



TEGEMEO INSTITUTE

Policy Brief

Impacts of USAID-Funded Programs on Smallholder Income in Kenya

M. Smale, M. K. Mathenge, T.S. Jayne, E. Magalhaes, J. Olwande, L. Kirimi, M. Kamau, and J. Githuku

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SUMMARY: *Over the last decade, the United States Agency for International Development has funded programs to promote maize, dairy and horticulture enterprises, with the objective of increasing household income, among smallholder farmers in Kenya. This study applied econometric and statistical methods on household survey data to provide evidence of the quantitative impact of the three programs on the income of program participants. Results reveal strong statistical evidence to suggest that from 2004 to 2010, the programs positively affected smallholder income, when compared to non-participants in the program areas, and to a broader sample of households some of which are outside the program areas. Small sample sizes weaken the statistical reliability of tests on impacts of individual programs, although the signs of the impacts are positive among all three. As Kenya's agricultural economy diversifies and develops, we intend to further investigate the finding that programs enhance household capacity to earn income from non-farm activities.*

BACKGROUND: Since 2002, the United States Agency for International Development (USAID) has funded programs to promote maize, dairy and horticulture enterprises, with the objective of increasing household income, among smallholder farmers in Kenya.

The maize program began in late 2002, with the objectives of improving maize productivity, enhancing access to business support services, increasing participation in markets and trade, and strengthening the effectiveness of smallholder organizations. The program incorporates a business development services paradigm that emphasizes non-financial services in the maize value chain. To improve the timeliness and accuracy of market information, the maize program established a network of Market Information Centers (MIC) that serves as locations for prices and trade information within local and regional markets. The program conducts practical on-farm training through using demonstration plots, and provides business skills training for farmer organization leaders and their members.

The horticulture program was established in October 2003 with the aim of supporting development of fresh and processed food sector. The program's

activities have focused on marketing, postharvest handling, processing and agronomic assistance to smallholders and allied agribusinesses. A wide range of fresh and processed products are addressed under the program, including fruits, spices, flowers, tree crops, and local market vegetables.

The dairy program was initiated in October 2002. Its goal was to raise the economic benefits earned by stakeholders in the dairy value chain and bolster rural household incomes.

OBJECTIVES: This study aimed to provide a comprehensive, statistical evidence of the quantitative impact of the three programs on the income of program participants. The study is intended to complement in-depth, internal assessments conducted by the programs themselves, and other Tegemeo reports that monitored progress in key indicators.

DATA AND METHODS: On behalf of USAID, Tegemeo Institute conducted household surveys to track progress in 2004, 2006, 2008, and 2010. The sample comprises a) households participating in the program (direct beneficiaries), b) households in the same villages as beneficiaries but did not participate in the program (indirect beneficiaries), and c) households in other villages in the same

area but did not participate in the program (control group). An econometric approach was used to isolate the impacts of program on participants as compared to non-participants by controlling statistically for differences in their initial conditions in the base year (2000), and changes in other factors that influence income, such as the composition of the household, headship, education, farmland owned, distance to market, agro-regional zone, and annual variations in farming conditions due to weather, or unexpected events. To test the robustness of findings and their generalizability outside of immediate program areas, data from a nationally representative panel household survey by the Tegemeo Institute were also used as a comparison group (counterfactual). Very large and very small values (outliers) were excluded from the analysis.

MAIN FINDINGS: Using 2004 as the baseline, the maize, horticulture and dairy programs significantly improved incomes of households targeted by the programs in the subsequent years; by an average of KES 74,414 in 2006; KES 125,320 in 2008; and KES 124,071 in 2010. Significant impacts pertain not only when comparing beneficiary households to non-beneficiary households selected for the study, but also when comparing the beneficiary households to the Tegemeo's nationally representative sample of households. There were also significant average impacts on households that benefited indirectly from programs in the same

community, suggesting effects of program on the local economy (Table 1). Other factors that contributed strongly to improving income include the education of the household head and the extent of farm land owned.

The programs had significant impact on off-farm income of beneficiary households in 2010 (an average increase by KES 77, 207 compared to non-beneficiaries), suggesting that the programs may have improved the capacity of program participants to generate income from non-farm sources. The data support this finding both locally and nationally.

There were limitations in analyzing individual program impacts due to small sample sizes. Nonetheless, we found that the maize program had significant impact on maize production and value of maize sales in 2006 (by an average increase of 1,374 kg and KES 26, 884, respectively); the horticulture program had significant impact on value of horticultural sales, particularly in 2010 (by an average increase of KES 28, 113), and net household income (by an average increase of KES 68, 247 in 2006; and KES 104, 571 in 2010); and the dairy program had significant impact on value of net livestock income in 2006 (average increase of KES 45,158), 2008 (average increase of KES 54,737), and 2010 (average increase of KES 71,114), and net household total income in 2010 (average increase of KES 164,744), when comparing beneficiaries to non-beneficiaries.

Table 1: Impact on smallholder income of USAID-funded maize, horticulture and dairy programs

	Year	Annual income, KES 1000	
		Direct beneficiary	Indirect beneficiary
Local comparison	2006	74.4	16.3
	2008	125.3	91.8
	2010	124.0	162.7
National comparison	2010	75.7	166.5
All Beneficiaries			
National adjusted for outliers	2010	118.9	

Note: Base year=2004 and income is in nominal terms

References for more information:

Smale, M., M. K. Mathenge, T.S. Jayne, E. Magalhaes, J. Olwande, L. Kirimi, M. Kamau, and J. Githuku, 2012. Income and poverty impacts of USAID-funded programs to promote maize, horticulture and dairy enterprises in Kenya, 2004-2010. MSU International Development Working Paper 122, Department of Agricultural, Food and Resource Economics, Michigan State University, East Lansing

Oehmke, J.F, C. Moss, J. Hoddinott, M. Smale, A. Mabiso and N. Kumar, 2011. The Impacts of USAID-Supported Agricultural Programs: Methodological Lessons Learned. Prepared for USAID/AFR/SD and USAID/BFS, October 11

Oehmke, J.F., 2012. Agricultural Policy Impacts in Kenya: A Synthesis of Findings. Policy Brief prepared for USAID

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*Smale and Jayne are professors of International Development at the Department of Agricultural, Food, and Resource Economics, Michigan State University; Mathenge is director, Tegemeo Institute; Magalhaes is researcher at Datalyze, Inc.; Olwande, Kirimi, and Kamau are research fellows and Githuku is research assistant at Tegemeo Institute.