policy changes and by the shifting roles of the public and private sectors—mainly those related to the marketing of agricultural inputs.
Rating: Low to moderate

Sources: Authors' evaluation based on NEPAD and FAO (2005) and Spielman, Kelemwork, and Alemu (2011).

Q: New Rice for Africa (NERICA) upland rice, Uganda

Problem definition: The project aimed to address low rice productivity in general, and the lack of cash crops in some areas. Rice is a strategic commodity in Uganda. Although rice production is increasing in Uganda, the country is still a net importer of rice. Improving rice productivity has been prioritized to reduce reliance on imports. Various technical and socioeconomic studies were commissioned to inform the project's design and implementation.
Rating: High to very high

Choice of the commodity/instruments: Rice production is a major intervention identified in Uganda's agricultural development strategy and investment plan. The project targeted all areas. However, in areas unsuitable for NERICA rice production (that is, where the profitability of NERICA rice relative to other crops is low), there were massive dropouts from the project—an economic and logical response.
Rating: High to very high

Suitability of instruments: The intervention targets the poor, including the internally displaced population in northern Uganda. Promotional activities target areas that are suitable for upland rice production.
Rating: High to very high

Design and timing of implementation: Various interventions to promote NERICA over the past decade have received financial support from development partners and technical support from research institutions. Several activities have been initiated to cover various aspects, including research, extension, and training of trainers. The high availability of improved seed varieties is stimulating rice production.
Rating: High to very high

Environmental sustainability: The program is not explicit on how it plans to address environmental issues.
Rating: Low to moderate

Financial sustainability: Reliance on external funding sources limits the sustainability of the interventions. So far, JICA and the Food and Agriculture Organization of the United Nations (FAO) have provided a large proportion of the resources. The government has not allocated adequate resources to strengthen human, institutional, and technical capacities. Staff and financial resources have been adequate to continuously disseminate the technologies to the farmers and address the constraints farmers face in adopting them. Some adopters have abandoned the technologies, which is raising a question about the project's sustainability.
Rating: Low to moderate

Community participation: Participatory varietal selection, where farmers select their varieties and evaluate interspecific lines, is used.
Rating: High to very high

Gender consideration: The project targets both men and women. NERICA rice has been beneficial to women in Uganda. Many women seem to think that despite the additional labor burden associated with growing upland rice, they have become more independent and have gained decisionmaking power in their households. Their bargaining power also has been strengthened, and spouses share proceeds through more democratic dialogue. Different studies indicate that female-headed households are experiencing yields per hectare equal to those of male-headed households.
Rating: High to very high

Complementary investments and partnerships: The Government of Uganda, WARDA, JICA, and FAO are working together to promote rice production. The actors with different comparative advantages are targeting different actors along the rice value chain, including farmers, millers, and traders.
Rating: High to very high

Capacity building: Capacity-building efforts include the FFS, research and extension capacity, development of demonstration plots, implementation of various experiments, development of technical manuals and training materials, and activities for farmers, millers, and government leaders. Nonetheless, capacity building, extension services, and awareness among the smallholder farmers are still insufficient, which seems to be limiting desired upland rice adoption rates and levels.
Rating: Low to moderate

Organized groups: Farmers organized themselves into groups, and NERICA seeds were distributed to them.
Rating: High to very high

Leadership and dedication: The project obtained strong support from the Ugandan government, particularly because of its objectives to increase food security and incomes and reduce dependence on food imports.
Rating: High to very high

Policies and national-level factors: Although government policies favor rice production, the rice sector in Uganda faces a number of constraints. These include rainfall variability, which reduces NERICA rice profitability; underdeveloped markets for seeds; inadequate rice-milling services; a weak extension system; credit constraints; and imperfect information about methods of seed production, the quality of seeds, and the rice-milling business.
Rating: Low to moderate

Sources: Authors' evaluation based on Kijima (2008), Kijima et al. (2011), and Lodin (2012).

R: Operation *Mwolyo* Out (OMO), Kenya

Problem definition: The project aimed at addressing the problem of persistent droughts leading to reliance and overdependence on food aid—a problem that ranks high in the government's priorities. A large part of the Mwolyo district is known for its insufficient rains, leading to food shortages. OMO started as an outreach program. Its founder is a retired teacher who lives in the area. A participatory needs assessment was conducted through discussions with the beneficiaries.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Choice of commodity/instruments: The project promoted digging dams and using water pans for harvesting water. These efforts were targeted at maize and beans, which are important staple crops. The project also targeted high-value crops, including onions, watermelons, French beans, sweet potatoes, chillies, and various fruits. These commodities grow well in the project areas when water is available. The project also supports livestock production, an important economic activity in the arid agroecological zones.
Rating: High to very high

Suitability of instruments: The project initially targeted or attracted women, but youths and men have gradually joined. Local-level socioeconomic factors and preferences for food and income generation were the main influential factors.
Rating: High to very high

Design and timing of implementation: Project design and implementation are led by the Christian Impact Mission, a local NGO. The design was based on a participatory approach through a seven-point plan (community mobilization, water harvesting, appropriate agricultural technologies, high-value crops, value addition, development of marketing associations, and market linkages). The participants are encouraged to keep records of their agricultural production. Although the project does not have an elaborate M&E system, it has strongly invested in partnerships to support M&E. Several organizations, such as the University of Nairobi, the Regional Strategic Analysis and Knowledge Support System, UNDP, and the World Food Programme, have collaborated with OMO to document lessons from the project. M&E needs further strengthening.
Rating: High to very high

Environmental sustainability: The project promotes use of biogas to reduce dependence on the forest as a source of energy. Local communities are preserving the natural environment for tourism purposes.
Rating: High to very high

Financial sustainability: The project is a good case on how farmers' own resources can be mobilized to minimize dependency on eternal resources, which often challenges sustainability. The local communities themselves dig dams and water pits. Ecotourism and environmental conservation are promoted to attract external funds or sources of nonfarm income for the communities.
Rating: High to very high

Community participation: Members of the community are empowered to participate, as the project builds on indigenous knowledge and practices.
Rating: High to very high

Gender consideration: Gender issues are integrated into the project's design and implementation. During a key informant interview with the beneficiaries, many women indicated how the project has improved their livelihoods, via the training activities and the adoption of technologies and better farming techniques.
Rating: High to very high

Complementary investments and partnerships: Complementary interventions to facilitate marketing, handling of postharvest losses, and access to input are very limited. While some partnerships have been initiated, they are still very few.
Rating: Low to moderate

Capacity building: Farmers were trained on improved agricultural methods. NGOs and CBOs also are being trained on grassroots community participation.
Rating: High to very high

Organized groups: Farmers were organized into groups under the umbrella of the local church, which enhanced group cohesion.
Rating: High to very high

Leadership and dedication: Local communities' interest in and effort to bring about change from their own initiative are high. The strong sense of ownership by the community is attributable to the use of the local population's indigenous knowledge.
Rating: High to very high

Policies and national-level factors: This initiative faces threats from recurrent droughts in the area and from lack of infrastructure and market access.
Rating: Low to moderate

S: Participatory Irrigation Development Project (PIDP), Tanzania

Problem definition: The project aimed at addressing the problem of inadequate access to water for agricultural production. This was in line with the government's overall priority to combat rural poverty by enhancing rural and agricultural development. The project made efforts to undertake technical analysis prior to the interventions. However, the studies did not adequately inform problem identification and project design. For example, the project attempted to undertake the required technical analysis in identifying irrigation schemes for development and/or rehabilitation, but the basis for decisions was in some cases weak because of the lack of data (especially on hydrology). This lack of information led to the selection of some schemes where the available volume of water was insufficient and could not meet the community's needs.
Rating: Low to moderate

Choice of the commodity/instruments: Rice was the targeted commodity, which is an important food and cash crop in Tanzania.
Rating: High to very high

Suitability of instruments: The project targeted marginalized farmers and provided opportunity to the traditionally landless rural population, especially women and youths. However, it was unable to involve the poorest to the extent envisaged, as a key beneficiary-selection criterion is ability to contribute substantial labor, which was not always possible for poorer households and female farmers. There were also some inadequacies with regard to site selection, which led the project to invest in some schemes that did not have sufficient water. The project did not adequately factor in local demand and perceptions.
Rating: Low to moderate

Design and timing of implementation: The project suffered several challenges. In addition to poor site selection, investments in pit latrines were not adequately implemented, because the community did not demand them. Other challenges included low institutional capacity at the district level, a limited range of water-harvesting technologies used, underestimation of construction costs, a lengthy tendering process, low capacity of contractors, and unclear land rights of the "new" landowners.
Rating: Low to moderate

Environment sustainability: Efforts to address environmental problems resulting from irrigation were inadequate.
Rating: Low to moderate

Financial sustainability: Although policy statements support irrigation development, they have yet to be translated into concrete commitments in budgets to ensure that extension agents can continue to provide advice to the community on a wide range of issues, after the phasing out of the project.
Rating: Low to moderate

Community participation: The project's design appears to have been participatory. All irrigation schemes were designed after consultation and planning involving beneficiary communities, development committees, and local government authorities. A tripartite agreement was drawn up among the implementing agencies on their respective roles in the development and maintenance of the irrigation structures, feeder roads, buildings, and wells. A public–private approach was applied in the development and management of infrastructure.
Rating: High to very high

Gender consideration: The project was successful in involving women in water use associations (WUAs). In some cases, the 70:30 participation target ratio of men to women was surpassed.
Rating: High to very high

Complementary investments and partnerships: Partnerships with universities, NGOs, consulting companies, and private contractors worked well to bring together different knowledge skills and capacities. The roles and responsibilities of the partners were well defined.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Capacity building: The project supported institutional and personal capacity development. It invested in providing extension services and training farmers and their leaders. Areas of training included management of irrigation infrastructure, establishment and management of WUAs, governance, leadership, management of an O&M fund, savings and credit cooperatives, group dynamics, and a logical framework approach in planning and monitoring results. Capacity building was carried out by the project through FFS, on-farm trials, and study tours, all of which proved to be effective and efficient. Through the extension services subcomponent, training on best agronomic practices was conducted in all schemes.
Rating: High to very high

Organized groups: The project promoted collective action in agriculture. It supported the formation and strengthening of self-help organizations (such as WUAs) that contributed to the establishment, operation, and maintenance of the irrigation schemes.
Rating: High to very high

Leadership and dedication: Building on experiences from similar projects in the past, the government promoted irrigation and water-harvesting systems, which were reflected in its National Irrigation Policy. The Ministry of Agriculture, Food Security and Cooperatives took the lead, and district councils were responsible for actual program implementation. The project had a high level of government dedication and leadership.
Rating: High to very high

Policies and national-level factors: There was no irrigation policy to guide irrigation activities at the time of the project's implementation. Two severe droughts followed by extensive rain affected the project's performance. Planned agronomic trials of high-yielding varieties and training on agro-nursery management were hampered by the severe droughts.
Rating: Low to moderate

T: Push–Pull Technology (PPT)

Problem definition: The PPT project was developed to address a combination of productivity constraints, such as insect pests, the parasitic weed *Striga*, land degradation, and poor soil fertility. PPT was informed by technical, feasibility, and socioeconomic studies, which together identified insect pests and *Striga* as key challenges to cereal production in East Africa.
Rating: High to very high

Choice of commodity/instruments: PPT targeted cereal crops (maize, millet, and sorghum). PPT involves intercropping maize with an insect-repellent plant (such as *Desmodium*) and an attractive-trap plant (such as Napier grass) as a border crop, which fits well with traditional mixed-cropping systems in East Africa.
Rating: High to very high

Suitability of instruments: PPT targeted resource-poor smallholder farmers. The technology has been very appealing to farmers, because it addresses multiple challenges they face concurrently (Khan et al. 2006). The insect-repellent or insect-trap plants are also used as animal feeds, thereby solving the problem of fodder availability for mixed crop–livestock farmers.
Rating: High to very high

Design and timing of implementation: PPT is implemented by the International Centre of Insect Physiology and Ecology (ICIPE) and key partners. ICIPE has good technical and project implementation capacity. Because the project was well funded, it was able to implement activities in line with its work plan.
Rating: High to very high

Environmental sustainability: PPT contributes to soil fertility management through nitrogen fixation, natural mulching, improved biomass, and control of erosion. It also supports biodiversity through the variety of plant and animal species on the farm. Adopters of the technology have benefited from reduced runoff and soil erosion, enhanced soil fertility, and minimized use of agrochemicals.
Rating: High to very high

Financial sustainability: PPT is a low-cost technology. It uses minimal inputs, is based on locally available plants, and requires minimal farmer management capacity. Thus, its benefits are likely to continue.
Rating: High to very high

Community participation: There was high level of involvement among local communities. The government, represented by KARI, was involved in the design stage. Farmers were consulted, especially during the research stages of the project's design. Farmers were also consulted and trained during the initial stages of the project's implementation. Farmers showed strong commitment and have adopted the technology.
Rating: High to very high

Gender consideration: PPT integrated both men and women. PPT manages ecological weeds, which reduces the workload for women and youths, who typically do most of the weeding on the farm.
Rating: High to very high

Complementary investments and partnerships: Public- and private-sector partnerships in East Africa include ICIPE, Rothamsted Research, Heifer International Project–Kenya, KARI, Kenyan Ministry of Agriculture, the Ministry of Livestock and Fisheries Development through the National Agriculture and Livestock Extension Programme, the Lake Zone Agricultural Research and Developing Institute in Tanzania, NGOs, and farmers' groups.
Rating: High to very high

Capacity building: The project used trial and demonstration plots, media (print and audio), existing field-extension backstopping, FFS, and strengthening of farmer-to-farmer extension.
Rating: High to very high

Organized groups: Farmers were organized into groups via the FFS. These groups have been instrumental for disseminating the technology.
Rating: High to very high

Leadership and dedication: ICIPE, KARI, and the Ministry of Agriculture are supporting PPT. Farmers are dedicated to developing PPT, and agreed to be involved in promoting its adoption through the learning-by-doing approach, as well as through participatory ecological field studies.
Rating: High to very high

Policies and national-level factors: Adoption of PPT is constrained by small land sizes among smallholder farmers. It is also constrained by lack of strong national extension support; lack of information; and shortage of inputs, particularly *Desmodium* seed.
Rating: Low to moderate

U: Regional Land Management Unit (RELMA)

Problem definition: RELMA addressed various land and water management issues, including land degradation and water scarcity as a result of poor spatial distribution and timing of rainfall. Although the project was informed by various studies, there were shortcomings in the problem definition stage, which contributed to including components that did not address local priorities. The participatory needs assessment was inadequate. Four subcomponents were discontinued by the project management following the mid-term review of RELMA in 2005.
Rating: Low to moderate

Choice of the commodity/instruments: RELMA targeted food crops (such as maize and beans), high-value tree crops (such as those for fodder, fruits, and wood), and livestock rearing. It promoted different soil and water management practices to suit different agroecological zones.
Rating: High to very high

Suitability of instruments: RELMA targeted smallholder farmers in rural areas. RELMA's activities generated a noticeable impact on its clients during the implementation period. Most significantly, its subcomponents on soil fertility, conservation agriculture, dryland/livestock management, and rainwater harvesting continue to offer benefits to smallholder farmers.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Design and timing of implementation: The project's shortcomings included lack of oversight during the planning process, which led to overestimating the interest of some clients and designing some project components that were irrelevant. The initial implementation faced a number of challenges (with staffing and financial management), which led to a slow start. The project's management was successful in accelerating the implementation momentum by effecting productive project staff reallocations within the ICRAF structure and promoting stricter budgetary and fiscal discipline among the RELMA staff. However, it did not fully compensate for weaknesses in subcomponent design or client support strategies resulting from the compressed planning period, or for the shortage of RELMA in-house expertise outside the core land, livestock, and water management and publication competencies.
Rating: Low to moderate

Environmental sustainability: RELMA promoted improved methods of land and water management, conservation farming technology, and rainwater-harvesting techniques.
Rating: High to very high

Financial sustainability: Although RELMA promoted simple and low-cost water supply and environmental management techniques, the continued implementation of some of the RELMA-promoted interventions relies on external support. RELMA was funded by the Swedish International Development Agency. When the project ended, maintaining its sustainability became a challenge.
Rating: Low to moderate

Community participation: Local communities were not adequately involved during the project's formulation phase.
Rating: Low to moderate

Gender consideration: RELMA was sensitive to gender issues. Training was provided to both men and women.
Rating: High to very high

Complementary investments and partnerships: RELMA worked and coordinated with various partners, including the Southern and Eastern Africa Rainwater Network, the International Rainwater Harvesting Alliance, the Centre for Science and Environment, ICRAF, the United Nations Environment Programme, UN Habitat, and national rainwater associations.
Rating: High to very high

Capacity building: RELMA created awareness through training (with training materials in local languages), media coverage in print and audio, and extension services to enhance knowledge in land management.
Rating: High to very high

Organized groups: RELMA promoted the formation of common interest groups and FFS, which provided technical support. The beneficiaries had capacity to engage effectively in the project.
Rating: High to very high

Leadership and dedication: Local communities were dedicated to implementing the interventions promoted by the project. Governments were positive about the program's support of environmental management.
Rating: High to very high

Policies and national-level factors: Timing was right because of the widespread awareness about environmental challenges. National governments in the target countries were generating policies and strategies to support environmental management.
Rating: High to very high

V: Sasakawa-Global 2000 Agricultural Program (SG2000-AP)

Problem definition: The NGO SG 2000 worked to address the problem of low agricultural productivity and food insecurity by introducing yield-enhancing agricultural technologies. The project was designed based on the documented information and data on causes of famine in various parts of Africa, which indicated that there was unexploited potential to increase food production through crop and livestock intensification.
Rating: High to very high

Choice of commodity/instruments: The program supported staple food crops (for example, maize, wheat, rice, legumes, and roots and tubers) and common livestock (cattle) kept by the smallholder farmers in the project areas.
Rating: High to very high

Suitability of instruments: SG 2000 promoted different commodities in different areas based on the suitability of local conditions. It also promoted agricultural intensification with appropriate, financially viable technology.
Rating: High to very high

Design and timing of implementation: SG 2000 was formulated through a partnership between the Sasakawa Africa Association and Global 2000 of the Carter Center. The NGO was mainly financed by the Sasakawa Foundation (now called the Nippon Foundation). It also worked closely with many other partners. The roles and responsibilities of different partners were clearly articulated. For instance, the Sasakawa Africa Association was responsible for program management, while Global 2000 specialized in policy-related interventions. SG 2000 has adequate qualified staff to implement project activities. Six expatriate field directors managed and supervised the 12 SG 2000 country projects with the assistance of local professionals and support staff. Two expatriate staff supervised multicountry programs to strengthen university-level extension education and agroprocessing microenterprise development.
Rating: High to very high

Environmental sustainability: SG 2000 promoted various strategies for better soil and water management. For example, in Mali, the strategy included efforts to combat wind and water erosion and use natural phosphates and legumes.
Rating: High to very high

Financial Sustainability: Sustaining the same level of support to the farmers after the end of the project has presented some challenges. The project worked closely with ministries of agriculture and national extension systems as a way of enhancing sustainability. However, various constraints within government extension systems have affected the project's sustainability.
Rating: Low to moderate

Community participation: SG 2000 worked with farmers and ministries of agriculture to test and promote adoption of appropriate, profitable technologies that increase yields and improve soil fertility. It involved government systems and farmers in technology transfer.
Rating: High to very high

Gender consideration: Not apparent.
Rating: Low to moderate

Complementary investments and partnerships: SG 2000 supported various complementary interventions along the crop and livestock value chains. It supported access to inputs (fertilizer, seed); contributed to value addition through agroprocessing, so as to reduce postharvest losses; promoted improved storage techniques and technologies; invested in promoting public–private partnerships, so as to leverage contributions from other partners in implementing these activities; and worked with ministries of agriculture and national extension services, as well as with national and international agricultural research systems and other development organizations.
Rating: High to very high

Capacity building: SG 2000 trained farmers on improved farming techniques through the use of high-yielding technologies. It supported the national extension system in the study countries, so as to enhance access to agricultural extension. Various knowledge transfer approaches were used, including experimental plots and farmer-owned demonstration plots.
Rating: High to very high

Organized groups: The project helped farmers to organize into groups and cooperatives. Farmers also were encouraged to create rural savings and loan associations.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Leadership and dedication: Beneficiaries were dedicated in participating in the project. Extension efforts were centered on the production test plot, which is a half-hectare parcel owned or managed by a participant farmer who agrees to test the new technology on his or her own field and share experiences with others.
Rating: High to very high

Policies and national-level factors: Efforts to introduce new technologies to farmers in semiarid areas, such as Burkina Faso and Mali, were confronted by a more fragile ecosystem (for example, nutrient-poor and badly drained soils, and insufficient and erratic rainfall). The project's effectiveness was also negatively affected by other factors, such as highly variable producer prices, weak marketing infrastructure, and poor input-responsive millet varieties.
Rating: Low to moderate

W: Speciality Coffee Program (SCP), Rwanda

Problem definition: The intervention aimed at addressing the priority problem of farmers producing a low-quality coffee crop that was not attractive in the international market. The project was informed by past studies on the trends and performance of the coffee industry in Rwanda. The importance of coffee is articulated in the national policy and strategy documents. The project focused on building capacity in the coffee sector to produce specialty coffee of high value in international markets.
Rating: High to very high

Choice of commodity/instrument: Rwanda has a long history of coffee production. Coffee is an important cash crop in Rwanda, which has suitable agroclimatic conditions for growing the crop.
Rating: High to very high

Suitability of instrument: SCP targets smallholder farmers and rural communities.
Rating: High to very high

Design and timing of implementation: The Rwanda Coffee Development Agency is promoting speciality coffee, in collaboration with other stakeholders in the country. A number of development partners have been supporting the Rwandan government on the intervention, and the numbers of coffee-processing factories and coffee-washing stations have increased as a result of the program.
Rating: *High to very high*

Environmental sustainability: Coffee processors are making efforts to address environmental issues, but these efforts are not adequate, as some other players in the coffee value chain are also required to invest in addressing environmental problems.
Rating: *Low to moderate*

Financial sustainability: The coffee sector is mainly supported by development partners. Government financial commitment is still low. Underutilization of the increased number of washing stations is threatened by low coffee production.
Rating: Low to moderate

Community participation: SCP brings together stakeholders in the coffee industry, including representatives of local communities. The Rwanda Coffee Development Authority involves stakeholders in the industry to agree on a minimum weekly price for coffee.
Rating: High to very high

Gender consideration: The project has made deliberate efforts to empower female coffee growers.
Rating: High to very high

Complementary investments and partnerships: Several complementary investments are in place, including marketing infrastructure and coffee-washing stations. There is collaboration among various actors, including local communities, the government, development partners, the private sector, NGOs, and research institutions.
Rating: High to very high

Capacity building: Technical support is provided through training in improved coffee production, coffee processing, washing station management, and coffee marketing. Access to credit has been promoted. Coffee-washing stations have been constructed. The capacity to fully wash coffee beans has significantly increased in the recent past.
Rating: High to very high

Organized groups: Farmers are organized in groups through cooperatives. However, the management problems in some cooperatives require further investments in strengthening planning, administration, and financial management skills.
Rating: Low to moderate

Leadership and dedication: The government has been dedicated to the promotion of coffee as a cash crop and to the development of the coffee value chain. Local leaders and other agriculture stakeholders are supportive of the initiative.
Rating: High to very high

Policies and national-level factors: The government has made a number of reforms in the coffee industry in the past two decades. In late 1990s, the government opened up the market for coffee export to increase competition, and began to focus on improving the coffee value chain. In 2002, the government unveiled a national coffee strategy for capturing a larger share of the specialty coffee sector. Despite such policy reforms, several challenges remain, including old coffee trees, low-yielding varieties, high transportation costs, and the high costs and weak management skills of the washing stations.
Rating: Low to moderate

X: System of Rice Intensification (SRI), Rwanda

Problem definition: The project aimed at addressing low rice yields. It was informed by various research activities undertaken by the Institut des Sciences Agronomiques du Burundi. The project supports the national priorities. The Support Project for the Strategic Plan for the Transformation of Agriculture (PAPSTA II) identified rice as one of the high-value crops in the country and one of the cereal commodity chains that will serve as a major source of internal agricultural markets in Rwanda.
Rating: High to very high

Choice of commodity/instruments: Rice consumption is on the rise as a result of urbanization and population growth. The government aims to meet the growing demand through domestic production in the marshlands. SRI involves changing the management of plants, soil, water, and nutrients, including early, quick, and healthy plant establishment; reduced plant density; improved soil conditions through enrichment with organic matter; and reduced and controlled water application.
Rating: High to very high

Suitability of instruments: Interventions targeted resource-poor smallholders, who are members of targeted cooperatives located in the Kibaza, Bugesera, and Rwabutazi/Kihere districts, which are suitable for rice production.
Rating: High to very high

Design and timing of implementation: The technology is being spread through pilot projects funded by development partners, including IFAD and JICA. Through research, technical support and other promotional activities have been carried out. SRI projects have been well staffed and implemented as planned. M&E activities have been in place.
Rating: High to very high

Environmental sustainability: SRI is a way of producing more with less by using fewer inputs, particularly less water, seed, and chemical fertilizer. With SRI technology, the soil is kept alternately dry and wet, allowing the plants' roots to take oxygen from the ground surface.
Rating: High to very high

(continued)

TABLE 6A.5 (continued)

Financial sustainability: Most of SRI promotion activities are supported by projects funded by development partners, which can be a problem when the project ends.
Rating: Low to moderate

Community participation: Farmers' groups are involved in the design and implementation of SRI activities. Their adoption of the technology has resulted in increased rice yields among the beneficiaries.
Rating: High to very high

Gender consideration: Not apparent.
Rating: Low to moderate

Complementary investments and partnerships: Various partners are involved, including IFAD, the National Agriculture Research Institute, the Ministry of Agriculture, extension workers, and union of rice cooperatives. Farmers face several challenges that limit their willingness or ability to adopt the technology, including insufficient storage infrastructure for surplus produce, scarce access to mineral fertilizers, and lack of regular follow-up by SRI technicians at every stage of SRI implementation.
Rating: Low to moderate

Capacity building: Although there is training of rice producers, demonstration farmers, and extension officers (who were trained by Malagasy experts), there is inadequate regular follow-up by SRI technicians at every stage of SRI implementation.
Rating: Low to moderate

Organized groups: Farmer cooperative schemes were set up by the government. These were built on local networks. The groups have been beneficial in promoting technology and sharing experiences.
Rating: High to very high

Leadership and dedication: The program is supported by the government. It was introduced in Rwanda under the Projet d'Appui au Plan Stratégique pour la Transformation de l'Agriculture (Support Project for the Strategic Plan for the Transformation of Agriculture—PAPSTA) and co-financed by IFAD. However, there is resistance by some smallholder farmers to adopt SRI technologies on their plots.
Rating: High to very high

Policies and national-level factors: The government has shown its support for the project through the national rice policy. It has set rice production as a priority, especially in the valley bottom marshlands. However, the rice sector faces a number of challenges, such as marketing problems and lack of access to both inputs and storage facilities.
Rating: Low to moderate

Y: Wei Wei Integrated Development Project (WWIDP), Kenya

Problem definition: The project aimed at addressing the problem of scarcity of water for crop production, with the objective of mitigating food security problems, as stipulated in national strategy documents. A cost–benefit analysis was conducted, and results were highly in favor of the project.
Rating: High to very high

Choice of commodity/instruments: The project introduced new technology for gravity-fed, overhead irrigation in the area. Farmers were encouraged to grow relevant food crops suitable for the area, including maize, sorghum, green gram, and cow peas.
Rating: High to very high

Suitability of instruments: The project targeted districts (such as West Pokot) that were vulnerable because of unfavorable dry climatic conditions. It used irrigation interventions that have increased crop productivity in other places with similar biophysical conditions. The project was built on local indigenous knowledge and farming practices. Pokot people living in the project area were already accustomed to growing crops using the traditional furrow irrigation system. The project recognized this and invested in improving the irrigation system by constructing a modern gravity-fed pipeline system.
Rating: Low to moderate

Design and timing of implementation: The project seemed to be well designed and implemented in a timely manner. Resources were adequate, and an M&E system was put in place to track project performance. There are several documented case studies regarding this intervention.
Rating: High to very high

Environmental sustainability: Measures to mitigate potential erosion problems that could result from irrigation were put in place. The project introduced an external vegetation windbreak between every four plots. In addition, at the perimeters of the plots natural vegetation was maintained. The project distributed Vetiver grass for planting across most water channels as a means to reduce the speed of water and its erosive capacity. The project was successful in the rejuvenation of vegetation.
Rating: High to very high

Financial sustainability: The gravity-fed irrigation system does not require energy for its operation. Maintenance costs for the system are minimal, and there is relatively less waste from seepage and evaporation, as was the case with the traditional furrows. Farmers have continued to realize consistently improved yields of the crops promoted by the project over the years.
Rating: High to very high

Community participation: Local people were consulted and involved in the implementation of the project right from the beginning. A plot allocation committee was created to ensure fairness in the allocation of plots. The committee consists of project staff, the executive committee of the Wei Wei Farmers Association, the local councilor, and local traditional leaders.
Rating: High to very high

Gender consideration: Not apparent.
Rating: Low to moderate

Complementary investments and partnerships: Partnerships were formed among various actors, including the governments of Kenya and Italy, private companies (seed companies), and local communities (farmers' associations). An integrated approach was used to address multiple constraints.
Rating: High to very high

Capacity building: Farmers were trained on improved soil and water management practices. Training was carried out through farm-level activities, workshops, and seminars. Training materials were also developed and distributed to the beneficiaries.
Rating: High to very high

Organized groups: Farmers formed groups and supported each other by sharing both knowledge on agriculture technologies and marketing information.
Rating: High to very high

Leadership and dedication: The government demonstrated its commitment to make the project sustainable by creating a joint management structure to continue with the project's implementation after the end of the donor support. Local leaders and farmers were very keen to implement the project, and there was strong sense of ownership of the project.
Rating: High to very high

Policies and national-level factors: The project is located in a remote area with recurrent droughts and frequent intertribal and interclan clashes.
Rating: Low to moderate

Source: Authors' evaluation based on Mugova and Mavunga (2000).

TABLE 6A.6 Performance in meeting the overall productivity objective or target

Project name and productivity performance indicators and achievements			
Project: Animal Health Services Rehabilitation Programme (AHSRP)—Kenya			
Target vaccination rate: 75 percent of the herd			
Achieved vaccination rate: 37.5 percent			
% of target achieved: 50 percent			
Overall performance rating: Very poor			

Project: Agriculture Productivity Enhancement Programme (APEP)—Uganda			
	Yield (tons/ha)		
Target crops	**Target**	**Achieved**	**% of target achieved**
Coffee	1.1	1.0	91
Cotton	1.3	0.9	69
Sunflowers	1.8	1.4	78
Rice	1.8	2.8	156
Maize	4.5	3.6	80
Flowers	33.7	28.7	85
Bananas	20.2	24.1	119
Green vanilla beans	0.9	0.72	80
Overall performance rating: Moderate			

Project: Agricultural Sector Development Programme (ASDP-irrigation)—Tanzania			
Performance indicators	**Target**	**Achieved**	**% of target achieved**
Irrigation schemes to rehabilitate	1,520	1,325	87.2
Irrigated area	380,000 ha	363,514 ha	95.7
Rice yield	6 tons/ha	5 tons/ha	83.3
Overall performance rating: Moderate			

Project: Cassava Enterprise Development Project (CEDP)—Nigeria
Target crop: Cassava
Target yield: 25.0 tons/ha
Achieved yield: 27.2 tons/ha
% of target achieved: 109 percent
Overall performance rating: Good

Project: Conservation Agriculture Project 1 (CAP1)— Zambia

Target crop: Maize

Target yield: 5.0 tons/ha (target is based on Conservation Farming Unit, 2007)

Achieved yield (average for all conservation agriculture approaches): 3.3 tons/ha

% of target achieved: 57 percent

Overall performance rating: Poor

Project: Crop Crisis Control Programme (C3P)—Kenya, Uganda, Tanzania, Rwanda, Burundi, and DRC.
Target crops: Cassava and banana

Performance indicators	Target	Achieved	% of target achieved
Area planted with disease-resistant crops (ha)	542	697	128.6
Number of farmers trained	6,000	47,631	793.9
Number of extensionists participating in training	310	1,000	322.6

Overall performance rating: Good

Project: East Africa Dairy Development Project (EADD)—Kenya, Uganda, and Rwanda
Target (objective): Increased milk production

	Production (liters/day)		
Project countries	Target*	Achieved	% of target achieved
Kenya	7.2	5.5	77
Rwanda	8.2	6.3	77
Uganda	6.3	4.9	77

*Target is based on EADD phase II target of doubling baseline milk production.

Overall performance rating: Moderate

Project: FARM Africa Dairy Goat Improvement Project (FADGIP)—Meru, Kenya

Baseline milk yield: 0.2–1.0 liters/day (local goat breeds)

Target yield: 3.0 liters/animal/day

Achieved yield: 2.9 liters/animal/day

% of target achieved: 96 percent

Overall performance rating: Moderate

Project: Farm Input Subsidy Program (FISBP)—Malawi

Target crop: Maize

Target yield: 3.0 tons/ha (computed as baseline yield of 1.3 tons/ha * 2.3)

Achieved yield: 2.7 tons/ha

% of target achieved: 90 percent

Overall performance rating: Moderate

(continued)

TABLE 6A.6 (continued)

Project: Farmer Input Support Program (FISPP)—Zambia
Target crop: Maize
Target yield: 3.3 tons/ha (computed as baseline yield of 1.44 tons/ha × 2.3)
Achieved yield: 2.24 tons/ha
% of target achieved: 68 percent
Overall performance rating: Poor
Project: Fodder Trees and Shrubs Project (FTSP)—Kenya, Rwanda, Tanzania, and Uganda
Objective: Increase milk yield
Target yield: 4 liters/animal/day (computed by doubling the milk baseline yield of 2 liters/animal/day)
Achieved yield: 3.5 liters/animal/day
% of target achieved: 88 percent
Overall performance rating: Moderate
Project: Fuve Panganai Irrigation Scheme (FPIS)—Zimbabwe
Target crop: Rice
Target yield: 6.0 tons/ha
Achieved yield: 1.6 tons/ha
% of target achieved: 27 percent
Overall performance rating: Very poor
Project: Kaleya Irrigation Project (KIP)—Zambia
Target crop: Sugarcane
Target yield: 100 tons/ha
Achieved yield: 110–115 tons/ha
% of target achieved: 110–115 percent
Overall performance rating: Good
Project: Kenya Dairy Development Programme (KDDP)—Kenya
Target product: Milk
Target: 40 percent increase in milk productivity
Achieved yield: 19 percent increase in milk productivity on average for all participants
% of target achieved: 48 percent
Overall performance rating: Very poor

Project: National Agricultural Advisory Services (NAADS) Phase 1—Uganda
Target (objectives): Increase access to agricultural advisory services, adoption of agricultural technologies, and yields

	NAADS		Non-NAADS	
Target crops	Yield in 2004 (kg)	% change 2000–2004	Yield in 2004 (kg)	% change 2000–2004
Groundnuts	426	**57**	433	**–0.6**
Maize	669	**64**	835	**27.3**
Bananas	5,942	**–5**	3,323	**55.3**
Sorghum	449	**77**	389	**34.8**
Sweet potatoes	1,761	**18**	1,392	**7.3**
Cassava	1,244	**46**	4,340	**–9.4**
Beans	572	**62**	721	**17.2**
Coffee	516	**–28**	2,090	**81.3**
Irish potatoes	1,003	**260**	1,369	**285.4**

Based on Benin et al. (2007). Difference-in-differences—that is, using columns in bold—was applied to calculate differences in percentage change.

Overall performance rating: Moderate

Project: National Agricultural Extension Intervention Program (NAEIP)—Ethiopia
Target (objective): Increased yield of maize, teff, wheat, and sorghum

	Yield (tons/ha)		
Target crops	Non-NAEIP	NAEIP farmers	% difference
Maize	1.9	2.9	52.6
Teff	0.9	1.1	22.2
Wheat	1.4	1.9	35.7
Sorghum	1.5	1.9	26.7

Based on World Bank (2007).

Overall performance rating: Very poor

Project: New Rice for Africa (NERICA)—Uganda

Target crop: Upland rice

Target yield: 3.30 tons/ha (based on Uganda rice strategy)

Achieved yield: 2.85 tons/ha

% of target achieved: 86 percent

Overall performance rating: Moderate

(continued)

TABLE 6A.6 (continued)

Project: Operation *Mwolyo* Out (OMO)—Kenya

Target crop: Maize

Target yield: 3.0 tons/ha (based on baseline yield of 1.3 tons/ha × 2.3)

Achieved yield: 5.4 tons/ha under irrigated conditions

% of target achieved: 180 percent

Overall performance rating: Very good

Project: Participatory Irrigation Development Programme (PIDP)—Tanzania

Target yield: 4 tons/ha

Achieved yield: 2 tons/ha

% of target achieved: 50 percent

Overall performance rating: Poor

Project: Push–Pull Technology (PPT)—Kenya, Tanzania, Uganda, and Ethiopia
Target crops: Maize and sorghum

	Yield (tons/ha)			
Target crops	Baseline	Target	Achieved	% of target achieved
Maize	1.5	3.0	6.0	200
Sorghum	1.0	2.5	3.0	120

Overall performance rating: Very good

Project: Regional Land Management Unit (RELMA), water harvesting component—Eritrea, Ethiopia, Kenya, Tanzania, Uganda, and Zambia

Target yield: 2.30 tons/ha (based on baseline yield of 1.0 ton/ha × 2.3)

Achieved yield: 1.97 tons/ha

% of target achieved: 86 percent

Overall performance rating: Moderate

Project: Sasakawa Global 2000 Agricultural Program (SG2000-AP)—Ghana, Sudan, Tanzania, Benin, Togo, Mozambique, Eritrea, Guinea, Burkina Faso, Malawi, Mali, Nigeria, Ethiopia, and Uganda

Objective: Increased cereals yields

Target yield: 2.3 tons/ha (based on baseline yield of 1.0 ton/ha × 2.3 for Uganda)

Achieved yield: 4.0 tons/ha

% of target achieved: 174 percent

Overall performance rating: Very good

Project: Specialty Coffee Program (SCP)—Rwanda
Target: 57.6 percent fully washed coffee by 2012
Achieved: 30.0 percent fully washed in 2012
% of target achieved: 52 percent
Overall performance rating: Poor

Project: System of Rice Intensification (SRI)—Rwanda
Target yield: 7 tons/ha (based on the target of the Government of Rwanda's National Rice Development Strategy)
Achieved yield: 7.5 tons/ha
% of target achieved: 107 percent
Overall performance rating: Good

Project: Wei Wei Integrated Development Project (WWIDP)—Kenya
Target crops: Maize and sorghum as the main crops

	Yield (tons/ha)			
Target crops	Baseline	Target	Achieved	% of target achieved
Maize	1.5	3.00	4.93	164.3
Sorghum	0.5	1.25	4.40	352.0
Overall performance rating: Very good				

Source: Authors' compilation from literature review, project documents, and expert consultations. (Table 6A.1 contains details on each project.)

Notes: Overall productivity performance rating: very poor = less than 50% of target achieved; poor = 50.0–74.9% of target achieved; moderate = 75.0–99.9% of target achieved; good = 100.0–149.9% of target achieved; and very good = 150% or more of target achieved.

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