



USAID
FROM THE AMERICAN PEOPLE

POLICY BRIEF

IMPACTS OF USAID-SUPPORTED AGRICULTURAL PROGRAMS

PROGRAMMATIC LESSONS LEARNED

James F. Oehmke, Dave D. Weatherspoon, Charles B. Moss, and Athur Mabiso

INTRODUCTION

In 2010, the Agency commissioned studies assessing the impact of the following Initiative to End Hunger in Africa and Global Food Security Response projects.

- East Africa Regional (intra-regional maize trade facilitation activities); Regional Agricultural Trade Expansions Support (RATES) and Competitiveness and Trade Expansion (COMPETE) programs
- Ethiopia (food and income support activities): Productive Safety Nets Programme (PSNP) and Household Asset Building Program (HABP)
- Ghana (pineapple and mango value-chain enhancement activities):
 - Trade and Investment Program for a Competitive Export Economy (TIPCEE)
 - Kenya (dairy production and value-chain development activities): Kenya Dairy Development Program (KDDP) and Kenya Dairy Sector Competitiveness Program (KDSCP)
 - Kenya (horticulture production and value chain development activities): Kenya Horticulture Development Program (KHDP)
 - Kenya (maize production and value chain development activities): Kenya Maize Development Program (KMDP)
 - Rwanda (coffee value-chain development activities): Partnership for

Enhancing Agriculture in Rwanda through Linkages (PEARL I & II) and Sustainable Partnership to Enhance Rural Enterprise and Agribusiness (SPREAD)

The studies were conducted by the Regional Strategic Analysis and Knowledge Support System and the Tegemeo Institute for Agricultural Policy and Development (East Africa study); the International Food Policy Research Institute (Ethiopia study); the Monitoring, Evaluation, and Technical Support Services Unit of the University of Cape Coast, Ghana (Ghana studies); the Tegemeo Institute (Kenya studies); and the National University of Rwanda (Rwanda study). The projects were selected on the basis of mission interest, likely data

JANUARY 2012

This publication was produced for review by the United States Agency for International Development. It was prepared with help from the Communications Division of the International Food Policy Research Institute.

availability, and indications of project success or lessons learned. There was a deliberate effort to examine likely success stories that might be scaled up under Feed the Future (FTF) and to examine key steps in the causal pathways from project activity to poverty reduction.

The objectives of the impact studies were:

1. To quantify the effect of USAID-supported projects on smallholder income and poverty status or child nutritional status;
2. To provide empirical validation or falsification of the causal pathways from intervention to poverty reduction, by which the projects operate; and
3. To learn lessons about what has made the projects most successful in augmenting smallholder income, particularly with respect to new activities to be funded under FTF.

The impact studies (listed in the bibliography) used quasi-experimental modeling methods with difference-in-differences based attribution of impact to USAID-supported projects. The Ghana studies were exceptions due to insufficient baseline data; they relied on changes in gross margins over time (pineapple) and livelihood descriptions (mango). Statistical specifics depend on the specific data used in the individual studies. Studies also used complementary methods to address questions posed by USAID missions related to their FTF programming needs.

To select preliminary lessons learned, the authors reviewed the impact studies and the evaluation literature related to these projects. Preliminary lessons were presented to a panel of five USAID experts for comment and review, and a follow-up working session was hosted by the International Food Policy Research Institute (IFPRI). This brief summarizes the lessons that emerged. Two companion briefs describe the cost-effectiveness of these USAID projects and methodological lessons learned. Detailed information is also available in the individual impact studies.

LESSONS LEARNED

USAID agricultural programs have had significant impacts. The impact studies quantify positive impact for every program examined in at least one of three indicators: quantitative increases in smallholder incomes, qualitatively improved livelihoods, and reduced poverty. The impacts include reductions in the food gap (defined as the number of months spent with insufficient food) in Ethiopia; increased smallholder incomes in Ghana, Kenya, and Rwanda; improved livelihoods in Ethiopia, Ghana, and Rwanda; and lower consumer prices for maize associated with increased intraregional maize trade in East Africa. A summary of impact results is available in *The Impacts of USAID-Supported Agricultural Programs: Household Income Growth and Cost-Effectiveness for Poverty Reduction*, a companion policy brief.

Some activities focused explicitly on generating impact: their objectives were specified in terms of income generation or nutritional improvement. The two activities with the largest impact on poverty reduction—Kenya dairy and Rwanda coffee—were explicitly concerned with increasing smallholder incomes. The activity that was least successful—Ghana pineapple—was primarily concerned with increasing pineapple exports and viewed any poverty reduction that occurred as a bonus. The literature review indicated that few projects had an evaluation plan in place to quantify impact on poverty or hunger reduction; this is unsurprising as few projects were asked to report on any indicator at a higher level than gross margins.

Recommendation: FTF projects should have explicit links to poverty or hunger reduction or both. This can be achieved by using explicitly stated and quantifiable targets or by evaluating the relationships among a project's activities, targets, and impacts using causal pathways or logical frameworks.

USAID programs can reduce poverty cost-effectively. Cost-effectiveness was quantified as the cost per individual emerging from poverty. The Rwanda coffee and Kenya dairy projects were cost-effective relative to a benchmark and relative to a standard

for comparison against other projects. (See *The Impacts of USAID-Supported Agricultural Programs: Household Income Growth and Cost-Effectiveness for Poverty Reduction*, a companion brief.) The Ghana pineapple activity, however, was not cost-effective. Additional cost-effectiveness analyses are currently in progress.

Recommendations: Cost-effectiveness analysis should be required of impact assessment for USAID programs that explicitly target poverty reduction, as a component of a larger set of indicators measuring a project's overall effectiveness. Cost-effectiveness is a critical measure of project impact. However, there is concern that poverty indicators and target populations may be too narrowly defined and subject to cherry picking. Neglecting those individuals who are substantially below the poverty line (and thus unlikely to emerge from poverty in the near future) and those just above the poverty line but still vulnerable reduces program costs, thereby raising the program's measured cost-effectiveness. However, such over-specific targeting may be inimical to broad-based income growth and sustainable poverty reduction.

Increasing smallholder asset value—by improving physical and value productivity as well as asset accumulation—leads to increased smallholder incomes. This lesson provides a number of sub-lessons.

- Changes in the value chain are not accomplished quickly. It takes time to introduce and accept innovation and change, accumulate assets, and establish trusting relationships between buyers and sellers. The highly successful Rwanda coffee activities had much larger impacts in their second five-year phase.
- In Africa, it is critical but difficult to increase smallholder physical productivity (that is, to increase yields). While increased yields were reported in a variety of projects, the increases were small even in the successful Kenya dairy and Rwanda coffee projects. Shifting to a high-value crop may not be sustainable without continued productivity increases, as was the case with the shift to premium coffee in Rwanda.

But based on the evaluation literature, the Uganda Private Sector Dairy Development Project successfully raised milk yields by significant amounts and reported important increases in income.

- Increasing smallholder value productivity can be accomplished by linking smallholders with value chains, introducing smallholders to new or differentiated crops linked to premium value chains, and improving value-chain efficiency. Increasing value productivity appears both as increased revenue per unit of land and increased net farm income per household. Examples include the premium Rwanda coffee value chain, the improved Kenya dairy value chain, the Kenya horticultural value chain, and the Ghanaian mango value chain. Value chains are also important for staple foods: the evaluation literature provides evidence that improvements in the Kenya maize value chain have led to increased farm prices and decreased consumer prices by shrinking the marketing margin.
- The most effective projects combine (a) yield and quality increases with (b) improved linkages to value chains and (c) increased value-chain efficiency. The Rwanda coffee and Kenya dairy projects are good examples. Increasing asset value productivity can lead to physical accumulation of the asset. This is best exemplified in the Rwanda smallholder transition from divestment of coffee trees prior to the USAID projects to accumulation of coffee trees following changes throughout the value chain that increased the value of premium coffee and therefore made coffee trees more productive in value terms. Smallholder assets include human capital; physical capital, which includes farm implements even if only hand tools; land, which can be made more productive with amendments, water retention structures, or other methods; trees; and animals. In Ethiopia, there is evidence of decreasing asset productivity due to drought and asset disinvestment.
- Producer groups can help link smallholders to value chains by aggregating product to the necessary quantity; they

can also help improve product quality and consistency and establish relationships with other participants in the value chain. Rwanda coffee producer groups provide a positive example.

- Smallholder relationships with input suppliers and output buyers facilitate smallholders' accumulation of value-chain-specific assets. Producer groups and community organizations can be effective means of acquiring lumpy capital serving multiple smallholders, whether this is physical capital—such as coffee washing stations in Rwanda—or institutional capital—such as contracts and relationships with intraregional or international buyers exemplified by Ghana mango and pineapple exports.
- Success is not guaranteed. External influences can affect project success. For example, in the European fresh pineapple market, the lack of adoption of the cayenne variety grown in Ghana negated most of the pineapple activity's impact throughout the country. Although the projects selected for this set of impact assessment studies influenced higher-level goals such as household income, there are examples in the evaluation literature of projects that had no significant impact on household income.

Recommendations: Programs should seek to increase physical and value productivity of smallholder assets by increasing on-farm productivity, linking smallholders to value chains, and improving the efficiency of value chains.

Improved asset value helps build smallholder resilience. Smallholders with greater asset bases are more resilient to negative shocks. Assets that help build resiliency include agricultural assets such as land and livestock, human capital, household assets, and assets used in non-agricultural business or income-generating opportunities. Qualitative livelihoods results from Ethiopia, Ghana, and Rwanda support this lesson, but there is little empirical quantification of resilience or project effects on resilience in either the impact assessments or the evaluation literature.

Recommendations: Direct analysis should be conducted to investigate in more detail the relationships among smallholder asset structure, resilience to negative shocks, and sustainable emergence from poverty.

Continued improvements are necessary throughout any value chain.

Investing in a value chain means investing to improve efficiency at every node of the chain and in the linkages between nodes. Projects that focus on only one node of a value chain are less likely to have a high level of impact. The Rwanda coffee, Ghana mango, and Kenya dairy projects all focused on addressing constraints at every level of the value chain. Value is ultimately added at every level because the suppliers provide appropriate inputs to meet the demands of a differentiated high-value market. A linked-in smallholder can benefit from an effective value chain, which can facilitate the flow of knowledge about consumer demands and willingness to pay for quality; market reactions to consumer demand as stated by grades, standards, and certifications; and the farmer's own contributions to meeting consumer demand. Appropriate smallholder and intermediary reactions to information signals build trust between parties. In the Rwanda, Ghana, and Kenya projects, USAID played the critical role of the trusted intermediary, which helped the smallholders consistently supply product that met consumer and buyer needs. For example, in Rwanda, USAID enticed international coffee buyers to travel to Rwanda for a coffee-cupping exercise that demonstrated product quality. The Agency also gave assurances to the producers that if they upgraded their coffee quality, a premium would be paid for their product—and it was. However, there are always new challenges to be met and further efficiencies to be gained, so continued improvement in any value chain is critical.

Recommendation: USAID projects should include components that link smallholders to value chains and build mutual trust between smallholders and other value-chain participants by providing quality assurances to buyers and price assurances (not subsidies) to smallholders.

Within the context of investing in value chains, the following sub-lessons and corresponding recommendations emerged.

- Picking value-chain winners is nearly impossible a priori. Value chains are diverse in their market structures, market niches, quality requirements, economies-of-scale versus returns-to-specialization, asset requirements, and asset availability. In Ghana, the European fresh pineapple represented TIPCEE's most promising value chain at project initiation. Following a shift in European consumer demand to gold pineapples, an independent evaluation still predicted success in the fresh gold pineapple value chain. Ultimately Ghana could not compete in this value chain, but neither the consumer shift nor the competitiveness issue could have been known at the time of project origination. In comparison, the Rwanda coffee project benefitted from increasing coffee prices during the past decade, although that too was difficult to predict at the outset.

Recommendations: Projects may not want to limit activities to a single “sure thing” value chain. Pre-investment studies can provide additional information on the likely success of investing in the selected value chains, but there are no guarantees.

- Value-chain investing works best in the context of public–private partnerships or relationships. Public sector investments, however, can induce private sector investment (for example, the case of washing stations in Rwanda) and foster relationship capital with preferred buyers domestically and internationally. The private-sector investment threshold levels for each value chain are complex and different.

Recommendation: Projects should continuously review the role the private sector is playing, and could play, in the value chain.

- Smallholder risk is often greater in quality-based value chains. High-value commodities have higher input costs, often including inputs owned by smallholders, so more is at stake. Highly perishable crops may have additional risks. Smallholders also face

“innovation risks,” that is risks associated with adopting a new and (to the smallholder) unknown crop. Crop-specific assets required for smallholders to access high-quality value chains may have higher risks associated with them. Consumer demand may change or other factors, including smallholder quality premiums, may reduce prices received.

Recommendation: Projects should examine ways to reduce smallholder risk in quality-based value chains.

- Little is known about the sustainability of value chains in a development-project context. Project evaluations typically take place shortly after the conclusion of the project, which is too soon to understand sustainability. In the case of Ghanaian mango in the poorer districts, it is expected that the largest smallholder income effects will be felt three or more years after the cessation of the project and are not captured in any project evaluation.

Recommendation: USAID should commission one to three retrospective value-chain studies to determine what has made successful value-chain investing sustainable and what the impacts were on smallholders.

- Credit markets are still problematic in value chains. In export value chains the traditional collateral-based credit approach limits smallholder options, and banks are often reluctant to accept agricultural assets as collateral, as was the case in the early development of the Rwanda coffee value chain. Export-oriented products in some instances can be used to secure international financing. Offering credit through smallholder cooperatives or producer groups may be a viable alternative, but there is little impact-assessment information related to this option. Private-sector buyers who enter into contracts with smallholders will sometimes provide input credit, especially if the input affects product quality (as is the case with Rwandan coffee). In staple value chains the same problems exist. USAID has invested in warehousing systems in order to provide a combined product/contract

type of collateral for smallholder groups, but there is no information in the evaluations or evaluation literature providing empirical quantification on smallholder incomes. Credit in both export and staple-crop systems is usually expected to be paid back at harvest, making it difficult for smallholders to make long-run sustainability or productivity investments. The working hypothesis is that value-chain projects that leverage private-partner relationships to secure long-term credit (multiple production cycles) have a greater likelihood of building a sustainable value chain.

Recommendation: The hypothesis that contractual relationships and availability of long-term credit increase value-chain sustainability should be validated in the field.

Generating and evaluating smallholder transformation requires new and innovative thinking. FTF is essentially an investment in smallholder agricultural transformation that enables smallholders and rural households to emerge sustainably from poverty. This is very different from traditional agricultural transformation with its reliance on increasing farm size to increase rural incomes and rural–urban migration of the poorest. Success in generating smallholder agricultural transformation necessitates innovative approaches to programming and impact assessment.

Impact assessment relevant to smallholder agricultural transformation goes beyond quantifying poverty reduction to empirical elucidation of both the pathways rural smallholders take to emerge from poverty and a project's influence in moving smallholders along these paths. Examples of such paths may be agricultural specialization in specific crops or livestock, agricultural diversification into new or high-value crops, increased rural nonfarm employment earnings, or expansion into nonagricultural business and income-generating opportunities. The existing knowledge base is insufficient to ascertain which pathways and income-generating opportunities are most appropriate in which circumstances.

Recommendation: Future impact studies should pay greater attention to understanding which income-generating opportunities smallholders invest in as they emerge from poverty and why smallholders select those particular pathways to increased income.

It is important to be proactive in understanding the societal objectives for which today's projects will be held accountable in five years.

Five years ago, few projects collected sample baseline data on income, poverty, or child nutrition because they were not asked to provide rigorous quantification of impact on these specific outcomes. In some cases, such as the TIPCEE pineapple activity, poverty reduction was considered a bonus but not a primary goal. Even in Kenya, with a proactive plan and a dedicated independent survey program to quantify the effects of USAID-supported agricultural programs on smallholder incomes, data comprehensiveness was not as good as is currently desired and better foreknowledge likely would have changed sampling frames and sizes.

Five years from now, the global development discussion may be asking whether investments in agriculture can have a positive effect on more than just poverty and child nutrition, potentially improving issues addressed in other Millennium Development Goals, including women's status, maternal health, state stability, perceptions of the United States, or contributions to US interests abroad, including increased foreign purchases of US products. These will be undertaken in an era of increasing concern about global climate change. Obviously the current studies provide no direct evidence on the future; however, there is an emerging literature suggesting that agricultural development is inexpensive in large portions of the world and may have impact on a broad range of US international interests. Moreover, lessons of the past do suggest that project effectiveness metrics are dynamic, especially when previously unrecorded impacts are measured. Even with credible commitment on the part of the US government to evaluate projects based only on pre-approved metrics and with commitment by implementing partners to provide credible empirical

evidence of impact using these metrics, both the government and its partners have an incentive to provide quantifiable information on additional impacts of those projects that appear to have more far-reaching successes. It is the authors' subjective opinion that the introduction of such information into strategic discussions about the role and direction of government investments in foreign development is appropriate and valuable. Credible quantification, however, requires forethought and planning from the onset of funding increases and project initiation or expansion.

Recommendations: FTF managers, decisionmakers, and implementing partners should provide greater clarity about the role and use of empirical, quantitative impact assessment in project evaluation. It is also recommended that they be proactive in selecting one to three projects to provide credible information on whether those projects might have impacts beyond poverty and nutrition, and that this selection is made quickly enough to gather reliable baseline data.

BIBLIOGRAPHY OF IMPACT ASSESSMENT STUDIES

East Africa

Guthiga, Paul, Stephen Wambugu, Maurice Ogada, Stella Massawe, Joseph Karugia, Hikuepi Katjiuongua, and James F. Oehmke. *An Assessment of the Impact of Cross-Border Trade in Maize on Welfare in the East African Region*. Washington, DC: USAID, 2011.

Ethiopia

Berhane, Guush, John Hoddinott, Neha Kumar, and Alemayehu Seyoum Tefesse. *The Impact of Ethiopia's Productive Safety Nets and Household Asset Building Programme: 2006–2010*. Washington, DC: International Food Policy Research Institute, 2011.

Ghana

Mensah, Albert O. *Mango Farmers Benefit from the Trade and Investment Program for a Competitive Export Economy (TIPCEE) Project*. Cape Coast, Ghana: University of Cape Coast, 2011.

Kenya

Oehmke, James F., Thomas S. Jayne, Sarma B. Aralas, and Mary K. Mathenge. *Impacts of USAID/Kenya Supported Agricultural Productivity Interventions on Household Income and Poverty Reduction*. Working Paper 38. Nairobi, Kenya: Tegemeo Institute of Agricultural Policy and Development, 2010.

Smale, Melinda, Mary K. Mathenge, Thomas S. Jayne, Eduardo Magalhaes, John Olwande, Lilian Kirimi, Mercy Kamau, and James Githuku. *Income and Poverty Impacts of USAID-Funded Programs to Promote Maize, Horticulture and Dairy Enterprises in Kenya, 2004–2010*. Nairobi, Kenya: Tegemeo Institute of Agricultural Policy and Development and Michigan State University, forthcoming.

Rwanda

Bihogo, Etienne, Dave D. Weatherspoon, and James F. Oehmke. *The Impact of PEARL and SPREAD Projects on the Development of the Rwandan Coffee Sector*. Kigali, Rwanda: USAID, 2011.

Moss, Charles B., James F. Oehmke, and Alexandre Lyambabaje. *An Economic Evaluation of SPREAD Impact on Rwanda's Rural Population*. Kigali, Rwanda: USAID, forthcoming.

Oehmke, James F., Alexandre Lyambabaje, Etienne Bihogo, Charles B. Moss, Jean Claude Kayisinga, and Dave D. Weatherspoon. *The Impact of USAID Investment on Sustainable Poverty Reduction among Rwandan Smallholder Coffee Producers: A Synthesis of Findings*. Kigali, Rwanda: USAID, 2011.

Literature

Katjiuongua, Hikuepi. *A Review of Evaluated Projects*. Washington, DC: USAID, 2011.

James F. Oehmke is an economic consultant based in East Lansing, Michigan. **Dave D. Weatherspoon** is a professor in the Agricultural, Food, and Resource Economics Department of Michigan State University. **Charles B. Moss** is a professor in the Department of Food and Resource Economics at the University of Florida, Gainesville. **Athur Mabiso** is a postdoctoral fellow in the Development Strategy and Governance Division of the International Food Policy Research Institute, Washington, DC. For questions and comments, please contact James F. Oehmke at oehmkej@gmail.com or via www.jfoehmke.com.

The authors would like to thank the large number of individuals who helped conduct the individual impact studies, and Juan Belt, Ron Greenberg, Jeff Hill, Susan Thompson, and Jerome Wolgin for useful comments and discussion.

The views expressed herein are those of the authors and do not necessarily represent the views of host institutions, IFPRI, USAID, or the Government of the United States. The responsibility for all errors remains with the authors.

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
Tel: (202) 712-0000
Fax: (202) 216-3524
www.usaid.gov