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Sustaining Development: Results from a Study of Sustainability and Exit Strategies among Development Food Assistance Projects

Kenya Country Study

Jennifer Coates
Elizabeth Kegode
Tina Galante
Alexander Blau

Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, Tufts University

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FANTA
FHI 360
1825 Connecticut Ave., NW
Washington, DC 20009-5721
Tel: 202-884-8000 Fax: 202-884-8432
fantamail@fhi360.org www.fantaproject.org

fhi 360

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Contact Information

Food and Nutrition Technical Assistance III Project (FANTA)
FHI 360
1825 Connecticut Avenue, NW
Washington, DC 20009-5721
T 202-884-8000
F 202-884-8432
fantamail@fhi360.org
www.fantaproject.org

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Any errors are the sole responsibility of the authors.

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Abbreviations and Acronyms

ADRA	Adventist Development and Relief Agency
AIDS	Acquired Immunodeficiency Syndrome
ASAL	arid and semi-arid land
CBO	community-based organization
CBT	community-based trainer
CHW	community health worker
COSAMO	community savings mobilization
DVO	district veterinary officer
EF	extension farmer
FANTA	Food and Nutrition Technical Assistance III Project
FFP	Food for Peace
FFW	food for work
FGD	focus group discussion
FH	Food for the Hungry
GOK	Government of Kenya
HAZ	height-for-age z-score
HIV	human immunodeficiency virus
IPTT	Indicator Performance Tracking Table
km	kilometer(s)
M&E	monitoring and evaluation
MCHN	maternal and child health and nutrition
MOA	Ministry of Agriculture
MOH	Ministry of Health
NGO	nongovernmental organization
NRM	natural resource management
PA	producer association
ppt	percentage point
USAID	U.S. Agency for International Development
W&S	water and sanitation
WASH	water, sanitation, and hygiene
WAZ	weight-for-age z-score
WHO	World Health Organization
WHZ	weight-for-height z-score

Executive Summary

Background

To be effective, development projects must result in lasting change. Projects may meet their objectives by improving economic, health, or social conditions while they are operating, but genuine success is achieved only through sustained change that does not depend on continued external resources. To assess the effectiveness of the U.S. Agency for International Development (USAID) Office of Food for Peace (FFP) development food assistance projects in achieving sustainable impacts after the projects exited their implementation areas, the Tufts University Friedman School of Nutrition Science and Policy, a partner on the USAID-funded Food and Nutrition Technical Assistance III Project (FANTA), conducted a multi-country study of project activities, outcomes, and impacts from 2009 to 2013.

Twelve FFP development projects in four countries (Kenya, Honduras, Bolivia, and India) were included in the study. Funding for these multisectoral projects ended between 2008 and 2009, providing the study team with an opportunity to observe how their activities, outcomes, and impacts evolved over the 2–3 years after the projects exited. In Kenya, the FFP development projects were implemented by three organizations—Adventist Development and Relief Agency (ADRA), CARE, and Food for the Hungry (FH)—in the technical sectors of maternal and child health and nutrition (MCHN), water and sanitation (W&S), agriculture and natural resource management (NRM), livestock, and microfinance.

Objectives

- Determine the extent to which the activities, outcomes, and impacts of FFP development projects were sustained after the withdrawal of FFP funding.
- Identify project and non-project factors that made it possible to sustain project benefits after the projects ended.
- Assess how project design, sustainability plans, the development of exit strategies, and the process of exit affected sustainability.[1]
- Provide guidance to future project implementers and funders regarding how to improve sustainability.

Methods

To understand the implementation of each project's exit strategy and the dynamics of sustainability in the years after the organizations had withdrawn, three rounds of qualitative data collection were implemented about 1 year apart, starting at the time of each project's exit in 2008 and 2009. In particular, the study team conducted key informant interviews and focus group discussions with project participants, as well as with service providers and other stakeholders.

To quantify the extent to which impacts achieved during the project period had been maintained, the study team implemented a quantitative follow-up survey in 2011 that replicated the projects' endline evaluation surveys, comparing indicators of project outputs, outcomes, and impacts at endline with the same indicators at follow-up. The follow-up quantitative survey also included (1) a "participation

[1] This study defines *sustainability plan* as a plan describing those elements of a project that incorporate sustainability concerns and increase the likelihood that project activities, outcomes, and impacts will continue after exit. *Exit strategy* is defined as an operational plan for withdrawing from target communities without jeopardizing progress toward project goals.

module" tailored to each project's activities and sustainability plan to collect information on respondents' participation in project-related activities during and after the project period and (2) a service provider questionnaire to ask each type of community-based resource person/group trained during the project about its level of service delivery during and after the project. Primary data collection was complemented by information from baseline and midterm evaluation reports, as well as from other project documents.

Results

As successive rounds of data collection were implemented, the study team identified three factors that appeared to be critical to sustainability: an ensured source of **resources** to sustain the activities that contribute to sustainable impact, sufficient technical and managerial **capacity** on the part of project participants and service providers to continue implementing activities independent of the projects, and **motivation** on the part of service providers and project participants to continue engaging in these activities post-project. The study team also found that a fourth factor, **linkages** (including vertical linkages, such as from a community health worker to the Ministry of Health, and/or horizontal linkages, such as among local committees), was also essential to consider. Appropriate linkages were important for the sustainability of most technical sector interventions. In addition, the study team found that the process of exit affected sustainability: **gradual exit**, with the opportunity for project participants to operate independently prior to project closure, made it more likely that activities would be continued without project support. The results from each technical sector studied in the FFP development projects in Kenya supported the importance of these factors.

Sustainability was judged in terms of the continuation of service delivery and service use, the adoption of practices promoted by the projects (through service providers), and the maintenance or further improvement of project impacts. One of the key results applicable across the FFP development projects' technical sectors in Kenya was that evidence of impact at the time of project exit did not necessarily predict sustainability 2–3 years later. Although there were some examples of project impacts that were substantial and positive at exit that were maintained or even improved at follow-up, there were more examples of positive impacts at exit that were not sustained and, in some cases, declined to baseline levels or below at follow-up. A synopsis of findings by technical sector for the Kenya study follows.

Maternal and Child Health and Nutrition

During the implementation phase of the projects in the MCHN sector, ADRA and FH trained volunteer community health workers (CHWs) to encourage beneficiary mothers to adopt preventive health, hygiene, and nutrition-related behaviors through regular mothers' group meetings. At monthly growth monitoring sessions, the CHWs distributed recuperative rations to mothers of children found to be growth faltering and emphasized the importance of feeding the full rations to the faltering children. In contrast, CARE trained volunteer CHWs to focus on promoting safe water systems and hygiene practices rather than on primary health and nutrition education. CARE CHWs' services did not include growth monitoring or food ration distributions.

The implicit sustainability strategy for MCHN sector interventions across all three FFP development projects in Kenya was that mothers would be motivated to continue to practice recommended behaviors once they had seen the positive impacts of these practices firsthand. The projects intended to phase over responsibility for CHW oversight and support to local Ministry of Health facilities at the end of the projects, and it was expected that, with this oversight, volunteer CHWs would continue actively reinforcing positive practices after the projects ended.

The sustainability results for this sector's interventions were mixed. The majority of CHWs interviewed during the 2011 follow-up survey (2–3 years post-exit) reported that they continued to serve their communities, although there was a significant decline in the amount of time CHWs from all three projects reported spending on service delivery after the projects ended. Quantitative and qualitative data suggest that the decline in time spent on service delivery following the projects' exit was related to a deterioration in CHW resources (e.g., availability of materials and transportation to perform tasks), capacity (e.g., access to refresher training and new information), motivation (e.g., availability of incentives to encourage continued performance of responsibilities,), and linkages (e.g., connections with the Ministry of Health for supervision and replacement resources) after the projects ended. Declining beneficiary demand for CHW services post-project, once the CHWs had no new information or food rations to offer, further exacerbated this deterioration.

Only a small percentage of CHWs received support from the Ministry of Health during or post-project in Kenya. Linkages to the Ministry were tenuous and had not become fully operational by the end of the projects. As such, fledgling connections that had been made during the projects often dissolved upon project exit. Another reason for the breakdown of this linkage was that the Ministry, still centralized during the FFP project period studied here, lacked the resources (e.g., staffing and finances) and capacity at the local level necessary to take on the CHW oversight role.

While declines in CHW service provision and reduced incentives to use these services (lack of new information and food rations) led to declines in use of these services, use of other services (e.g., taking children to health facilities for treatment of illness and growth monitoring) for children under 5 years of age remained relatively high at follow-up. It should be noted, however, that some of this may be attributable to the presence of other projects that began implementation efforts in the former FFP development project areas, in particular in response to recurrent droughts that impacted the ADRA and FH implementation areas in the intervening years.

Accompanying these declines in service provision was a decrease in associated FFP development project-promoted practices. Sustainability of recommended health practices appeared to depend at least partially on whether external resources were needed to implement them. For example, exclusive breastfeeding of infants up until 6 months of age (essentially a "free" practice) remained prevalent among former participating mothers who had subsequent children, while other infant and young child feeding practices (some of which required accessing specific foods or supplements) showed less sustainable results. Relatedly, follow-up survey results suggest that CARE households, which were not directly impacted by the droughts and which had relatively better access to water, maintained many of the key hygiene behaviors the project had promoted, in particular water purification (the inputs for which were relatively low cost) at follow-up. By contrast, hygiene behaviors in former FH areas, which had scarce levels of water resources and were highly drought-affected, were not well maintained.

The sustainability of the projects' nutrition impacts was also mixed. Child stunting, wasting, and underweight deteriorated from endline to follow-up in former FH project areas. Again these areas were in the midst of a severe drought with commensurate declines in food security at the time of the follow-up study. The findings suggest little lasting resilience from the FFP development project to withstand the drought shock. In contrast, child stunting, wasting, and underweight showed some improvement from the time of project closure to follow-up in CARE areas. Such data was not collected in ADRA project areas.

Water and Sanitation

ADRA, CARE, and FH adopted a similar approach in their W&S sector interventions and sustainability strategies: they formed W&S management committees, trained them in the technical and managerial

maintenance of the water points constructed by the projects, and encouraged them to charge user fees for water consumption. CARE's W&S interventions also trained local artisan groups to build slabs for latrines and water tanks, as well as safe water vessels, for which they received either formal or in-kind payment. FH's W&S interventions included an NRM element, with W&S committees serving a dual role managing the water points and the natural environment around them.

W&S committees were to be formally registered with the Government of Kenya and were to develop constitutions to govern their operations as a means of creating sustainable institutional capacity. In addition, ADRA and FH planned to link the W&S committees to relevant government offices for ongoing training and technical advice following project closure, while CARE assumed that the W&S committees would be technically and managerially self-sufficient following their exit, given the intensive capacity strengthening CARE provided the committees during project implementation. Across all three projects, the expectation was that water user fees would cover committee operating costs and infrastructure maintenance, thereby sustaining the infrastructure investments.

The study's follow-up data indicated that W&S committees continued to deliver services post-project. With few exceptions, W&S committee members reported that the technical and managerial training they received through the FFP development projects in Kenya was sufficient for the committees' continued, independent operation after the projects withdrew. Committee members' motivation was largely sustained through their sense of obligation to the community, given the importance of water resource stewardship in the more arid areas in which most of the projects worked. However, there were reductions in the amount of resources and external assistance available to many of these committees at follow-up. In former ADRA and FH areas, rising salinity levels in the water affected W&S committees' ability to continue to regularly deliver quality services as well as communities' willingness to pay for the poorer supply and quality of the water that was available.

In terms of external assistance, the status of W&S committee linkages with the Government of Kenya varied between the ADRA and FH projects. In ADRA areas, no W&S committees reported receiving support from the government post-project, while in FH areas, linkages with the Ministry of Water remained at roughly project levels at follow-up and linkages with the National Environmental Management Agency increased, given the W&S committees' additional NRM responsibilities.

Across all three projects, W&S committee participation dropped slightly from endline to follow-up. Participation in water-related infrastructure construction and maintenance (e.g., latrines, water points, and handwashing stations) declined significantly post-project, due in part to the continued functioning of existing infrastructure or, in some instances, a lack of service availability (water), resources (time and finances), and capacity (technical know-how) to create new infrastructure or engage in repairs of existing infrastructure.

The sustainability of targeted W&S practices—including use of latrines and improved water sources and payment of water user fees—varied. Latrine access declined in FH areas but was sustained in CARE areas; use of improved water sources was sustained in ADRA and FH areas but decreased in CARE areas; and payment for water from a community source increased in ADRA areas but decreased in CARE areas. However, achievements toward the overall goal of the FFP development projects' W&S interventions in Kenya—to reduce the incidence of diarrhea and morbidity from waterborne infections in children—were broadly sustained at follow-up.

Agriculture and Natural Resource Management

The agriculture and NRM sector interventions of the three FFP development projects in Kenya were designed to increase crop yields, overall agricultural income and, ultimately, food security. ADRA and FH employed similar models to promote the sustainable adoption of the practices needed to achieve these goals, namely training community-based extension farmers to demonstrate to other farmers the feasibility and benefit of applying new technologies to improve yields, post-harvest storage, and marketing. CARE did not explicitly select model farmers, but expected that improved agricultural practices would be organically disseminated from farmer to farmer.

In addition to the diffusion of improved agricultural practices, ADRA's and CARE's agriculture and NRM sector interventions emphasized the creation and strengthening of producer associations and worked to link them with the Ministry of Agriculture for technical assistance. CARE also worked to link producer associations with input suppliers and contract buyers. Farmers were expected to pay dues to sustain producer association activities, under the assumption that the relatively greater profits from cooperative sales would cover these costs and incentivize continued participation.

The three FFP development projects in Kenya also worked to improve NRM (e.g., establishing tree nurseries and terracing) as part of their broader strategy to sustainably increase agricultural production. NRM activities were typically incentivized with project-provided food-for-work rations, although it was assumed that once farmers gained the capacity to maintain these activities, they would be motivated to continue to maintain them without the ration incentive given the benefits from the activity itself. ADRA also identified and trained community-level seed multipliers and tree seedling producers to improve community access to these inputs.

The implicit sustainability pathway across all three projects was that beneficiary farmers who experienced increases in yields and income resulting from these practices would be motivated to continue using them post project. As with CHWs in the MCHN sector, ADRA and FH also assumed that project-trained extension farmers would continue to reinforce recommended practices and disseminate them to new beneficiaries post-project. ADRA instructed its extension farmers to begin charging fees for their services once the project closed, while FH expected its extension farmers to continue this work on a voluntary basis. ADRA's seed multipliers and tree seedling producers were expected to sustain (and motivate) themselves by charging a small fee for their products. ADRA intended to link these producers with the Ministry of Agriculture for continued support post-project.

The post-project success of ADRA's and CARE's producer associations varied widely between and within the two projects. CARE's project participants sustained a high level of participation in the producer associations, while participation in ADRA areas declined. In both cases, farmers reported feeling that participation often yielded fewer benefits relative to individual operation. In addition, unreliable revenue streams and a lack of reliable sources of market information posed constraints to the sustained function of producer associations during the post-project period, particularly in the ADRA areas. Part of the resource challenge for producer associations in ADRA areas may be attributable to the fact that ADRA producer associations received financial support from the project until it ended, whereas CARE used a graduated cost share approach that prepared its producer associations for independent operation. In addition, as previously noted, ADRA areas were impacted by recurrent droughts in the post-project period.

While former ADRA project areas reported receiving no government support post-project, Ministry of Agriculture support to producer associations increased in CARE areas during this period. The difference in these government linkage results appears to have been affected at least in part by how and when the

linkage was created. ADRA included government agricultural officers in trainings and other sector activities in ceremonial, rather than substantive, roles and was less explicit about how it intended the Ministry of Agriculture–producer association relationship to continue post-project, whereas CARE engaged the Ministry of Agriculture and private sector entities throughout its implementation process.

Despite weak linkages with the Ministry of Agriculture, ADRA-trained seed multipliers and seedling producers saw continued consumer willingness to pay for their products post-project, although this demand was negatively affected by recurrent droughts in the former project area. In CARE areas, linkages to other entities, such as suppliers and buyers, decreased, mostly from a lack of producer association resources and capacities to negotiate contracts and meet contractual requirements.

Although use of agricultural services and activities declined post-exit in all project areas, the study showed overall improvements in beneficiaries' use of the improved agricultural practices promoted by the FFP development projects in Kenya at follow-up, although which practices were sustained varied by project. However, despite improvements in yields across the life of the projects and the persistence of many recommended cultivation and NRM practices post-project, yields in ADRA and FH areas declined significantly post-project, likely due at least in part to the droughts that affected these areas during that period. In CARE areas, which were not affected by drought, yields declined for two crops, but were maintained for four others. Following this trend, household food security had improved in CARE areas between the end of the project and the follow-up survey, while it had deteriorated in ADRA areas. A similar indicator was not measured in FH areas.

Livestock

ADRA's and FH's livestock sector interventions were designed to reduce the number of livestock deaths from disease by making veterinarian services more accessible to households with livestock holdings. Both projects shared a common implementation model and sustainability strategy: projects identified community members to serve as community-based animal health workers (paravets); these paravets were trained in business and animal health and provided with kits of essential drugs and basic equipment; and the paravets charged a small fee for their services to cover the cost of supplies and generate a profit sufficient to motivate their continued work. To ensure that the paravets had the technical support and supervision needed to continue to provide quality services after project exit, linkages were made with the Government of Kenya's district veterinary offices. FH also linked its paravets with the management committees of the livestock markets that it developed so that the animal health workers could offer services during market days.

The self-financing paravet model was largely sustained—paravets maintained service delivery after the projects exited and community demand for these services continued. Project-provided training, on-the-job experience, and occasional linkages with the government increased paravets' capacity and confidence, and the fee-for-service model enabled access to needed resources, although paravets in both former project areas noted some resource constraints in the post-project period, particularly those associated with transportation and access to specific tools. The droughts that occurred in these implementation areas post-project had a particular impact on paravets' resource base, as livestock owners lost significant portions of their herds and sometimes defaulted on payments. Despite this, the paravets largely reported continued motivation to engage in their work given the sense of duty to their community to provide these important services and the income they received for these services during non-shock periods. Paravet linkages with the Government of Kenya were mutually beneficial—the government was strapped for resources and could not provide adequate veterinary extension services themselves, while the paravets benefited from access to government technical expertise and equipment. In addition, the government–paravet linkages were established early in the project cycle and ADRA and FH ensured that appropriate government staff

were included in paravet training sessions. In terms of impact, overall, livestock deaths (due to disease) fell among former ADRA and FH households between endline and follow-up.

Microfinance

CARE's FFP development project in Kenya included a community savings mobilization activity (called COSAMO) to give community members access to loans and secure savings that they could use to invest in productive activities. CARE trained existing community-based organizations in all aspects of running a community savings group, including negotiation and conflict resolution related to financial transactions and investments. The community-based organizations were to register with the Government of Kenya and identify a community-based trainer who, once trained by CARE, provided technical support to the savings groups in exchange for a fee. Savings groups were started without external capital; instead, money for the loans came from the required regular savings contributions by group members.

The study found that microfinance activities continued to thrive after CARE's exit, with groups reporting high levels of sustained resources, capacity, motivation, and linkages. In terms of resources, the lack of dependency on outside financing—supported by strong bylaws that prevented default—was identified as a key factor in the sustainability of these groups. Community-based trainers were also able to continue training new groups because of the fee-for-service model they employed. To ensure capacity, CARE implemented an intensive, year-long, graduated training program for each COSAMO group. This training supported the groups in developing strong constitutions and bylaws that included regular rotation of group leadership. In addition, the process of graduated independent operation allowed for incremental independence to facilitate the groups' success. Motivation was also built into this approach, as benefits of participation grew with each financial cycle. As beneficiaries became more astute in their individual businesses, horizontal linkages among COSAMO groups expanded to the point that, in the post-project period, there was an increase in the number of group leaders reporting providing training or support to other COSAMO groups.

The majority of original COSAMO activity participants sustained their participation in group savings and loan activities post-project and the rate of loan-taking increased post-project. COSAMO members' continued use of the group savings and loan services allowed them to make investments that substantially improved their lives, using loans as start-up capital to engage in income-generating activities, make upgrades to homes, pay for children's school fees, and access more diverse diets and health care.

Conclusions and Recommendations

The study findings in Kenya demonstrate that evidence of impact at the time of project exit does not necessarily predict sustained benefit 2–3 years later. All three of the FFP development projects studied in Kenya demonstrated notable improvements in key impact indicators during their project cycle. Some of these achievements were maintained or improved 2–3 years post project, while many others deteriorated between the withdrawal of project support and the follow-up study. Declines were traced to factors including inadequate design and implementation of sustainability strategies and exit processes, as well as external factors such as drought. Relatedly, the study found that focusing only on achieving impact during the project period can compromise the potential for expansion of benefits to individuals not originally reached by the project, as it does not result in the durable systems needed to reach this broader group.

The study results strongly support the importance of having all three critical factors—resources, technical and managerial capacity, and motivation—in place before project exit to improve the likelihood of sustainability. Many examples from the study demonstrated the necessity of all three of these factors and emphasized the likelihood that sustainability will not be achieved if any one factor is missing. In addition,

linkages were almost always required throughout the delivery chain and were most successful when linkage entities were identified early in the project cycle and meaningfully integrated into project activities.

The findings also underscore the importance of building resilience to external shocks during project design and implementation. In the Kenya case, the sustainability of project impacts (and interpretation of associated measures) was challenged by the droughts that occurred in 2008/2009 and 20011, as well as the other challenges noted above.

Interventions that were successfully sustained in the projects studied considered not only the supply of services but also demand for, access to, and utilization of those services. Beneficiaries, as well as service providers, must have the resources, capacity, and motivation to take advantage of the services offered. The study results suggest that demand was sustained when beneficiaries perceived that provided services meet a felt need and lead to notable improvements in their well-being.

In addition, the successfully sustained interventions generally did not use external resources or the projects gradually phased out their use prior to exit—practices that did not require continued external resources were more likely to be sustained than those that did. The study findings also show that beneficiaries were more willing to pay a fee for services when these charges were levied from the outset, rather than when the fee was introduced following project exit. Fee-for-service models were useful but not always sufficient to ensure sustainability unless the resource streams were complemented by capacity and motivation. Similarly, post-project declines in participation in activities that had used external resources (which disappeared at the end of the project) may have been averted had these resources been phased out earlier and alternative sources for the resource been identified.

The findings of the Kenya study suggest the following recommendations.

Recommendations for Project Designers and Managers

- During project design, consider the benefits the project would like to see maintained after its exit and work backward to determine the project strategies needed to achieve these aims, considering how the key factors of resources, technical and managerial capacity, motivation, and linkages will be sustained.
- Clearly describe sustainability plans and exit strategies in the project application and carefully operationalize them.
- Identify potential weak links in the sustainability chain and manage them (and any other weaknesses that become apparent) while implementation is underway.
- Ensure that user fees for services are introduced at the beginning of the project, as opposed to near or at project exit.
- Communicate plans for project exit to recipient communities as early as possible and design project activities to allow for a gradual exit after a phase of incrementally independent operation.

Recommendations for Donors/Funders

- Incorporate indicators of sustainability into project monitoring and evaluation, in addition to conventional measures of project-level impacts. Sustainability indicators should include measures of resources, capacity, motivation, and linkages and should track progress toward benchmarks that signal when phase-out of an activity can begin (after a period of successful independent operation).

- Consider lengthening the typical 5-year project life cycle to facilitate achievement of sustainability benchmarks, as efforts to assess sustainability may need to transcend narrow project cycle time horizons.
- Require that project monitoring and evaluation data are well preserved to ensure that learning from project experiences can continue after a project ends.
- Require the incorporation of contingencies into sustainability planning to ensure that projects have considered possible threats to the smooth execution of their sustainability plans. Ensure that projects identify and communicate contingency options to all stakeholders.
- Support and reward projects that strive for sustainability over shorter-term impacts, and incentivize project implementers to seek innovative and successful sustainability models for challenging sectors and contexts.
- Fund periodic post-project sustainability evaluations for critical projects or sectors.

Recommendations for Future Research

- Conduct sectoral landscape assessments to identify other potentially promising sustainability models for FFP contexts.
- Compare the relative sustainability of the wide range of social and behavioral change communication strategies used in the health and nutrition sector. An optimal study design would randomly assign households to different social and behavior change communication mechanisms and track them longitudinally.
- Develop a sustainability index comprised of indicators of motivation, resources, capacity, and linkages; validate its positive predictive ability through post-project assessments in a variety of FFP contexts.

1. Study Overview and Objectives

To be effective, development projects must result in lasting change. Projects may meet their objectives by improving economic, health, or social conditions while they are operating, but genuine success is achieved only through sustained change that does not depend on continued external resources. The U.S. Agency for International Development (USAID) recognized this in 2006 when it began requiring that all applications for Office of Food for Peace (FFP) development food assistance projects[2] include explicit sustainability plans, that is, explanations of how projects intend to ensure that their benefits will last beyond the project life cycle. The USAID-funded Food and Nutrition Technical Assistance III Project (FANTA) contracted the Friedman School of Nutrition Science and Policy at Tufts University to assess the effectiveness of sustainability plans and exit strategies used in FFP development food assistance projects in achieving sustainable project activities, outcomes, and impacts. The multi-country study was conducted using a mixed-methods approach in Bolivia, Honduras, India, and Kenya between 2009 and 2014. This report presents key findings of the Kenya research. A separate Kenya Exit Strategies Comprehensive Report contains detailed quantitative and qualitative study results and is available upon request from the authors. A report synthesizing findings from all four countries is also available.[3]

USAID Food for Peace Development Projects

FFP is a USAID program, authorized under the U.S. Government's Farm Bill, that supports projects intended to increase food security in vulnerable populations in the developing world. The program, in existence since 1954, provides food commodities (such as wheat, rice, lentils, and other foods), value-added foods (such as corn-soy blend and ready-to-use supplementary food), and complementary cash resources to support projects implemented by nongovernmental and intergovernmental organizations in some of the world's most resource-poor and food-insecure settings. Projects supported by FFP typically include interventions in several sectors, including maternal and child health and nutrition, water and sanitation, agricultural development, rural income generation, natural resource management, and microfinance.

Development food assistance projects, such as those included in this study, make use of food and/or cash resources—supported by other project approaches (e.g., training, infrastructure improvements, and social and behavior change communication)—to feed vulnerable groups directly (as in the provision of supplementary foods for the treatment and prevention of child malnutrition or cash vouchers for the purchase of select food commodities) or to support development-related activities (as in the provision of food or cash for work to support participation in natural resource management or infrastructure construction interventions). Food can also function as an incentive for participation in project activities.

The present study addresses the sustainability of FFP development projects implementing activities in a range of technical sectors in Kenya. The findings of the study are likely to be applicable not only to FFP and other food-assisted projects, but to a broad range of development interventions.

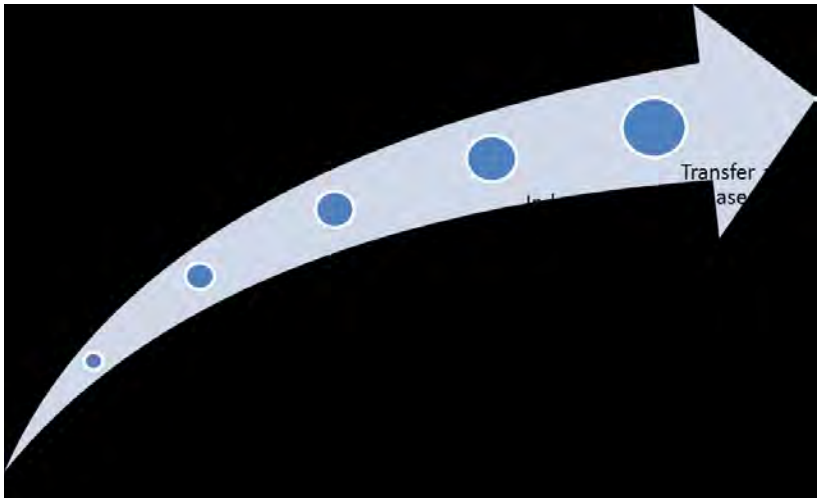
[2] Development food assistance projects have previously been referred to as Title II programs, development programs, development assistance programs, and multi-year assistance programs.

[3] Rogers, B.L. and Coates, J.C. 2015. *Sustaining Development: A Synthesis of Results from a Four-Country Study of Sustainability and Exit Strategies among Development Food Assistance Projects*. Washington, DC: FHI 360/FANTA. Available at http://www.fantaproject.org/sites/default/files/resources/FFP-Sustainability-Exit-Strategies-Synthesis-Dec2015.pdf.

Sustainability is achieved when outcomes and impacts (and sometimes activities) are maintained or even expanded after a project withdraws its resources through the exit process. A **sustainability plan** should represent all the elements of project design that take sustainability into account and should increase the likelihood that project outcomes and impacts and (where relevant) activities continue. An **exit strategy**, by contrast, relates specifically to the portion of a sustainability plan that deals with the process of "phase-out" (withdrawal of external support) and/or "phase over" (transfer of responsibility) by an implementing organization from an activity, a project, or an entire area by the end of a project cycle (Rogers and Macias 2003; Levinger and Mcleod 2002). "Exit" can also refer to the graduation of individuals from external support for certain activities (Gardner et al. 2005). For example, an organization may decide to phase out its technical support to farmer groups once the groups' members have been trained, are registered with the government, have a constitution and a renewable resource base, and have demonstrated that they can access and use market information and negotiate contracts with buyers independently.

It is a common misconception that a "sustainability plan" and an "exit strategy" connote actions that need to be taken only at the final phases of a project's closeout. On the contrary, a well-designed sustainability plan should be developed from the beginning of a project's conception, with actions tailored to each stage of project design, implementation, and closeout. As illustrated in **Figure 1.1**, stages of sustainability throughout a project can include (though are not limited to) partnership formation, creation of demand for services or practices, capacity development, consolidation of capacity through continued application of practices learned, and exit. The phase-out or phase-over stage of an activity should be triggered by the achievement of criteria that are likely to be predictive of sustainability. While FFP development food assistance projects have been required to incorporate mechanisms for achieving sustainability into their design since 2006, few organizations implementing such projects (referred to as awardees) have developed detailed, explicit sustainability plans or exit strategies.[4] Elements such as capacity building and training, strengthening of vertical and horizontal linkages, and promoting self-governance and self-financing have been used throughout the design of various FFP projects to contribute to sustainability. However, the study team's comprehensive review of the sustainability plans and exit strategies of all FFP development food assistance projects operating worldwide in 2009 found that only a handful of awardees in two countries, not including Kenya, had developed detailed and explicit sustainability plans and exit strategy documents that were intended to be used as roadmaps for project implementation (Koo 2009).

Figure 1.1. Sustainability throughout an Illustrative Project Cycle



[4] FFP guidance for fiscal year 2015 projects requests a description of the exit strategy for each activity, including how sustainability will be considered, but does not mandate a specific format or content for the sustainability plans and exit strategies to be included in a proposed project (USAID n.d.).

There are several reasons why few projects had developed detailed, explicit sustainability plans or exit strategies as of the time of the start of this study. One is that there is little empirical evidence to guide organizations in designing exit strategies and implementation processes to yield longer-term, sustainable results. These evidence gaps exist partly because funds for evaluation have typically been tied to project cycles, not reserved for assessment after projects end. A second reason relates to the real methodological challenges of attributing progress or lack thereof to projects that ended years ago. And, despite the fact that sustainability plans have been required in FFP project applications since 2006, FFP has typically held projects accountable for achieving outcomes and impacts over the life of the project but not for ensuring that those benefits are maintained following projects' closure.[5] There is an implicit assumption that large, short-term outcomes and impacts will result in improved sustainability. However, the strategies used to achieve short-term outcomes and impacts may actually undermine the likelihood of producing lasting results.

FFP is to be commended for supporting studies such as this one and for requiring awardees to think about sustainability and exit strategies in their applications. While FFP has been taking steps to increase its focus on sustainability, additional strides must be made to build the evidence base to institutionalize these changes within FFP's processes and to ensure broader learning within the implementing community.

This study is designed to contribute to that evidence base by achieving the following objectives:

- Determining the extent to which activities, outcomes, and impacts of FFP projects are sustained after the withdrawal of external funding[6]
- Identifying project and non-project factors that make it possible to sustain project benefits after the project ends
- Assessing how the process of "exiting" affects sustainability
- Providing guidance to future projects regarding how to ensure sustainability

Many of these evidence gaps fall under the umbrella of "delivery science," that is, the study of how to better deliver assistance. In the context of sustainability, this extends to understanding the dynamic processes that continue (or do not continue) after a development project has ended. The results of this multi-country study, including those specific to the Kenya research documented here, are intended to help guide FFP development food assistance projects and other development practitioners in the best approaches for achieving lasting positive change.

The FFP development food assistance projects studied in Kenya were implemented by Adventist Development and Relief Agency (ADRA) in Kitui, Food for the Hungry (FH) in Marsabit, and CARE in Nyanza and Western provinces. The projects undertook interventions in five main sectors: maternal and

[5] Recent shifts in broad USAID and FFP-specific priorities have moved toward promoting approaches that focus more explicitly on sustainable development, for example, by incorporating "systems thinking" into the design of FFP and other USAID projects. See, for example, USAID's *Local Systems: A Framework for Supporting Sustained Development* (2014). Nonetheless, endline evaluations still focus on measuring baseline-endline impacts rather than indicators of sustainability, although there were indications at the time of the release of this report that this, too, may be changing.

[6] The following definitions, taken from USAID's *Glossary of Evaluation Terms* (2009), are applied in this study:
Activity: A specific action or process undertaken over a specific period of time by an organization to convert resources to products or services to achieve results.
Outcome: A result or effect that is caused by or attributable to a project, program, or policy. Outcome is often used to refer to more immediate and intended effects.
Impact: A result or effect that is caused by or attributable to a project or program. Impact is often used to refer to higher-level effects of a program that occur in the medium or long term, and can be intended or unintended and positive or negative.

child health and nutrition (MCHN), water and sanitation (W&S), agriculture and natural resource management (NRM), livestock, and microfinance.[7]

The report is structured as follows:

- **Section 2** details the conceptual frameworks guiding the study design
- **Section 3** describes the data collection and analysis methods used, as well as the study's limitations
- **Section 4** provides a brief overview of the design and operating context of each of the three FFP development projects studied
- **Sections 5–9** present the study findings by sector
- **Section 10** discusses overall findings
- **Section 11** presents a set of associated recommendations

Each of the five sector results sections (5–9) first summarizes the elements of the sector interventions that were intended to lead to sustained or expanded benefits. The subsequent four subsections of each sector results section present results related to the implementation of these sustainability components and the de facto exit processes, in association with the documented sustainability of: service delivery (organized by factors related to resources, capacity, motivation, and linkages), service use, uptake and continuation of recommended practices, and impacts. The final subsection for each sector summarizes key sustainability findings and lessons learned.

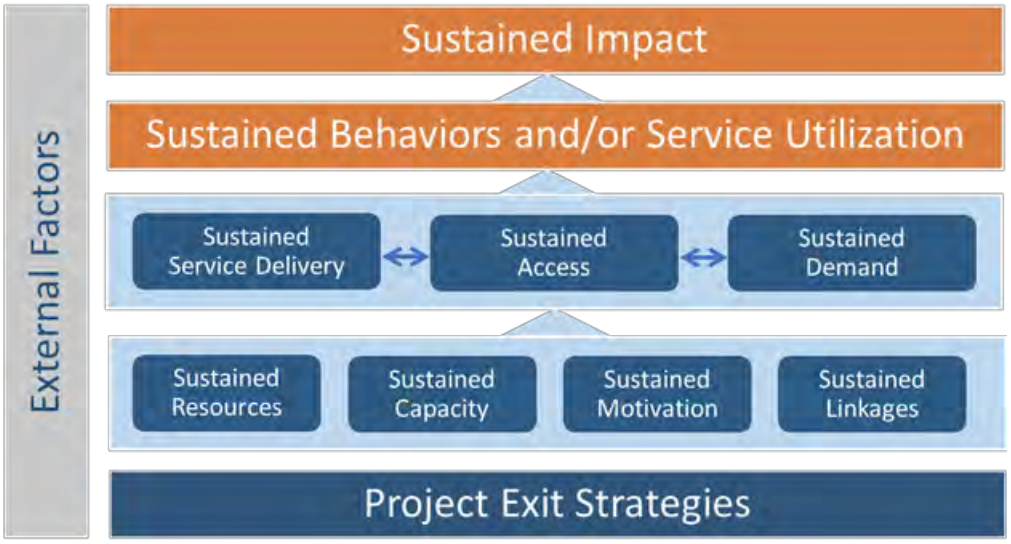
[7] Like most FFP development food assistance projects reviewed as part of the broader sustainability and exit strategies research initiative, the three Kenya awardees did not have detailed, explicit sustainability plans embedded in their project designs. They had *implicit sustainability strategies*: elements of their intervention designs intended to yield long-term benefit but not operationalized in a distinct plan with timelines and indicators. With the exception of some of CARE's activities, the awardees in Kenya also did not articulate an exit strategy in project documentation.

2. Conceptual Framework and Hypothesized Factors Predicting Sustainability

Based on observations during the early stages of the study, the study team formulated a conceptual framework of factors that were hypothesized to predict continued benefit after the end of a project (**Figure 2.1**).

The framework is based on the idea that most project activities can be grouped into three categories of implementation outputs: 1) creation or strengthening of service *delivery* mechanisms, 2) assurance of beneficiary *access* to services, and 3) improvements in beneficiary *demand* for services. For example, the MCHN components of the projects in this study trained community health workers (CHWs) to provide community-based health services, such as growth monitoring, to strengthen service delivery. Activities to improve beneficiary access to services included reducing social, geographic, and time barriers to services through community-based growth monitoring and CHW home visits. Activities to improve beneficiary demand for services included health and nutrition education to sensitize women to the role that behavior changes, including increased health service uptake, can play in child health.

Figure 2.1. Sustainability Plans and Exit Strategies Conceptual Framework



As shown in the framework, the sustainability of project impacts were hypothesized to depend on the continued delivery of these types of services and/or the continued adoption and use of practices and behaviors promoted in the project. The study team hypothesized that sustained service delivery, service use, and practices require four key factors: 1) a sustained source of *resources*; 2) sustained technical and managerial *capacity*, so that service providers can operate independently of the awardee; 3) sustained *motivation and incentives* that do not rely on project inputs; and often 4) sustained *linkages* to other organizations or entities that can promote sustainability by augmenting resources, refreshing capacity, and motivating frontline service providers and beneficiaries to provide and make use of services and to continue practices promoted by the projects.

The study team expected that the same categories of factors needed to sustain service delivery would also be critical to sustain demand. Beneficiaries would require the resources, capacity, motivation, and linkages to demand, afford, and participate in services and to implement desired behaviors. Sustained

access is the confluence of supply and demand. It pertains to the ability and motivation of beneficiaries to continue to avail themselves of services that were previously subsidized or free (demand) and to the geographic and physical accessibility of the services (supply).

The study team also hypothesized that the exit process would be critical to sustainability. In particular, the team hypothesized that a more gradual exit that allows a period of independent operation with some supervision is likely to be more successful in promoting sustained impact than abrupt disengagement. A final hypothesis underlying the study was that external shocks, such as periodic droughts, political crises, or global market fluctuations, as well as key contextual factors, such as governmental structure, other projects operating in the area, and/or cultural beliefs, could threaten the sustainability of activities, outcomes, and impacts achieved during the project unless recognized and managed from project conception by incorporating resilience strategies and other contingencies into the sustainability plan.

3. Research Methods and Analysis Approach

3.1 Overview of Data Sources and Timeline

Qualitative and quantitative data were collected from the three FFP development project awardees' implementation areas in Kenya: an ADRA project in Kitui, an FH project in Marsabit, and a CARE project in Nyanza and Western provinces. Three rounds of qualitative data collection were carried out annually from 2009 through 2011 to understand the implementation of each of the awardee's exit strategy and the dynamics of sustainability in the years after the organizations had withdrawn. Additional information was obtained from a review of project documentation, including Indicator Performance Tracking Tables (IPTTs) and baseline, midterm, and endline evaluation reports. One round of quantitative data collection in 2011 was designed to repeat each organization's endline evaluation survey approximately 3 years later to assess the extent to which activities, outcomes, and impacts achieved during the project period had been maintained. In addition, baseline and midterm indicator results that were extracted from project evaluation reports were used in combination with the endline and 2011 follow-up survey data to examine indicator trends over the course of the projects and beyond. A "participation module," tailored to each project's activities and sustainability plan, was incorporated into the 2011 follow-up quantitative household survey questionnaires to collect information on respondents' participation in project-related activities during and after the project period.

Service provider questionnaires were developed and implemented as part of the follow-up quantitative survey to ask each type of community-based resource person or committee (e.g., CHW, paravet, W&S committee) trained during the project about its level of service delivery and related sustainability factors (e.g., resources, motivation) during and after the project. Finally, secondary data (e.g., from the Demographic and Health Survey and the Kenya National Household Budget Survey) were identified where available to help triangulate impact-related trends in the target project communities with those in the region more broadly. **Figure 3.1** presents a timeline of primary data collection activities. **Figure 3.2** illustrates the purpose and use of each type of data source. **Table 3.1** summarizes key details of each dataset.

Figure 3.1. Data Collection Timeline

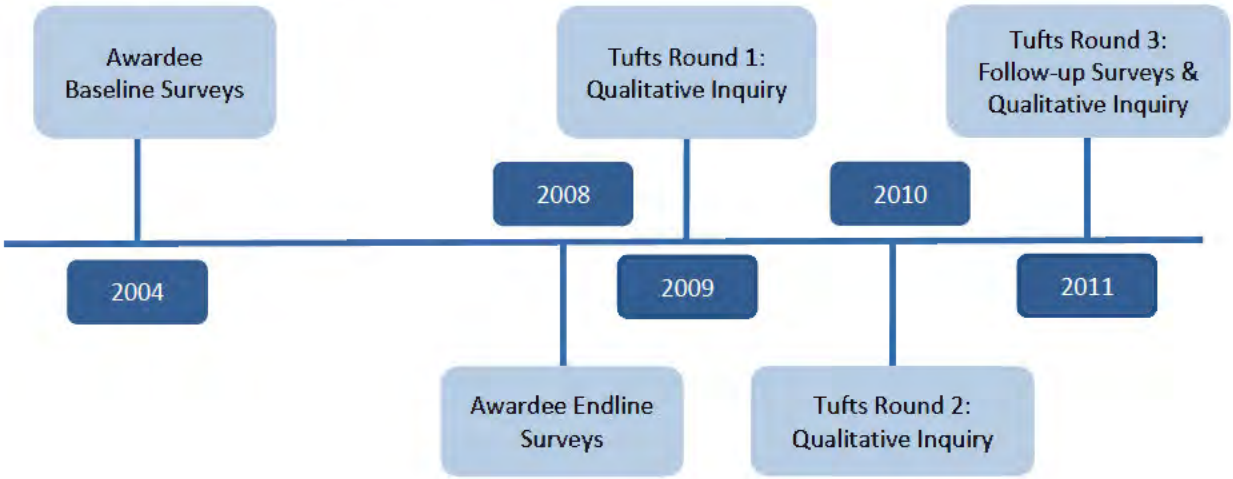


Figure 3.2. Role of Key Data Sources

Table 3.1. Summary of Data Sources

Data Source	Year Collected	Sample Size[a]	Locations (Province/Districts)	Data Collected by:	Raw Data Available to Study Team for Analysis?
Surveys					
ADRA					
Baseline Survey	2003	800	Ikutha, Yatta	ADRA	No[b]
Midterm Evaluation Survey	2006	NA		ADRA	No
Endline Evaluation Survey (Jun)	2008	599		ADRA	No[b]
Follow-Up Survey[c] (Sep-Dec)	2011	500		Kimetrica	Yes
Service Provider Survey	2011	163		Kimetrica	Yes
FH					
Baseline Survey					
Household Survey	2003	NA	Marsabit, Chalbi, Laisamis	FH	No[b]
Child Anthropometric Data	2003	667		FH	No[b]
Midterm Evaluation Survey					
Household Survey	2006	NA	Marsabit, Chalbi, Laisamis	FH	No[b]
Child Anthropometric Data	2006	741		FH	No[b]
Endline Evaluation Survey (Jun)					
Household Survey	2008	903	Marsabit, Chalbi, Laisamis	FH	Yes
Child Anthropometric Data	2008	1,595		FH	Yes
Follow-Up Survey[c] (Oct-Nov)					
Household Survey	2011	1,157	Marsabit, Chalbi, Laisamis	Kimetrica	Yes
Child Anthropometric Data	2011	995		Kimetrica	Yes
Service Provider Survey	2011	90		Kimetrica	Yes
CARE					
Baseline Survey	2004	NA	Nyanza and Western	CARE	No[b]
Midterm Evaluation Survey	2006	NA		CARE	No[b]
Endline Evaluation Survey (Mar-May)					
Household Survey	2008	529	Nyanza and Western	CARE	Yes
Child Anthropometric Data	2008	469		CARE	Yes
Follow-Up Survey[c] (Sep-Oct)					
Household Survey	2011	1,690	Nyanza and Western	Kimetrica	Yes
Child Anthropometric Data	2011	1,117		Kimetrica	Yes
Service Provider Survey	2011	96		Kimetrica	Yes
Exit Strategies Study Qualitative Data Collection (All Awardees)					
Round 1	2009	–	Ikutha, Yatta, Marsabit, Chalbi, Laisamis, Nyanza, and Western	Tufts	Yes
Round 2	2010	–		Tufts	Yes
Round 3	2011	–		Tufts	Yes

[a] NA=Information not available and/or missing.

[b] Data for certain indicators were available in baseline and endline reports.

[c] All follow-up surveys replicated endline survey questionnaires and included an additional participation module.

3.2 Qualitative Methods

Qualitative data were collected annually in three consecutive rounds from 2009 through 2011, with the first round beginning shortly after the end of the FFP development food assistance projects in Kenya. The Tufts University Institutional Review Board granted approval for each round of data collection. The qualitative data team was led by the Assistant Researcher, who supervised a team of three experienced Kenyan researchers. Focus group discussion (FGD) and key informant interview guides for service providers, beneficiaries, project staff, and other stakeholders were developed to explore the thematic areas of the conceptual framework presented in Section 2. Data collected from Round 1 led to the development of a participatory rating exercise to explore the dynamics of the post-exit sustainability of service delivery. This exercise was implemented in Rounds 2 and 3. In Rounds 2 and 3, participants in each FGD were asked to rate their perceptions of, and reasons for, changes in service delivery, resources, capacity, motivation, and linkages. Ratings and rankings were compared between Rounds 2 and 3 to gain insight into the dynamic nature of the factors contributing to sustainability.

With the assistance of ex-project staff, the team purposively sampled communities for variability in such factors as length of time the awardee had worked in the community, project sectors and sustainability strategies implemented, perceived success of project implementation in that area, and agro-ecological zone. The number of locations, communities, and respondents selected differed across the three project areas. The sample size was based on the geographic spread of the project and the number of interactions required to achieve theoretical saturation in the information obtained. **Table 3.2** indicates the number of FGDs and key informant interviews completed, by sector. Though a handful of former awardee staff and members of local administrations were interviewed in the first round, due to high turnover most of these individuals had moved on by subsequent rounds. The qualitative inquiry was centered around FGDs with community-based service providers and beneficiaries. Where possible, the qualitative study team revisited the same communities (and often, though not in every case, the same groups and informants) across all three rounds of data collection. Though a few groups were visited for the first time during Rounds 2 and 3, they were able to provide a retrospective picture of how their situation differed during and after the project.

Table 3.2. Qualitative Focus Group Discussions and Key Informant Interviews by Sector and Round

Sector	Round 1	Round 2	Round 3	Total
MCHN	31	27	21	**79**
W&S	18	12	11	**41**
Agriculture and NRM	30	26	27	**83**
Livestock	18	22	25	**65**
Microfinance	14	16	12	**42**
Total	**111**	**103**	**96**	**310**

Collected qualitative data were analyzed and coded using NVivo8. This software facilitates systematic and methodical data analysis and enabled the study team to compare results across different countries through the use of a common coding list. Transcript content was assigned to themes representing aspects of the conceptual framework, and new themes were identified and coded as they emerged. The coded data were organized and analyzed by sector, by whether or not the respondent was a "service provider" or "beneficiary," and by theme to examine trends and changes over the 3 years of qualitative data collection.

Participatory ratings were entered into Excel, and basic summary statistics and visual displays were then generated of the rating results.

3.3 Quantitative Methods

The study team contracted the Kenya-based research firm Kimetrica to conduct the quantitative follow-up surveys in the former ADRA, FH, and CARE FFP development food assistance project areas. These surveys were implemented from September to December 2011. The Kimetrica Technical Director appointed survey managers to oversee separate teams assigned to each of the three surveys. The managers were the focal points for the surveys, receiving information from the study team about sampling and instrument design and overseeing the planning and implementation of the data collection process. All instruments were translated, pretested, and finalized before enumerator training. After completion of each pretest, the team collectively discussed key issues, reviewed the questionnaires in detail, and incorporated revisions. All survey documents were translated into the relevant local languages.

The survey manager for each survey and Kimetrica's Survey Expert worked together to conduct each enumerator training with assistance from the study team liaison (one of the Kenyan researchers who had participated in the three rounds of qualitative data collection and who the study team appointed as its representative), using a training manual developed to guide the process. A representative of the awardee organization was present in each training (except for the ADRA training), along with the supervisors and enumerators being trained. Because the FH and CARE surveys required anthropometric measurements, medical personnel were called in to train enumerators to take these measurements. Data collection followed a protocol for the protection of human subjects that had been approved by the Tufts University Institutional Review Board.

Enumerators administered the household questionnaires to the sampled households and carried out height and weight measurements of children under 5 years of age. Survey supervisors headed each of the enumerator teams and ensured smooth data collection, administered service provider questionnaires, confirmed that all questionnaires were properly filled out, and ensured that daily targets were met.

The sampling approach used for the follow-up surveys attempted to re-create, as closely as possible, the sampling strategy that each awardee used for its endline evaluation. The sample size for all three surveys was calculated to detect a 10 percentage point difference from the endline value of the most demanding of the key indicators, with 80 percent power and α=.05. The following subsections outline the sampling methods that were used for each awardee's follow-up survey.

3.3.1 Adventist Development and Relief Agency: Kitui District

ADRA's FFP development food assistance project was implemented in the Yatta and Ikutha divisions of Kitui District. To replicate the ADRA endline survey sampling methodology, the study team created a sample frame of all sublocations in Yatta and Ikutha. A list of estimated numbers of households in each sublocation in Yatta was available from ADRA; for Ikutha, the study team liaison and Kimetrica's survey manager contacted chiefs of the sublocations to obtain their population estimates in order to select the sample of sublocations using a probability proportional to size method, as was done for the project's endline survey. The team randomly selected 25 clusters (i.e., sublocations) across Yatta (12 clusters) and Ikutha (13 clusters). A total of 20 households in each cluster were selected for interview using the random walk method, resulting in a total planned sample size of 500 households. Additionally, the service provider questionnaire was administered to 96 service providers that had been trained by the project to work in each of the randomly sampled sublocational clusters.

3.3.2 Food for the Hungry

The sampling methods for the FH survey were relatively straightforward, as FH had preserved documentation of its sampling frame and the Monitoring and Evaluation (M&E) Officer for the FFP development food assistance project was available to clarify questions. FH carried out MCHN and agriculture/NRM activities in Marsabit's mountain area. The project also implemented livestock and NRM activities in some of the county's lowland areas and MCHN activities in other lowland areas. Thus, FH stratified its endline sample to include one stratum of households in the mountain area that responded to MCHN and agriculture/NRM questions, one stratum of households in the lowlands area that were administered only the MCHN questionnaire, and a second stratum of households in another lowlands area that were administered a livestock/NRM questionnaire. FH's baseline, midterm, and endline survey samples were drawn from the population of each sampled community (rather than from direct beneficiaries only). The follow-up survey replicated these methods, relying on the FH sample frame to first select 30 communities in each stratum using a probability proportional to size method. Thirteen households in each community were then selected using the random walk method, for an intended total of 390 households in each stratum and a grand total of 1,170 households across the entire sample. Those service providers (e.g., CHWs, paravets) that had been trained by the project to work in each of the randomly selected community clusters were identified and (where possible) were administered the relevant service provider questionnaire. Ninety service provider interviews were completed.

3.3.3 CARE

Re-creating the sampling approach for CARE was challenging because the endline survey document did not clearly specify the methods used. Additionally, a freak lightning strike had erased all endline survey sample frame files off computers in the CARE/Kisumu office. Consultation with the former CARE M&E Officer clarified many of the sampling questions, while additional consultation with the FANTA Survey Methods Scientist enabled the study team to plan the most methodologically appropriate sampling strategy possible, in the absence of complete information, to ensure sufficient comparability of the follow-up survey data to CARE's endline data.

As the CARE FFP development project did not use a co-location model (i.e., different sector interventions were implemented in different communities), the CARE sample was stratified by the three main project components (agriculture and NRM, W&S, and community savings mobilization [COSAMO]). CARE worked only with community groups (not the community at large), and therefore the CARE endline and study follow-up surveys sampled community group members only.

For each CARE project component, a three-stage cluster sampling process was followed to select: 1) districts, 2) community groups, and 3) individuals within community groups. For the first stage, the probability proportional to size method was used to select four districts from the seven in Nyanza and Western provinces for each component.[8] Once these districts were selected, the sampling frame was reconstructed by listing all of the community groups in each of the four districts that had been selected for each component. The second stage of the cluster sampling procedure randomly selected 10 community groups from each of the four districts that had been chosen for each component. Once these community groups were selected into the sample, the study team completed the listing exercise by visiting the group leaders of each of the sampled groups to obtain a complete list of the members who had joined the groups before or during the project period. From these lists, individuals were randomly selected for interview.

[8] CARE implemented COSAMO activities in only three districts, so it was not possible to sample four districts for the COSAMO sector. In addition, there were only 10 COSAMO groups in two of the three districts, so all 20 of these groups were included in the sample. In Suba District (the district where most COSAMO activities took place), 20 groups were randomly selected to reach the intended total COSAMO sample size of 40 groups.

The intended sample size was 1,740 respondents, composed of 580 respondents per sector, or 145 respondents per district per sector. The group leader from each randomly selected community group was also interviewed, using the service provider questionnaire.

3.4 Data Analysis Methods

The first step in the study team's quantitative data analysis was to operationally define the project indicators to be compared between the endline and follow-up survey time points. The team consulted each of the FFP development project awardees' IPTTs to determine which indicators the projects had used to measure relevant activities, outcomes, and impacts. Because the precise indicator definitions used in the awardee endline evaluation reports were not available, the researchers developed logical definitions and applied these standardized definitions to the FH and CARE endline evaluation survey and follow-up survey datasets. The study team was unable to obtain the raw baseline or midterm evaluation survey data from any of the three awardees in time for inclusion in the study, and the ADRA endline evaluation survey data were also unavailable. In lieu of the raw data, baseline, midterm, and (for ADRA) endline results were extracted where possible from tables in the evaluation reports. Anthropometric indicators were constructed with FH and CARE data using age in months, weight in kilograms, and height in centimeters, using Emergency Nutrition Assessment (ENA) for SMART v11, with World Health Organization (WHO) 2006 child growth standards. Flagged, implausible anthropometric data points were removed from analysis of endline and follow-up data. Neither FH's nor CARE's baseline reports described whether they followed this same process with their baseline anthropometric data.

All datasets were cleaned and analyzed using Stata v11 and v12. Descriptive statistics were performed on all variables to summarize both anthropometric data and responses from the various questionnaires. A series of significance tests was conducted to compare responses from the endline and follow-up surveys. Analysis of the FH and CARE anthropometric and household questionnaire data involved using Pearson's chi-square tests to compare proportions for categorical variables and independent sample t-tests to compare means between endline and follow-up responses. For the ADRA household questionnaires, only categorical indicators for which frequency data were available in the endline report documents could be analyzed using Pearson's chi-square test. Significant changes in means in the ADRA data could not be tested because no standard deviations were available from the endline report. Participation modules and service provider questionnaire results for all three projects were analyzed using McNemar's test to compare changes in service delivery and utilization for each activity during and after the projects. Finally, Wilcoxon signed rank tests were used to compare means for ordinal variables in the service provider data, as this test is appropriate for data that are paired, non-normal, and/or ordinal.

The significance level used for all hypothesis tests was $\alpha<0.05$ and, when possible, the survey design used by each project was accounted for in data analysis. All significance tests were two-sided, using the null hypothesis of no difference between endline and follow-up results. A significant change in the desired direction was interpreted as evidence of improvement from endline to follow-up, and a significant change in the undesired direction was interpreted as evidence that the achievement was not sustained. A non-significant change in either direction in this context corresponds to the possibility that activities, outcomes, and impacts were sustained at the same level as at endline, and thus "sustained," although this cannot be concluded with statistical certainty. Whether an observed change is important (separate from statistical significance) is a matter of judgment, and the results are reported with this perspective.

3.5 Limitations

The study team encountered certain challenges related to study design and data quality, many of which were unique to this type of post-project evaluation and the retrospective nature of the research.[9] These challenges, and the team's approach to handling them, offer useful methodological lessons to researchers aiming to study project sustainability.

An experimental study design was not feasible in this context since, per USAID policy, FFP development project awardees were not required to employ a control or comparison group at their baseline, midterm, or endline. The lack of a comparison group compromised the study team's ability to *statistically* determine whether maintenance or improvements in impacts, or lack thereof, after the projects ended were attributable to each project's effectiveness and the sustainability of its benefits rather than to non-project factors. Because sample sizes varied across awardee surveys, the ability to detect statistically significant differences also varied. To mitigate these challenges, the study team employed a program sustainability pathways approach. Similar to a program impact pathways analysis, this approach was grounded in a clear understanding of the project theory (and project sustainability theory), summarized in the conceptual framework presented in Section 2. The follow-up surveys not only measured the degree to which activities, outcomes, and impacts were sustained, but explored the relationships between each step of the pathway both qualitatively and quantitatively: the project's intended sustainability plan and exit strategy and the actual sustainability of service delivery, beneficiary service use, and beneficiary-level outcomes and impacts. Known external factors, such as drought and the continued presence of other nongovernmental organizations (NGOs), were examined qualitatively to tease out their dynamic effects on trends in the post-project period. Secondary data regarding trends in similar, non-project areas were considered as additional points of comparison. While a longitudinal study design would have been useful, a repeat cross-sectional design was necessary, as the awardee evaluative surveys did not collect household identifiers.

Other challenges stemmed from difficulties ensuring comparability between the design and instrumentation used in the awardee endline surveys and the follow-up surveys conducted nearly 3 years later. Most former project staff had departed the organizations, and detailed documentation on the endline design and instruments used was not always available. For example, CARE had utilized a sample frame of community groups and group members that their FFP development project had targeted. However, this sample frame was not available, as the data had been erased from CARE computers in a lightning strike. The study team re-created the sample frame through a listing exercise requiring a few weeks of staff time and logistical support, along with input from the few remaining CARE field officers who had been involved in the FFP development food assistance project. While this listing exercise went smoothly and group leaders were able to easily recall the names of individuals who were group members during the project, it is possible that some members were excluded or others incorrectly included.

The study team used the same questionnaires that were administered for the awardee's endline surveys. This meant that all questionnaire items were replicated for the sake of reliable comparisons, even where items could/should have been improved upon. Constructing indicators that were comparable at each time point (from baseline to follow-up) was sometimes difficult. This was not an issue for comparison of endline to follow-up survey data, since the raw endline datasets were available (for FH and CARE) and indicators could be constructed the same way using logical operational definitions, but it was a challenge in the case of ADRA, whose endline data were unavailable. It was also an issue in trying to construct

[9] As described in the methods section, the study team was not involved in the implementation or evaluation stage of any of the three projects, having been enlisted for the research just as the projects were closing out and after their final evaluations were complete. Several of the limitations described herein stem in part from the inability of the study team to influence the design or type of data collected during the final evaluation.

trends in indicators from baseline through to the follow-up, as baseline and midterm datasets were not available from any of the Kenya awardees. In lieu of raw data, the team relied on indicator results as reported in the awardees' final evaluation reports and/or their IPTTs. Any indicators with ambiguous definitions were excluded from analysis to avoid making inaccurate comparisons. In some cases, indicators that were measured at endline and follow-up were not measured by the awardees at their baseline and midterm, making it difficult to assess trends for many key behaviors, outcomes, and impacts from the time of the projects' baselines.

Because certain questions of interest to the exit strategies study were not available from the endline surveys to be compared to follow-up results, the study team introduced a "participation module" in the household questionnaire and a "service provider questionnaire" that relied on retrospective questions, asking individuals about their experiences "during" the project compared to the period "after" the project ended. While recall bias is a common problem in many research studies, triangulation between quantitative and qualitative data showed a great deal of convergence.

An additional issue pertains to the seasons in which the endline and follow-up surveys were implemented. The Kenya awardees' endline surveys were conducted at various points throughout the year, ranging from March through September. Due to the cost constraints of fielding a team to remain in the field across the 7-month period that would have spanned the timing of all three endline surveys, the follow-up surveys could not be conducted at the exact same time points as each of the endline surveys. Table 3.1 references the months in which the endline and follow-up surveys were implemented. In the ADRA operational area, the endline survey was conducted in the harvest period in June, while the follow-up survey was conducted at the end of the harvest period before planting in anticipation of the short rains (September–December). In the FH area, there was a severe drought in both 2008, at the time of its endline survey, and in 2011, during the follow-up survey. Crop conditions were similarly poor at both time points, neutralizing seasonal effects on the data. In the CARE area, the endline survey took place during the primary long-rain growing season (March–May), when people were busy planting and tending crops, whereas the follow-up survey was conducted during the beginning of preparation for the short-rain growing season (September–October). These seasonal variations in data collection timing may have affected the reliability of impact indicator comparisons over time.

Additionally, the study team encountered data quality issues when calculating the anthropometric indices for children from FH and CARE endline and follow-up surveys. While highly implausible results were excluded based on the WHO standard cutoffs (2013), in several instances the standard deviations of the distributions of z-scores exceeded those recommended as plausible by WHO, implying some degree of measurement error and lower than optimal data quality. For the FH follow-up surveys, all three indicators had problematic distributions, though weight-for-height exhibited the highest variability. Kimetrica faced challenges finding solid ground for the weighing scales, possibly contributing to slightly inaccurate results. Z-scores from the FH endline data were within the expected ranges. For CARE, data quality issues were evident in both rounds of survey data. Follow-up survey z-scores were more problematic than endline z-scores, with height-for-age exhibiting the highest variability. All three indicators had standard deviations higher than those recommended by WHO. Based on these quality checks, comparisons of change over time in anthropometric indicators must be interpreted with some degree of caution.

The limitations described in this section underscore the challenges of conducting research on project sustainability. While some of these issues were the unavoidable result of project-based development and the turnover in staff that occurs at the end of a project, others can be traced to the fact that the institutional archiving of M&E data was not a prioritized or standardized practice among these FFP development projects. Preserving accessible original data and evaluation reports with clearly documented indicator definitions and sampling methods is critical for any institution's long-term learning agenda. It is also important for future research on post-project sustainability.

4. Project Descriptions and Operating Context

4.1 Food for Peace Programs in Kenya

In fiscal year 2006, FFP/Washington reprioritized funding that had been going to FFP development projects in 32 countries. Based on indicators of food availability, access, and utilization, 17 countries were deemed no longer eligible for FFP development project funding. As a result, new development food assistance projects (then referred to as multi-year assistance programs) in Kenya were not funded and the ongoing projects were not extended beyond the end of their awarded project cycle (October 2008 for ADRA, December 2008 for FH, and May 2009 for CARE). The closeout of these three projects offered an opportunity to study the implementation of their sustainability plans and exit strategies in relation to the sustainability of their activities, outcomes, and impacts.

In Kenya, implementation of the 2006–2010 FFP strategy focused on achieving three intermediate results, linked to the overall strategic objective of reducing the vulnerability of food-insecure populations: 1) human capabilities protected and enhanced, 2) livelihood capacities protected and enhanced, and 3) community resiliency protected and enhanced. The FFP program's strategy in Kenya was an integrated framework in which emergency projects would address immediate acute needs, while development projects would focus on increasing resilience and sustaining development progress in shock-prone environments. At the time of the study, this integration was not obvious in the study sites, as the FFP development and emergency projects were primarily operating in different geographic locations. The exception was in Marsabit, where emergency assistance was provided during the 2011 drought emergency (USAID 2007).

4.2 Awardee Projects

All three awardees in Kenya worked in arid and semi-arid land (ASAL) regions—regions with high levels of food insecurity—although the operating environments were distinct and the awardees adapted their sustainability and exit strategies to each different environment.

4.2.1 Adventist Development and Relief Agency: Kitui District

ADRA implemented FFP development projects in Kitui District, Eastern Province, in two project cycles in Ikutha Division, beginning in 1997 and ending in 2008. At the beginning of the second cycle, the organization launched its second phase of activities in Ikutha and expanded into the neighboring Yatta Division. Kitui District is classified as an ASAL region and the majority of the population in this area earns its living from a mix of agriculture and livestock rearing. The overall objective of the ADRA FFP development project was to improve food security for 20 percent of the population of rural poor people in Ikutha and Yatta divisions by increasing rural household income (Strategic Objective 1) and improving their health and nutrition status (Strategic Objective 2).

There were two droughts in the region during ADRA's second project cycle, while post-election violence in 2007 led to significant internal population displacement that further compounded regional food insecurity. Two additional droughts hit the region after the last project cycle ended (during this study): The first began around the time of ADRA's exit and continued through 2009, while the second, more severe drought occurred in 2011 (ADRA 2008). As will be described throughout the remainder of this report, such external shocks introduced specific challenges with regard to planning for, achieving, and evaluating project sustainability.

4.2.2 Food for the Hungry/Kenya: Marsabit and Neighboring Districts

FH/Kenya's FFP development project was implemented in an area known as the Northern Pastoral Cluster. The project's first 5-year cycle was concentrated solely in Marsabit District; during its second 5-year cycle, some of the project's activities were expanded to Moyale, Marsabit, Samburu, and Turkana districts. Pastoralism is the main livelihood in this area. There are also pockets of agro-pastoralist activity, particularly on and near Marsabit Mountain, which receives more rainfall than the lowlands and is suitable for growing crops, such as maize, peas, sorghum, cowpeas, and green gram (mung beans). Marsabit District is subject to scant and erratic rainfall, and the food insecurity situation in the area was compounded by poor road infrastructure, low population density, and huge distances between markets (FH/Kenya 2009). Ongoing instability and conflict also posed challenges to implementing and sustaining development interventions. Tribal clashes and large cattle raids had become increasingly violent with the availability of semi-automatic weapons. These conflicts tended to impede seasonal migration through traditional grazing areas and prompt displacement as communities abandoned their settlements to congregate around water points in safer areas. FH designed a project to tackle many of these underlying causes of food insecurity in this region. The goals of the project were to: 1) raise annual household income by 20 percent; 2) reduce stunting among children under 5 by 40 percent; and 3) increase food security for 25,000 families through increased and sustained food availability, access, and utilization.

In July 2009, the Government of Kenya (GOK) officially declared a state of emergency in the Pastoral Livelihood Zones of Marsabit, Laisamis, and Chalbi Districts. In 2011, another drought led to another, even more severe food emergency in the region. The massive relief response and ongoing interventions in the context of an emergency setting after the end of the FH/Kenya FFP development project make it challenging to assess the sustainability of the FH interventions. The multiple methods used for this research were designed to circumvent as many of the potential limitations as possible.

4.2.3 CARE: Nyanza and Western Provinces

CARE implemented its FFP development food assistance project in Nyanza and Western provinces,[10] which are home to more than 25 percent of the total population in Kenya (CARE 2002). The CARE project areas lie adjacent to Lake Victoria and two major rivers, the Nyando and the Nzoia, whereas other areas in the region are classified as ASAL and subject to severe drought. Nyanza is the poorest province in Kenya. Unproductive agricultural practices, low farm income, and poor health status—including high HIV prevalence—contribute to the overall poverty levels in Nyanza (CARE 1999).

The FFP development project, titled "Sustainable Livelihood Security for Vulnerable Households in Nyanza and Western Provinces," was designed to address the multifactoral causes and consequences of food insecurity in this region. The goal of the project was to improve, in a sustainable manner, the food and livelihood security of vulnerable households in 10 districts in Nyanza and Western provinces through five project components: 1) improved agriculture for smallholder farmers in Western Kenya; 2) water, sanitation, and education for health; 3) COSAMO; 4) HIV and AIDS life initiative; and 5) food for work (FFW) maintenance and repair of canal, irrigation, and other public infrastructure.

[10] The first FFP-funded development food assistance project cycle operated in Nyanza Province; the second FFP-funded development food assistance project was expanded to include certain districts in Western Province in addition to Nyanza.

5. Results: Maternal and Child Health and Nutrition Sector

This section first summarizes the elements of each of the projects' MCHN sector interventions that were intended to lead to sustained or expanded benefits. The subsequent four subsections present results related to the implementation of these sustainability components and the de facto exit processes, in association with the documented sustainability of: 1) service delivery (organized by factors related to capacity, resources, motivation, and linkages), 2) service use, 3) uptake and continuation of recommended practices, and 4) impacts. The final subsection summarizes key MCHN sustainability findings and lessons learned.

5.1 Maternal and Child Health and Nutrition Sector Sustainability Plans and Exit Strategies

ADRA and FH areas employed similar health service delivery models that involved training volunteer CHWs to encourage the adoption of preventive health, hygiene, and nutrition-related behaviors through regular meetings with groups of beneficiary mothers (referred to as "mothers' groups"). There were also slight differences across the two projects. For instance, FH promoted a second tier of health service providers, called contact mothers, who worked under the guidance of the CHWs. The contact mothers were in charge of spreading health education in their communities by convening, and regularly meeting with, mothers' groups.

FH and ADRA CHWs distributed rations of corn-soy blend and oil at monthly growth monitoring sessions to mothers of children found to be growth faltering. The CHWs and awardee staff worked to educate mothers on the importance of feeding the full ration to the faltering child, though project staff noted widespread sharing among household members. Children continued to receive rations until their weight once again fell within the normal range for their age. Severely underweight children and children who did not gain weight within 3 months were referred to health facilities. Project staff noted that children tended to remain underweight (and, thus, on the rations for long, sometimes indefinite, periods of time) due to household sharing.

CARE also trained volunteer CHWs (who were called group hygiene promoters). Although their role and work circumstances were similar to those of the CHWs in the other two project areas, CARE's group hygiene promoters focused on promoting safe water systems and hygiene practices rather than on primary health and nutrition education more broadly. Their services did not extend to growth monitoring or food ration distribution.

The implicit sustainability strategy across all three projects was to motivate mothers to continue to practice recommended behaviors once they had seen the positive impacts firsthand. Unpaid CHWs were expected to remain active after the projects ended and were instructed to continue meeting with mothers' groups to reinforce positive practices. The awardees intended to phase over the responsibility for CHW oversight and support to Ministry of Health (MOH) local facilities at the end of the projects. The awardees' MCHN sector sustainability strategies and key assumptions are summarized in **Box 5.1.**

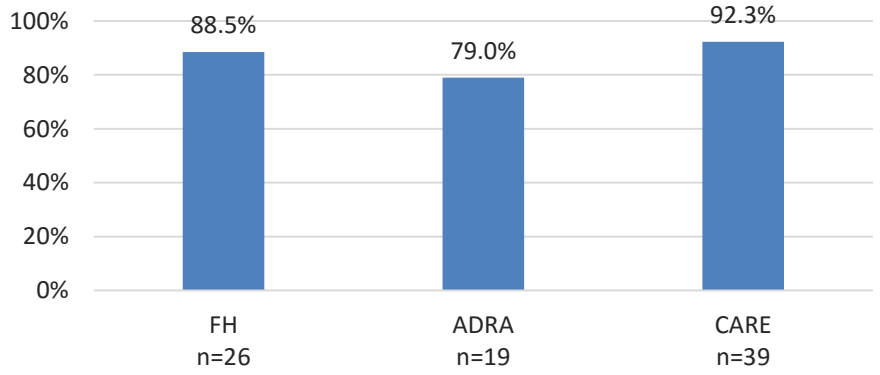
Box 5.1. ADRA, FH, and CARE MCHN Sustainability Strategies and Key Assumptions

SUSTAINABILITY STRATEGIES	KEY ASSUMPTIONS
• Link trained CHWs with the MOH for sustained supervision, training, and supplies.	• The MOH has the resources, capacity, and motivation to supervise CHWs. • CHWs will continue work without remuneration or other benefit. • The benefits of service delivery will outweigh CHW opportunity costs. • Improved health practices will be self-sustaining or sustained with CHW reinforcement.
• Withdraw supplemental rations, teaching beneficiaries to replace rations with locally available nutritious foods.	• Mothers will be able to access locally available nutritious foods and obtain resources needed for other project-promoted practices.

5.2 Sustainability of Maternal and Child Health and Nutrition Service Delivery

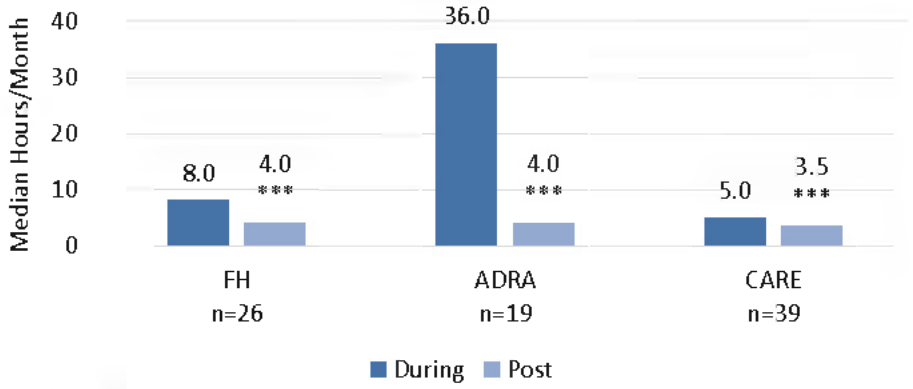
The majority of health workers interviewed during the 2011 follow-up survey (3 years post-exit) reported that they were continuing to serve their communities (**Figure 5.1).** However, there was a statistically significant decline across CHWs from all three projects in the amount of time they reported spending on service delivery after the projects ended, compared to during the project period (**Figure 5.2**). Qualitative interactions with CHWs found that most maintained their titles and identity as health workers largely in name only. The title conferred a sense of prestige and, they believed, singled them out for future employment opportunities with new NGOs or the MOH. The quantitative data from retrospective surveys administered to CHWs in 2011 also suggested that the significant decline in time spent on service delivery was related to deterioration in CHW resources, capacity, motivation, and linkages after the projects ended (**Figure 5.3**, **Figure 5.4**, and **Figure 5.5**). These factors were synergistically affected by declining beneficiary demand for health worker services once CHWs had no new information or food rations to offer.

Figure 5.1. Health Workers Reporting Still Serving at Follow-Up



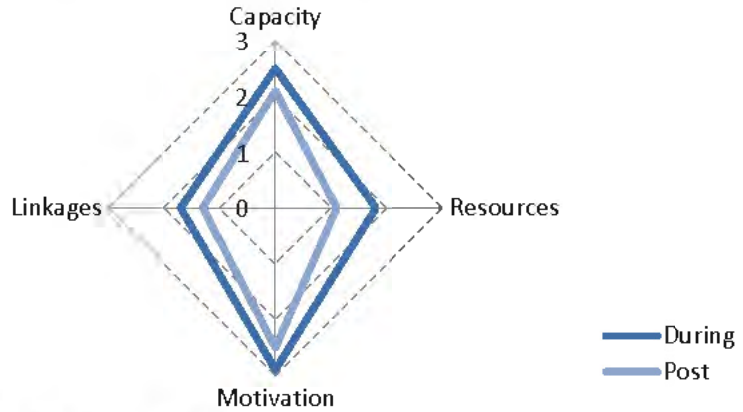
Source: 2011 CHW Surveys.

Figure 5.2. CHW Time Spent Providing Services, During and Post-Project



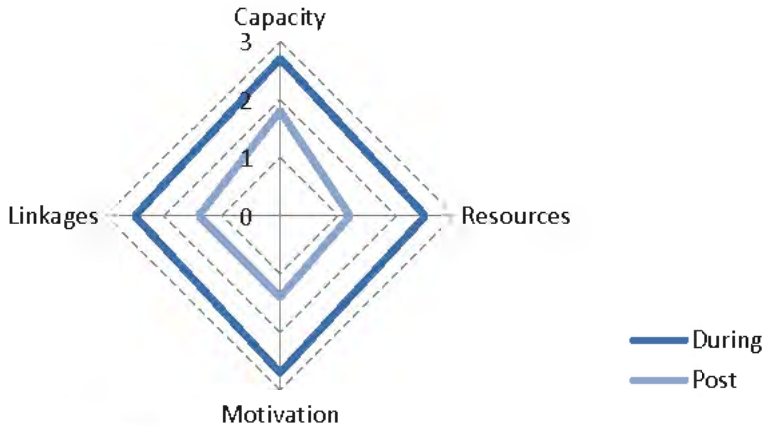
Source: 2011 CHW Surveys.
Note: Significance based on Wilcoxon signed rank test; *p<0.05, **p<0.01, ***p<0.001.

Figure 5.3. ADRA CHWs' Mean Service Delivery Ratings, During and Post-Project



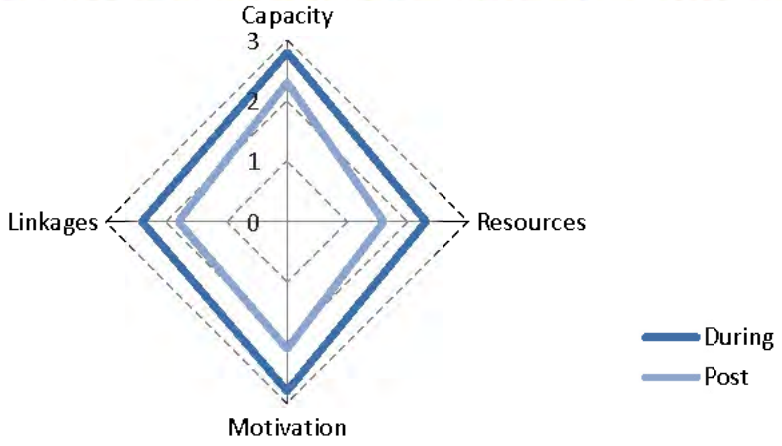
Source: 2011 ADRA CHW Survey, n=19.
All changes significant at p<0.05, though change in resources and linkages rankings significant at p<0.01, based on Wilcoxon signed rank test.

Figure 5.4. FH CHWs' Mean Service Delivery Ratings, During and Post-Project



Source: 2011 FH CHW Survey, n=26.
Note: All changes significant at p<0.001 based on Wilcoxon signed rank test.

Figure 5.5. CARE CHWs' Mean Service Delivery Ratings, During and Post-Project



Source: 2011 CARE CHW Survey, n=39.
Note: All changes significant at p<0.01 based on Wilcoxon signed rank test.

5.2.1 Resources

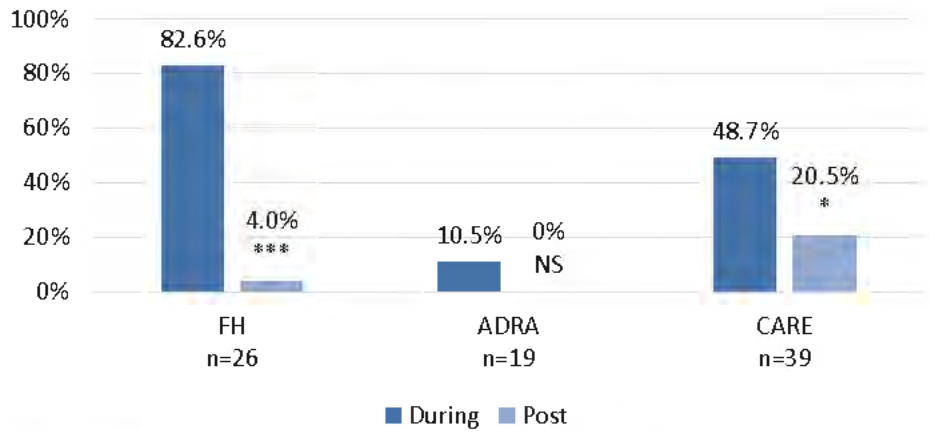
FGDs revealed at least four types of resources that affected health workers' service delivery across all three projects:

- Resources that helped them do their job, such as weighing scales, report forms, t-shirts, and bicycles
- Food rations that they offered the community as an incentive to participate in project activities
- Benefits such as access to goats distributed to women's goat groups or water tanks that served as an incentive for CHWs to serve
- CHW time and the opportunity cost of time spent on CHW activities rather than on other productive labor

None of the three projects had a viable mechanism to replenish any of these resources after the projects ended. While the intention was for the MOH to take responsibility for equipping CHWs to carry out their jobs, this linkage was never consolidated, and materials from the MOH were not forthcoming. On paper, the FH project sustainability strategy expected CHWs to charge community members a small fee so that they could replenish their resources after the project ended. However, the CHWs found that it was unrealistic to expect their already resource-poor communities to begin paying for services that had been free, particularly given low demand for their information and phase out of the food ration that had been linked to growth monitoring. Effectively, the sustainability strategies did not account for any of the four types of motivational resources listed above that appeared necessary to incentivize CHW performance.

Consequently, CHWs reported that their access to resources dropped significantly after the projects ended (**Figure 5.6**). In the FH area, only 4.0 percent of respondents reported having access to sufficient materials and supplies post-project ($p<0.001$), and the data indicate that these individuals were participating in another NGO project in the area. On a scale from 1 to 3 (1=poor and 3=excellent), ADRA CHWs rated their ability to acquire necessary resources at 1.8 during and 1.1 after the project ($p<0.01$), indicating a decline in resource access. Resource restriction was also perceived to be a critical issue in the CARE project area, where quantitative results showed a significant decrease in the percentage of CHWs reporting enough supplies to do their jobs effectively, from 48.7 percent during the project to 20.5 percent post-project ($p<0.05$) (Figure 5.6).

Figure 5.6. Percentage of Health Workers Reporting Access to Sufficient Resources, During and Post-Project



Source: 2011 CHW Surveys.
Note: Missing baseline bar reflects missing data, unless noted with a "0%." Significance based on McNemar's test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

Qualitative interactions uncovered many examples of how unsustained resource access impeded CHW performance. For instance, many of the bicycles provided to CHWs had broken down by the time of the first post-project qualitative inquiry, and CHWs reported that they had no source of income to make repairs. Lack of transportation was highlighted in FGDs as a major constraint to service delivery. The distances that CHWs were expected to cover were vast, and there was little or no public transportation in the rural areas. In the FH area, weighing scales were reportedly (and inexplicably) removed from growth monitoring points, leaving CHWs without this basic equipment to weigh children.

The time burden of CHW duties was raised repeatedly, leading to discussion of the opportunity costs of continuing to work without compensation or other incentives. The opportunity cost of spending the day walking long distances to visit other mothers, only to return to their own families empty-handed, was unsustainable:

> "There is no way that we can leave our houses and train the community and at the end of it, the community cannot pay us. It is better we concentrate on our own families."
> – CHW, Yatta District

Food rations reportedly had the largest impact on CHWs' ability to deliver services. Many CHWs said that their children were eligible for food rations during the project period because they were growth faltering, which reduced the time that CHWs needed to seek and prepare food for their family and thus increased time available to visit other households. More significantly, rations distributed at growth monitoring sessions acted as enormous incentives for community members to participate in health activities. FH and ADRA CHWs reported that mothers reduced their participation in health education sessions once the awardees exited the areas because the CHWs had no rations to distribute and no new information to impart to the communities.

5.2.2 Capacity

All three projects planned to transfer responsibility for sustained CHW capacity through refresher training and supportive supervision to the MOH local facilities. However, these plans never materialized for reasons that will be discussed below. CHWs reported in FGDs that they were well trained and felt

confident in their capacity to perform their duties during the projects but that, after the awardees exited, they no longer had access to new information, the primary "product" that they had to offer their communities. The value of the information declined after CHWs had saturated their catchment areas. Their communities sent clear signals that there was little utility in having CHWs repeat the same health messages to households that had heard them many times before. The CHWs expressed that they had little to offer without new information.

A CHW explained in a FGD during the Round 3 qualitative data collection why she also needed refresher training:

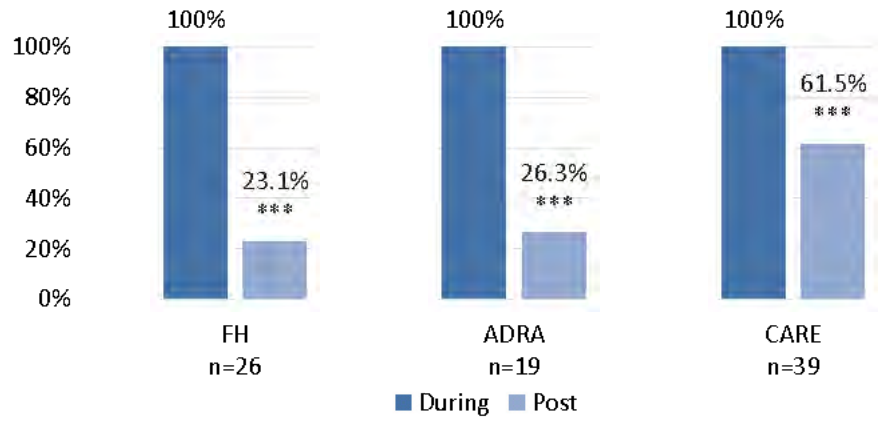
> "Due to the training we got from ADRA and after passing it on to the community, we saw the health of our community improve. People accepted our training and their health practices changed. Generally, our houses became smarter and the level of disease reduced. We would therefore say that the training prepared us to face the day-to-day challenges, but we need further training for us to be able to cope with the challenges facing the community today."
> – CHW, Kitui District

The quantitative survey results reinforced these responses. Only 26.3 percent of ADRA CHWs reported receiving training after the project ended (**Figure 5.7**) and 47.4 percent of ADRA's CHWs reported that "insufficient knowledge" was a problem in sustaining service delivery in the post-project period. In a participatory rating exercise undertaken during FGDs with ADRA CHWs, ratings of "current feeling of preparedness" to do their jobs tended to decrease by half from the project period to the post-project period.

Similarly, in FH project areas, only about a quarter of CHWs reported receiving any training after the FFP development project ended (Figure 5.7) and 84.0 percent of FH CHWs stated that "insufficient knowledge" was a problem in continuing service delivery. In FGDs, these CHWs reported that the lack of continued supportive supervision and refresher courses was one of the reasons that they felt ill prepared to carry out their jobs after the project ended:

> "We are illiterate and tend to forget quickly. Without support and supervision, we find that we are not practicing as effectively as we were taught and thus forget even more."
> – CHW, Laisamis District

Figure 5.7. Percentage of Health Workers Who Received Training, During and Post-Project



Source: 2011 CHW Surveys.
Note: Significance based on McNemar's test; *p<0.05, **p<0.01, ***p<0.001.

In contrast, 61.5 percent of CARE's CHWs received at least some training in the post-project period (Figure 5.7) and did not report as significant a decrease in their capacity to serve. In the quantitative survey, CARE CHWs rated their capacity to conduct their responsibilities (on a scale from 1 to 3, 1=poor and 3=excellent) as 2.8 during the project and 2.3 after the project ended ($p<0.001$; Figure 5.5).

The results of the quantitative survey suggest that the majority of CARE CHWs surveyed appeared to remain somewhat functional in their roles, despite reduced capacity and training. In FGDs, CHWs revealed that some had been absorbed into other NGO projects and had received additional training for the purpose of those projects. They also stated that the lack of support from CARE did not come as a surprise, as they had understood clearly all along that CARE would eventually exit. CARE's early and effective communication of its sustainability strategy appeared to have prepared many CHWs to continue practicing without its presence:

> "They informed us a year before leaving. They told us to use our skills and knowledge to train many other groups. This we have done and our groups are functioning well."
> – CHW, Suba District, Nyanza Province

5.2.3 Motivation

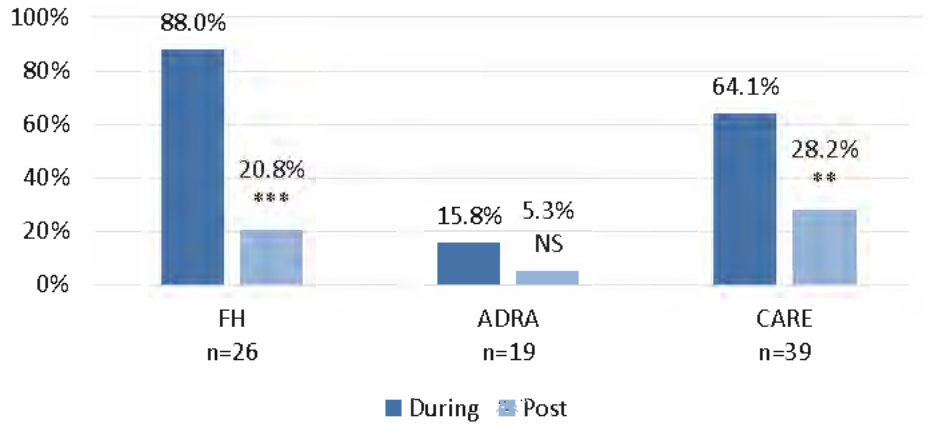
Both qualitative and quantitative data documented a significant decrease in CHW motivation after the end of the FFP projects. For instance, the quantitative survey of FH CHWs found that motivation declined significantly from a mean rating of 2.7 during the project to 1.4 post-project ($p<0.001$) (on a scale from 1 to 3, with 1=poor and 3=excellent), with 96.0 percent of respondents citing "insufficient benefit" as a hindrance to continuing service in the post-project period. Similarly, 52.0 percent cited "insufficient demand" from the community as another contributor to declining motivation. Interestingly, motivation among ADRA CHWs remained relatively high, with a mean rating of 2.9 during the project and 2.5 after the project. However, 47.4 percent cited "insufficient benefit" and 52.6 percent cited "insufficient demand" as obstacles to continuing service delivery.

Qualitative interactions suggested that the factors that motivated CHWs evolved after the projects ended. During the project period, in-kind material benefits, such as certificates and training, inspired the CHWs' work. As illustrated in **Figure 5.8**, the percentage of health workers receiving payment and/or other incentives for service declined post-project. This result is not surprising given that the transfer of responsibility for CHWs to the government was never consolidated. There was also a dynamic relationship among the food rations tied to health service delivery, community demand for such incentives, and the subsequent effect on health worker motivation to continue to provide services. Once the projects ended and all material benefits were withdrawn, few CHWs continued to serve. The few that did were motivated by less tangible factors, including a sense of indebtedness to the community in return for having been selected as representatives and an obligation (often religiously motivated) to share their knowledge and improve the lives of children.

> "We were selected by the community and we do not want to just lay back and forget the trust they had in us. We need to keep going."
> – Contact mother, Marsabit District

However, even those few CHWs who expressed a strong motivation to continue serving their community were unable to due to accompanying restrictions in resources, capacity, and linkages.

Figure 5.8. Percentage of Health Workers Receiving Payment/Incentives, During and Post-Project

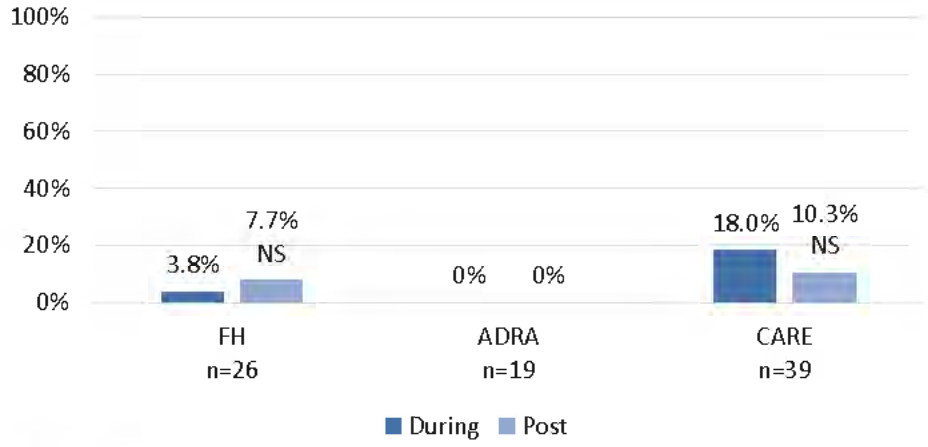


Source: 2011 CHW Surveys.
Note: Significance based on McNemar's test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

5.2.4 Linkages

All three awardees intended to forge linkages with MOH officials and local dispensaries in order to transfer supervision of CHWs to them upon the projects' exit. However, the follow-up survey found that only a very small percentage of health workers actually received support from the MOH either during or post-project (**Figure 5.9**). Only 3.8 percent of FH CHWs and 18.0 percent of CARE group hygiene promoters recalled receiving any assistance from the MOH during the project. Post-project MOH support remained low, at 7.7 percent in the FH area and 10.3 percent in the CARE area. None of ADRA's CHWs reported receiving any support from the MOH either during or post-project.

Figure 5.9. Percentage of Health Workers Receiving Support from the MOH, During and Post-Project



Source: 2011 CHW Surveys.
Note: Significance based on McNemar's test; NS=not significant.

Qualitative research found that the role of MOH officials during the projects seemed largely ceremonial, with only irregular appearances at community events and some training sessions. These linkages were not fully operational by the end of the projects and, invariably, what minimal connection had been made during the projects dissolved completely at exit. Key informant interviews with MOH officials suggested that they were not involved much with the health workers.

> "ADRA had done a good job on the ground with latrine coverage, nutrition, and training the CHWs. I have a very good relationship with ADRA. But a big failure of ADRA was not to include us from the beginning. If they had included us, then we would be involved with the project and better able to partnership."
> – Public Health Officer, Yatta District

A second major reason for the breakdown of the sustainability strategy was the lack of MOH capacity to assume the intended supervisory role. The Kenyan MOH, still centralized during the FFP project period, was understaffed and strapped for resources. A public health officer in Marsabit District explained that he was assigned a duty area of approximately 30,000 square miles. He did not have any means of transportation to get out to the field for supervision and had been waiting for a motorcycle or vehicle for more than 1 year. The CHWs had expected a continued linkage with the MOH and, without the expected supervisory oversight and feedback, links to MOH resources, or new information, lost their motivation to continue delivering services.

Many CHWs reported, however, that they maintained linkages with each other. For example, 52.6 percent of ADRA CHWs reported being in touch with other CHWs in the post-project period. Qualitative research found that these CHWs often repurposed their time spent in group activities to a social focus yielding personal, rather than communal, benefits.

5.3 Sustainability of Maternal and Child Health and Nutrition Service Use

Table 5.1 shows beneficiary participation in five key health-related activities in the FH and ADRA project areas both during and after the projects. As CARE's project did not have an MCHN component per se (it focused on messaging around W&S), this table does not include CARE.

Table 5.1. Sustainability of Health Service Utilization by Project Beneficiaries (FH and ADRA)

Service/activity	FH				ADRA			
	Participated during	Participated post	Sustained participation[a]	Sig.[b]	Participated during	Participated post	Sustained participation[a]	Sig.[b]
Households with a child under 5 years of age	**n=598**	**n=630**	**n=548**		**n=371**	**n=360**	**n=320**	
Received food rations for a child under 5 years[c] of age	80.8%	79.8%	86.9%	NS	59.0%	24.1%	31.5%	***
Took a child under 5 years of age to be weighed for growth monitoring	95.8%	91.3%	92.6%	***	90.5%	63.5%	61.1%	***
Took a child under 5 years of age to a health facility for treatment	92.8%	91.9%	95.1%	NS	99.2%	96.5%	85.6%	*
All households	**n=780**				**n=500**			
Received a visit from a CHW/ contact mother	69.5%	29.7%	40.7%	***	32.1%	17.3%	33.5%	***
Received any health advice/ counseling	80.3%	35.3%	39.6%	***	92.7%	94.8%	83.2%	NS

Source: 2011 Follow-Up Household Surveys, Participation Module (which asks respondents to recall information about participation during and post-project).

Note: Participation refers to respondent or anyone in the household.

[a] Sustained participation was calculated as the percent of households participating during the project that reported also participating post-project; therefore, only households with a child under 5 years of age at both time points were analyzed in this column.

[b] Significant change in participation based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; NS=not significant, *significant at $p<0.05$, **significant at $p<0.01$, ***significant at $p<0.001$.

[c] Food rations post-project were provided in FH areas during a 2011 relief response, ongoing at the time of the follow-up survey.

Fewer than half of the FH and ADRA beneficiary households continued to receive visits from project-trained CHWs and only 39.6 percent of FH households continued to receive health advice or counseling in the years following project completion (all changes were significant at $p<0.001$). More than 80 percent of these respondents cited service unavailability as the primary factor for discontinuing service use. Most of the households that *did* report use of health counseling services post-project (which was found to be high in the ADRA project area) reported receiving these services from MOH extension officers and/or other NGOs.

This trend was also reflected in the qualitative data. FGDs with beneficiary mothers revealed that they were no longer seeking or receiving services from the CHWs. As described in the previous section, beneficiary mothers reported that the withdrawal of food rations had an enormous impact on their demand for services.

> "Now that there is no food, we are finding that the mothers are not bringing their children for weighing or for meetings."
> – Contact mother, Marsabit District

While use of CHW services declined significantly among both FH and ADRA beneficiaries, use of other services for children under 5 years of age remained relatively high. As shown in Table 5.1, more than 90 percent of ADRA and FH households that had children under 5 years of age at both the endline and follow-up surveys reported taking their children to health facilities for treatment both during and after the project. In this same group (households with children under 5 years of age at both survey points), most of the FH households who received food rations and attended growth monitoring activities sessions during the project continued to do so after it ended (86.9 percent and 92.6 percent, respectively). Among ADRA households with children under 5 years of age at both time points, 61.1 percent who took their children to growth monitoring activities sessions during the project also took them after the project ended, while only 31.5 percent of those who received food rations for their children during the project also received them at some point in the post-project period.

This set of findings must be interpreted in the context of other external interventions happening at the time of the follow-up survey in 2011. All food rations were phased out when both FH and ADRA finished their projects. Qualitative evidence from the two years following project exit strongly support the fact that health-seeking behavior and growth monitoring participation all but ceased once the household rations were withdrawn. Though indicators from the 2011 follow-up survey suggest *sustained* participation, these data are actually capturing *renewed* participation. During the 2011 relief response, ongoing at the time of the follow-up survey, household food ration distribution linked to growth monitoring participation was reinstated, this time at health posts by government health workers, as well as at some community-based distribution points. Women again began to bring their children, though this time CHWs were bypassed. This example illustrates both the powerful incentive of food for participation in preventive health activities and the challenge of maintaining community engagement without it.

The survey results showed a significant decline in the percentage of respondents who received a visit from a project-trained CHW, even though most reportedly continued to visit health facilities after the project ended. This suggests that the sustainability strategy to give CHWs continued responsibility was largely unsuccessful. Once the CHWs could no longer incentivize community mothers with food rations, the benefits of growth monitoring alone did not outweigh the cost or time to travel to the sites, particularly given that many women lacked sufficient resources to act on the information offered in growth monitoring sessions once the ration was withdrawn. Not only did purchasing power suffer in the drought-stricken region, but the "locally available nutritious foods" that were meant to substitute for the household food ration were not available during the drought.

5.4 Sustainability of Recommended Maternal and Child Health and Nutrition Practices

5.4.1 Sustainability of Health and Nutrition Practices

Quantitative data pertaining to the sustainability of recommended health practices is largely limited to the FH project. As CARE's project focused on W&S interventions, CARE measured only two health outcome indicators during its endline evaluation: exclusive breastfeeding and feeding during a child's diarrheal episode. While ADRA's project had a strong health component, the study team was unable to access the ADRA endline evaluation survey raw data, and the ADRA endline evaluation report did not present any of the relevant project indicators related to health and nutrition practices, outcomes, and impacts, despite the fact that they were apparently measured by ADRA and appear in ADRA's endline questionnaire. This lack of ADRA data (raw and reported) prevented the study team from examining the degree of change between ADRA's endline survey and the follow-up survey of many key health activities, outcomes, and impacts. The data collected in the follow-up (post-project) survey could be compared only to indicators that ADRA included in its endline evaluation report.

Table 5.2 and **Table 5.3** show sustainability of recommended health practices for CARE and FH. As Table 5.3 shows, many recommended health practices, as well as health knowledge, were not sustained in the FH project area 3 years post-exit. While nearly all caretakers of infants under 6 months of age could recall at least two signs of child illness indicating need for treatment at follow-up, there were statistically significant declines from endline to follow-up in the percentage that could recall: 1) the fact that vitamin A prevents night blindness, 2) at least three foods rich in vitamin A, or 3) more than two ways to prevent HIV transmission (all significant at $p<0.001$).

Interestingly, this trend of decreasing knowledge is somewhat inconsistent with the findings of the qualitative study team. The qualitative inquiry revisited mothers who had been beneficiaries during the FH-implemented FFP development food assistance project in Kenya. In FGDs, these beneficiary mothers were able to recall most of the health and nutrition messages that FH promoted and even sang songs in their language about vitamin A and vitamin A-rich foods, suggesting that many retained the knowledge that they acquired during the projects. The quantitative follow-up survey sampled a cross-section of mothers with children under 5 years of age more than 2 years after the project ended, and it is possible that many of these respondents were newer mothers who were never exposed to the messages conveyed during the project. If this is the case, these findings suggest that diffusion of knowledge to new beneficiaries did not work as FH had hoped even though direct project beneficiaries retained knowledge. This finding is supported by data reported in the service delivery and service use sections of this report (Sections 5.2 and 5.3), which suggest that CHW activity and effectiveness declined significantly after the projects ended.

Table 5.2 and Table 5.3 suggest that sustainability of recommended health practices partially depended on the need for external resources. Exclusive breastfeeding of infants younger than 6 months of age, an essentially free practice, remained prevalent among FH beneficiary mothers, with no statistically significant difference between endline and follow-up data. The majority (68.0 percent) of targeted mothers in both the mountain and lowlands regions reported this behavior in the follow-up survey. Among CARE beneficiaries, exclusive breastfeeding actually *increased* post-exit from 38.2 percent at endline to 60.7 percent at follow-up ($p<0.05$). However, the remaining health outcomes, all of which pertain to other infant and young child feeding practices or iron supplementation, show less positive results. In both the FH and CARE areas, there were significant declines in the percentage of mothers reporting that they offered extra food to their children during a diarrheal episode ($p<0.001$ for FH and

p<0.05 for CARE). There were also significant declines in the percentage of FH beneficiary mothers who reported taking at least 3 months of iron supplements during their last pregnancy (p<0.001) and offering children 9–23 months old at least three meals or snacks a day (p<0.01 in the mountain and p<0.001 in the lowlands regions). The drop in recommended feeding practices during child illness may reflect the drought and food shortage at the time of the follow-up survey (the FH area was in a declared food emergency). Most households had lost their livestock and were relying on relief food, which was often insufficient or unreliable. The lack of adherence to other prescribed feeding practices may also reflect the critical levels of household food insecurity at the time.

Table 5.2. Sustainability of Recommended Health Practices from Endline to Follow-Up, CARE

Indicator	Endline (2008)		Follow-Up (2011)		Endline to Follow-Up[a] (ppt Δ[b])
	n	%	n	%	
Infants under 6 months of age exclusively breastfed	13	38.2%	51	60.7%	+22.5*
Mothers of children under 5 years of age offering extra food during last diarrheal episode (within the last 2 weeks)	20	24.1%	20	13.0%	−11.1

Sources: 2008 CARE Endline Survey; 2011 CARE Follow-Up Household Survey.
[a] Significance based on Pearson's chi-square test; *p<0.05, **p<0.01, ***p<0.001.
[b] ppt Δ=percentage point change.

Table 5.3. Health Knowledge and Recommended Practices Trends from Baseline to Follow-Up, FH, 2003–2011

Indicator	Baseline (2003)	Midterm (2006)	Endline (2008)	Baseline to Endline (ppt Δ[a])	Follow-Up (2011)	Endline to Follow-Up[b] (ppt Δ[a])
All households	**n=n/a**	**n=n/a**	**n=598**		**n=780**	
Caregivers recalling that vitamin A prevents night blindness	n/a	n/a	76.4%	n/a	37.9%	−38.5 ***
Caregivers recalling at least three vitamin A-rich foods	n/a	n/a	60.6%	n/a	31.2%	−39.4 ***
Women 15–49 years of age recalling at least 2 methods to prevent HIV	n/a	n/a	57.4%	n/a	30.9%	−26.5 ***
Households with child 6 months of age or younger	n=n/a	n=n/a	Mtn: n=28 Low: n=31		Mtn: n=46 Low: n=44	
Caregivers of infants 6 months of age or younger recalling at least 2 signs of childhood illness indicating need for treatment						
Mountain Region	70%	71%	93%	+23	98%	+5 NS
Lowlands Region	34%	64%	100%	+66	100%	0 NS
Infants 6 months of age or younger exclusively breastfed						
Mountain Region	51%	67%	69%	+18	68%	−1 NS
Lowlands Region	27%	33%	86%	+59	68%	−18 NS

Indicator	Baseline (2003)	Midterm (2006)	Endline (2008)	Baseline to Endline (ppt Δ[a])	Follow-Up (2011)	Endline to Follow-Up[b] (ppt Δ[a])
Households with child 9–23 months of age	n=n/a	n=n/a	Mtn: n=133 Low: n=123		Mtn: n=75 Low: n=111	
Caregivers of children 9–23 months of age offering child at least three meals/snacks (apart from breastfeeds) each day						
Mountain Region	73%	75%	93%	+20	75%	−18 **
Lowlands Region	49%	30%	90%	+41	63%	−27 ***
Households with child under 2 years of age	n=n/a	n=n/a	Mtn: n=174 Low: n=166		Mtn: n=138 Low: n=172	
Mothers of children under 2 years of age who reported taking at least 3 months of iron supplements during last pregnancy						
Mountain Region	n/a	47%	69%	n/a	37%	−32 ***
Lowlands Region	n/a	68%	73%	n/a	46%	−27 ***
Caretakers of children under 2 years of age offering extra food[c] to child during child's last diarrhea episode[d]	n/a	28%	87%	n/a	53%	−35 ***

Sources: FH IPTT; 2008 FH Endline Survey; 2011 FH Follow-Up Household Survey.
Note: Sample sizes were not available (n/a) from the baseline and midterm reports. These baseline and midterm reports presented all results rounded to whole numbers, as reproduced here.
[a] ppt Δ=percentage point change.
[b] Significance based on Pearson's chi-square tests (using Rao-Scott correction); NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[c] "Extra food" defined as the caretaker reporting offering breast milk, solids, and/or fluids "more than usual."
[d] Denominator includes only households reporting a child under 2 years of age who had diarrhea in the previous 3 months (endline: n=110, follow-up: n=136).

5.4.2 Sustainability of Recommended Water, Sanitation, and Hygiene Practices

Table 5.4 presents data on the sustainability of specific water, sanitation, and hygiene (WASH) practices promoted by the trained CHWs. (Section 6 of this report discusses results pertaining to the sustainable delivery and use of W&S services, which were channeled through community W&S committees.) Table 5.4 endline figures are limited to FH and CARE beneficiary households, as ADRA endline data were unavailable to the study team.

Follow-up survey results suggest that CARE households maintained many of the key hygiene behaviors promoted by the project 3 years after it ended. These sustained hygiene practices included handwashing with soap after using the toilet, washing fruits before eating, washing vegetables before cutting, bathing daily, using dish racks, cleaning the compound, proper treating or storage of water for consumption, and disposal of garbage in a compost pit. The mean number of recommended hygiene practices reported changed little from endline to follow-up. Water purification was especially well sustained, with 68.7 percent of households reporting purifying with WaterGuard at endline and 69.8 percent reporting the practice at follow-up. Respondents reported in qualitative FGDs that they adopted the improved behaviors because they experienced a visible impact and benefit in their household, namely, they felt healthier and reported fewer incidents of illness. Many of these sustained practices did not require any outside resources. Other behaviors that were sustained, like chemical water purification, required very low-cost periodic inputs. CARE successfully ensured the ready availability of these inputs in local markets by the end of the project.

In the FH project area, where water was exceptionally scarce, recommended hygiene practices were not as well sustained. The mean number of appropriate handwashing situations household respondents reported fell from 3.5 to 2.7 (out of 7 total) from endline to follow-up ($p<0.001$). Water purification, by boiling or chemical treatment, also declined, from 66.1 percent of households reporting "always" purifying drinking water at endline to only 17.0 percent at follow-up ($p<0.001$). At follow-up, 57.5 percent reported purification "sometimes," meaning that 74.5 percent of all follow-up households reporting purifying "always or sometimes," down from 82.6 percent at endline. This trend implies that the knowledge of the importance of water purification may have been sustained among the majority of households. It is possible that many households lacked the resources (chemicals, kerosene, or firewood) to carry out the practice on a daily basis.

Table 5.4. Sustainability of Recommended WASH Practices

Indicator	Endline (2008)	Follow-Up (2011)	Endline to Follow-Up[a]
CARE (All households)	n=246	n=606	
Mean # of respondent hygiene practices	5.7	5.8	+0.1 NS
Households using a dish rack	48.8%	49.9%	+1.1 ppt Δ[b] NS
Households treating water with WaterGuard[c]	68.7%	69.8%	+1.1 ppt Δ[b] NS
Households reporting handwashing after toilet use	68.3%	72.6%	+4.3 ppt Δ[b] NS
Mean # of situations in which respondents reported washing their hands (0–5)	3.0	2.8	−0.2 ***
FH (All households)	n=598	n=780	
Mean # of situations in which respondents reported handwashing (0–7)	3.7	2.5	−1.2 ***
FH (Households with children under 5 years of age)	n=584	n=552	
Caretakers of children under 5 years of age who report always purifying[d] drinking water	66.1%	17.0%	−49.1 ppt Δ[b] ***
Caretakers of children under 5 years of age who report purifying[d] drinking water always or sometimes	82.6%	74.5%	−8.1 ppt Δ[b] *

Sources: 2008 Endline Surveys; 2011 Follow-Up Household Surveys.
Note: Baseline data for above indicators were not available (n/a).
[a] Significance based on independent samples t-test or Pearson's chi-square test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[b] ppt Δ=percentage point change.
[c] WaterGuard is a dilute chlorine solution used to disinfect water at the household level.
[d] Purification defined by either boiling or chemically treating water.

5.5 Sustainability of Maternal and Child Health and Nutrition Impacts

Across all three FFP development projects in Kenya, children's nutritional status was the primary health impact of interest. While endline and post-project data were available for FH and CARE, ADRA did not collect or report anthropometric measurements as part of its endline evaluation. Therefore, the study team made the cost-saving decision not to collect anthropometric data during the ADRA follow-up survey. Hence, only the FH and CARE project areas are discussed in this section.

As shown in **Table 5.5**, all child anthropometric indicators deteriorated among FH beneficiary households, while CARE beneficiaries experienced some improvements. In the FH households, the prevalence of malnutrition among children 6–59 months of age, measured by wasting, stunting, and

underweight, increased at midterm (likely because of the 2005–2006 drought) and returned to baseline levels at endline. All measures then worsened from endline to follow-up, with 39.6 percent of children stunted, 41.5 percent underweight, and 25.9 percent wasted (all significantly higher than endline at $p<0.001$). Based on secondary data from the UNICEF/FH 2011 Marsabit Nutrition Survey, these figures generally align with trends observed in the wider Marsabit District. The follow-up survey was administered during a time of severe drought and severe food insecurity in this region.

By contrast, quantitative data show a general trend of *declining* rates of child malnutrition among CARE households from 2004 to 2011. While CARE did not have a large programmatic focus on addressing children's nutrition, the project implicitly assumed that improvements in W&S would reduce malnutrition by reducing water-borne infections and diarrheal disease. Measures of both underweight and wasting among children aged 0–59 months declined significantly from endline to follow-up, with wasting decreasing from 25.1 percent at baseline to 13.5 percent at endline and 5.1 percent at follow-up ($p<0.001$ from endline to follow-up). Underweight declined steadily from 22.2 percent at baseline to 15.0 percent at endline to only 10.4 percent at follow-up ($p<0.05$ from endline to follow-up). Stunting increased slightly, from 24.5 percent at endline to 28.8 percent at follow-up, though the change was not statistically significant.

Table 5.5. Trends in Child Malnutrition Impacts from Baseline to Follow-Up (FH and CARE)

Indicator	Baseline (2003/4)[a]	Midterm (2006)	Endline (2008)	Baseline to Endline (ppt Δ[b])	Follow-Up (2011)	Endline to Follow-Up[c] (ppt Δ[b])
FH	n=667	n=741	n=1,595		n=995	
Stunted (HAZ[d] < −2)	30.9%	31.2%	29.0%	−1.9	39.6%	+10.6 ***
Underweight (WAZ[e] < −2)	23.7%	37.1%	24.1%	+0.4	41.5%	+17.4 ***
Wasted (WHZ[f] < −2)	12.4%	22.7%	11.5%	−0.9	25.9%	+14.4 ***
CARE	n=n/a	n=n/a	n=417		n=1,129	
Stunted (HAZ[d] < −2)	51.7%	n/a	24.5%	−27.2	28.8%	+4.3 NS
Underweight (WAZ[e] < −2)	22.2%	n/a	15.0%	−7.2	10.4%	−4.6 *
Wasted (WHZ[f] < −2)	25.1%	n/a	13.5%	−11.6	5.1%	−8.4 ***

Sources: 2008 Final Evaluation Reports; 2008 Endline Surveys; 2011 Follow-Up Household Surveys.
Notes: Endline and follow-up indicators calculated using Emergency Nutrition Assessment for SMART (v.11) and WHO 2006 child growth standards; baseline and midterm indicators converted from National Center for Health Statistics standards to reflect newer WHO standards using algorithms developed by Yang and de Onis (2008); age ranges include 6–59 months (FH) and 0–59 months (CARE). n/a=not available.
[a] FH's baseline was carried out in 2003; CARE's baseline was carried out in 2004.
[b] ppt Δ=percentage point change.
[c] Significance based on Pearson's chi-square test (using Rao-Scott correction for FH); NS=not significant, *significant at $p<0.05$, **significant at $p<0.01$, ***significant at $p<0.001$.
[d] Height-for-age z-score.
[e] Weight-for-age z-score.
[f] Weight-for-height z-score.

The data for the CARE project area were compared with secondary data on anthropometric measurements that were available for children under 5 years of age in Nyanza Province (one of the provinces in which CARE operated) during the project period from 2004 to 2008. In 2004, the first year of the CARE FFP development project studied here, baseline prevalences of acute and chronic malnutrition reported in the project area were much higher than rates in Nyanza overall (**Table 5.6**). For example, stunting prevalence was 37.3 percent in Nyanza in 2004, compared to 51.7 percent in the CARE project area. However, by endline, rates of stunting were lower in the project area (24.5 percent) than in Nyanza as a whole

(30.9 percent), suggesting that the rate of decline in the project area was greater than for the province overall. Without a control group, it is difficult to attribute improvements in malnutrition indicators over time to the CARE project itself or to attribute the nutritional status of children assessed in 2011 to lasting project impacts. However, given higher malnutrition base prevalence in the project area and greater rates of decline compared with Nyanza, there is some evidence to suggest that the CARE project may have reduced malnutrition prevalence during the life of the project, and perhaps successfully sustained these reductions after the project's exit.

Table 5.6. Trends in Child (0–59 Months) Malnutrition from Baseline to Follow-Up in the CARE Project Area, Compared to Trends in Nyanza Province Overall, 2004–2011

Indicator	Baseline 2004	Midterm 2006	Endline 2008	Baseline to Endline (ppt Δ[a])	Follow-Up 2011	Endline to Follow-Up (ppt Δ[a])
CARE project area	n=n/a	n=n/a	n=417		n=1,129	
Stunted (HAZ[b] < –2)	51.7%	n/a	24.5%	–27.2	28.8%	+4.3
Underweight (WAZ[c] < –2)	22.2%	n/a	15.0%	–7.2	10.4%	–4.6
Wasted (WHZ[d] < –2)	25.1%	n/a	13.5%	–11.6	5.1%	–8.4
Nyanza						
Stunted (HAZ[b] < –2)	37.3%	42.4%	30.9%	–6.4	n/a	n/a
Underweight (WAZ[c] < –2)	13.7%	15.6%	10.6%	–3.1	n/a	n/a
Wasted (WHZ[d] < –2)	3.1%	8.8%	3.9%	+0.8	n/a	n/a

Sources of secondary data: Kenya Central Bureau of Statistics 2004; Kenya National Bureau of Statistics 2010; Kenya National Bureau of Statistics 2006.
Note: n/a=not available
[a]ppt Δ=percentage point change.
[b] Height-for-age z-score.
[c] Weight-for-age z-score.
[d] Weight-for-height z-score.

However, as already mentioned, there were some potential data quality issues with the anthropometric data collected during the follow-up survey. Despite following WHO criteria for exclusion of highly implausible results from analysis, the standard deviations of the distributions of z-scores exceeded those recommended as plausible by WHO, implying potentially poor data quality and/or measurement error. This was particularly the case with the WHZ data. Therefore, results pertaining to children's anthropometric data, and the WHZ data especially, should be interpreted with caution.

5.6 Maternal and Child Health and Nutrition Sector Sustainability: Lessons Learned

Box 5.2 summarizes key findings of the assessment of exit strategies and sustainability within the MCHN sector. Each of the three FFP development projects in Kenya focused its health sector sustainability strategy on developing front-line health workers to continue disseminating health knowledge, practices, and resources after the organizations left and to function as a community-based resource that could be called on for future government-led health initiatives. The quantitative and qualitative results showed that the functionality of front-line health workers declined post-project, as did their perceived resources, capacity, motivation, and linkages. Health workers were not paid for their services, either during or after the project period, and linkages to the GOK were never consolidated. Moreover, with the withdrawal of household food rations, front-line health workers no longer had a means of incentivizing health-seeking

behavior, and, without the benefit of continued training from a linkage partner, they did not feel that they had any new information to disseminate.

Despite the decline in service delivery by project-trained health workers and the use of their services by communities, many respondents in the ADRA and FH areas reported that they continued to take their children to health facilities and to growth monitoring after the projects ended. However, these and other services were offered by the MOH at local dispensaries, and many of the services were linked to the distribution of food aid by other NGOs and the GOK during the drought emergency.

The sustainability of health-related practices and impacts varied. Without a strong community-based service provider presence post-project, many promoted behaviors and practices that cost money, time, or other resources, such as providing children with more food, were not sustained. While the link between these practices and child malnutrition is tenuous, anthropometric data were analyzed to complete the evaluation according to the project pathway and to provide insight into possible connections among exit strategies, service delivery, recommended behaviors, and targeted impacts. In the FH project area, malnutrition increased significantly, but the effects of the sustainability strategies and project itself cannot be disentangled from the severe effects of the 2011 drought. CARE beneficiaries, on the other hand, experienced improvements in childhood malnutrition over the life of the project, and these reductions were sustained after project exit, which secondary data suggest could be at least partially attributed to the project's success.

Box 5.2. MCHN Sector Sustainability: Key Findings

WHAT WORKED

- Practices that did not require outside resources were more likely to be sustained.
- People continued to participate in activities and/or engage in practices when a new awardee offered resources or incentives.
- Non-material benefits (prestige) were a powerful incentive in the short term only.
- A gradual, phased approach to transfer CHWs to government was more successful than an abrupt handoff.

WHAT DID NOT WORK

- The projects' CHW sustainability strategy did not account for resources, capacity, motivation, or linkages.
- MOH linkages did not consistently consider the resources, capacities, or motivation of the linkage partner.
- Information transmission often had diminishing returns when there was no injection of new messages.
- There was no simple substitute for free food. Discontinuation of rations was a disincentive to continue participation in associated activities.
- Non-material benefits were not often sufficient motivation for volunteers after exit.

A number of important conclusions can be drawn from this research about the efficacy of the MCHN sector sustainability strategies and their underlying assumptions.

- Resources, capacity, motivation, and linkages are critical for sustainability, yet the CHW model employed by the FFP development projects studied in Kenya did not take these key factors into consideration.
- The resources, capacity, and willingness of the government health system to take over a project's health service providers after the project ends must be carefully assessed at the project's design stage. In addition, transferring health workers to the government may be more successful using a gradual, phased approach with key benchmarks and a period of allowing health workers to operate with only government supervision while the awardee serves a troubleshooting role. It is clear from the study findings that an abrupt handover at the time of exit is not likely to succeed.
- Information transmission has declining returns, especially when an intervention promotes a limited set of messages. Health workers are not able to sustain demand for their services when their main product is a supply of "old" knowledge. However, knowledge is not the only barrier to behavior change. This study found that new behaviors requiring external resources in resource-scarce environments, such as continued feeding during diarrhea episodes, were generally less likely to be sustained.
- Non-material benefits (e.g., respect, privilege, or obligation) may be powerful motivators in the short term, but are not sufficient over the long term to motivate effective service delivery by volunteer CHWs.
- Food is a powerful incentive. In the cases examined through this study, it appears that the abrupt discontinuation of supplementary food rations at the end of a project for households with low weight-for-age children detected through growth monitoring had a disincentivizing effect on continued growth monitoring service utilization. This appears to be because expectations of free food could no longer be met and, without a viable replacement for the food ration, mothers did not see a benefit to taking their children to growth monitoring sessions. Furthermore, CHWs in charge of running growth monitoring sessions were demoralized by the lack of demand and stopped the regular weighing sessions. By the time of the follow-up survey in 2011, distribution of rations to malnourished children had recommenced in the FH and ADRA areas through the government health dispensary as part of the relief response and, in turn, the vast majority of mothers interviewed had once again started taking their children for growth monitoring. These dynamics raise questions of whether there are more appropriate approaches to "exiting" from ration provision that will preserve, rather than undermine, continued participation.

6. Results: Water and Sanitation Sector

This section first summarizes the elements of the projects' W&S sector interventions that were intended to lead to sustained or expanded benefits. The subsequent four subsections present results related to the implementation of these sustainability components and the de facto exit processes, in association with the documented sustainability of: 1) service delivery (organized by factors related to resources, capacity, motivation, and linkages), 2) service use, 3) uptake and continuation of recommended practices, and 4) impacts. The final subsection summarizes key W&S sustainability findings and lessons learned.

6.1 Water and Sanitation Sector Sustainability Plans and Exit Strategies

ADRA, CARE, and FH adopted a similar approach in their W&S sector interventions and sustainability strategies. They formed W&S management committees and trained them in the technical and managerial aspects of maintaining water points constructed during the projects. All the W&S committees were to be formally registered with the Ministry of Culture and Social Services and were to develop constitutions that laid out their rules of operation. While ADRA's and FH's sustainability strategies were to link the committees to relevant GOK offices for continued training and technical advice once the projects ended, CARE assumed that the committees would be technically and managerially self-sufficient after intensive capacity building during the project. To ensure sufficient funds to cover committee operating costs, replacement parts, and maintenance after exit, all three projects implemented a model to charge user fees for water consumption.

The CARE water projects included training local potter artisan groups to build slabs for latrines and water tanks, as well as safe water vessels. These CARE artisan groups were paid or given in-kind payments as incentives. In FH's water projects, which also incorporated NRM elements, the W&S/NRM committees assumed a dual role. For example, the W&S/NRM committee spearheaded the dredging of the North Horr Ghuda Spring and then protected it with a fence line. The community constructed a gravity-fed trough for the livestock that protected the spring and planted grasses and trees. The CARE and ADRA projects focused on building community-run boreholes and wells. **Box 6.1** summarizes the three awardees' W&S sector assumptions and sustainability strategies.

Box 6.1. ADRA, FH, and CARE W&S Sector Sustainability Strategies and Key Assumptions

SUSTAINABILITY STRATEGIES	KEY ASSUMPTIONS
• Train W&S committees to take over technical and managerial aspects of maintaining water points and strengthen relations with GOK water officers to ensure their availability as a technical resource, if needed.	• W&S committees will be able to access further technical assistance, when necessary.
• Implement user fees to cover operating costs and maintenance of water points.	• Water sources will be reliable, adequate, accessible, and of good quality. • Communities will demand and pay for water. • User fees will be sufficient to cover maintenance and periodic replacement of capital equipment.

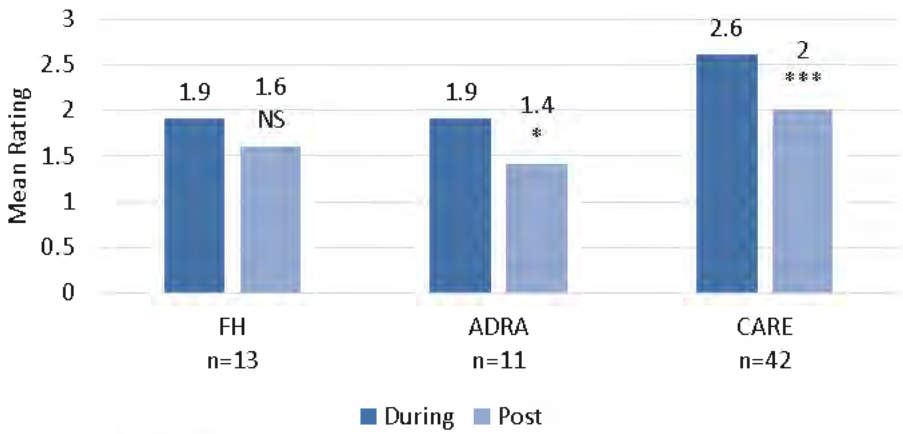
6.2 Sustainability of Water and Sanitation Service Delivery

While many W&S committees were still functioning at the time of the follow-up survey, many faced challenges in continuing service delivery post-exit. In the FH Marsabit mountain area, shifting water tables and the prolonged drought affected service delivery. The functioning of the ADRA boreholes and wells were also challenged by shifting water tables, rising salinity levels, and drought.

6.2.1 Resources

All three awardees implemented a self-financing water model in which communities were charged user fees for water consumption. The assumption underlying the sustainability strategy of that model is that user fees would fund the continuation of water activities and needed repairs to the system. **Figure 6.1** shows that the W&S committees' ratings of their ability to acquire needed resources decreased after the projects ended, though the decrease was not statistically significant among FH respondents.

Figure 6.1. W&S Committee Member Ratings of Their Ability to Acquire Resources, During and Post-Project



Source: 2011 W&S Committee Member Surveys.
Note: Significance based on Wilcoxon signed rank test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

In the ADRA area, on a scale of 1 to 3 (1=poor, 3=excellent), the mean rating of the W&S committee's ability to acquire resources was 1.9 during the project and 1.4 post-project ($p<0.05$). "Insufficient resources" was cited as a problem by 83.3 percent of ADRA committee respondents. In FGDs, which explored the resource constraints in greater depth, the committees reported that, after ADRA's exit, many community members refused to pay the water fees because of poor water supply and salinity of the boreholes. Many of these dissatisfied customers reverted to fetching water from contaminated riverbeds. Without a high-value product to offer, committee members felt they were unable to enforce the fee structure or take action against noncompliance.

> "When ADRA was present, the community actually paid. Now that they have left, they have refused to pay us. ADRA used to provide us with spare parts, now we have none."
> – Member of W&S Committee, Kitui District

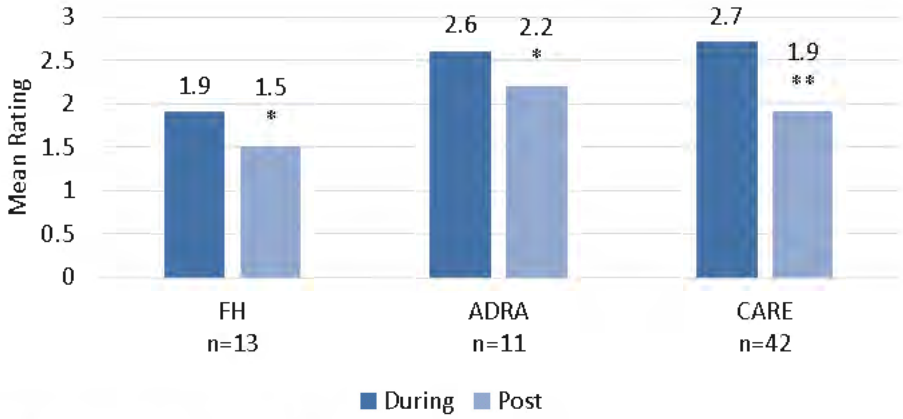
There were also cultural issues attached to water as a commodity. Many rural communities in Kenya consider it wrong to deny someone the right to water. This cultural characteristic could have affected the enforcement of water usage fees and the sustainability of financing in some areas.

In contrast to the financing challenges of some of the smaller community-based boreholes, the W&S committee in the former CARE area that oversaw the large-scale, high-input water development scheme used innovative methods to raise enough fees to buy fuel for the generators at booster stations. This ambitious project drew water from Lake Victoria through a series of booster stations, water towers, and elaborate piping systems. In the first round of FGDs that took place just as CARE's project was ending, the committee seemed stymied about how it would sustain the system in CARE's absence. However, by the third year after project exit, it had established bulk water supply contracts with local institutions and sold water to the community through various outlet pipes to raise funds to maintain the infrastructure and even expand service delivery into new communities. The user fee system provided a consistent source of income to sustain service delivery.

6.2.2 Capacity

During the projects' implementation period, W&S committees were trained in the financial and technical aspects of managing the water points with the intention of institutionalizing this knowledge. Although **Figure 6.2** shows a decrease in the committees' ratings of their capacity after the projects ended, most of the committees reported in FGDs that they were capable of handling the managerial and technical oversight of the water points. This was especially true of the W&S committees in the (FH) Northeru Chalbi Region and most of the ADRA and CARE committees managing smaller community boreholes. For instance, in North Horr Ghuda in the Chalbi Desert, the FH-trained W&S committee not only sustained its activities but also innovatively expanded on the initial investment by coupling spring protection with the development of associated fodder and water sources for livestock.

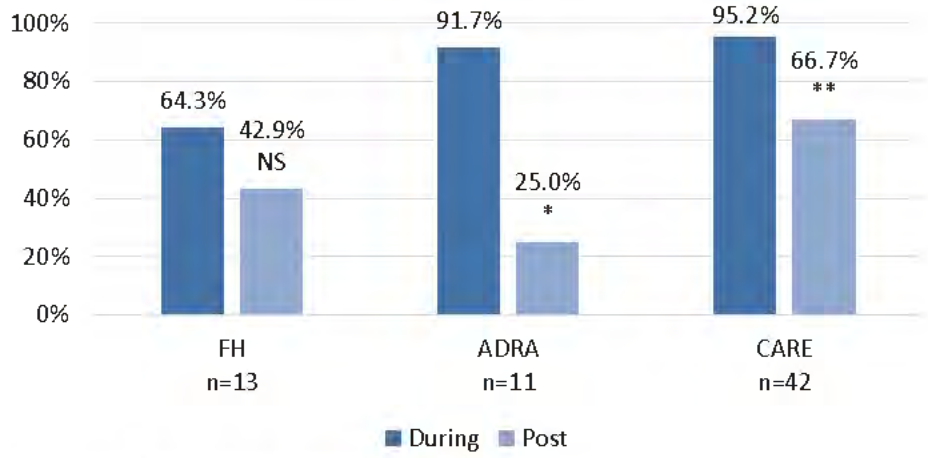
Figure 6.2. Capacity Ratings of W&S Committee Members, During and Post-Project



Source: 2011 W&S Committee Member Surveys.
Note: Significance based on Wilcoxon signed rank test; *p<0.05, **p<0.01, ***p<0.001.

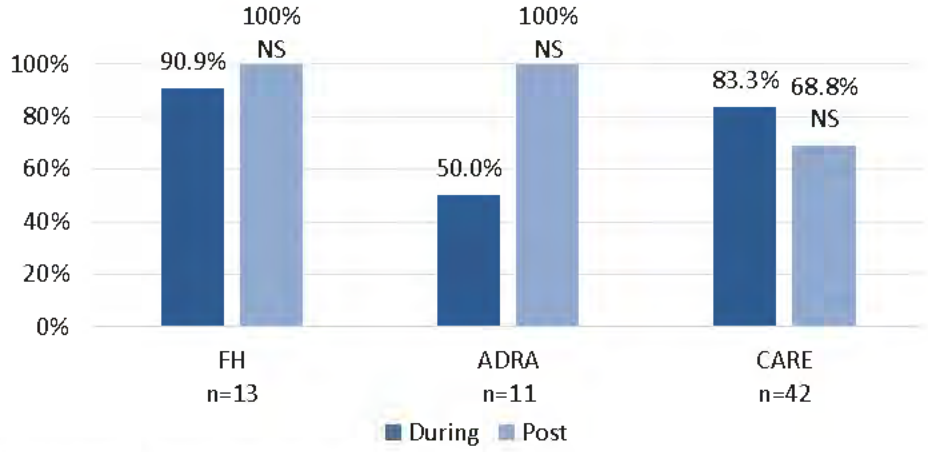
Despite the decline in refresher training across all three projects (**Figure 6.3**), technical capacity to repair the water points remained high, with 100 percent of the committees in both FH and ADRA areas affirming that they had repaired their water points when necessary (**Figure 6.4**). In CARE areas, the percentage of W&S committee members reporting that their water points had been repaired when needed dropped from 83.3 percent during the project to 68.8 percent post-project. However, only 38.1 percent of CARE committee respondents reported that their water points needed repair in the post-project period, compared with roughly two-thirds of FH and ADRA committee respondents.

Figure 6.3. Percentage of W&S Committee Members Reporting Having Received Training of Leaders, During and Post-Project



Source: 2011 W&S Committee Member Surveys.
Note: Significance based on McNemar's test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

Figure 6.4. Percentage of W&S Committee Members Reporting Water Points Were Repaired When Needed, During and Post-Project



Source: 2011 W&S Committee Member Surveys.
Note: Changes not statistically significant using McNemar's test.

The W&S committee members who reported a decline in capacity to sustain their community water systems seemed to interpret the question in terms of their *ability,* rather than their *knowledge* of how, to do so in the face of various challenges. For instance, communities close to the Marsabit Mountain (FH) area, which experienced a sustained drought, rated their capacity to maintain their water systems lower. Similarly, W&S committees in ADRA areas that said that they were struggling to maintain their water points faced outside challenges, which affected water quality, quantity, and reliability. These effects occurred from a combination of salinization and shifting water tables, which left shallow boreholes unable to yield a reliable water supply. In areas with these supply side challenges, community demand dropped and committees could no longer collect user fees to cover their costs.

> "The community perceives the activities as a failure because the water sources that were done by the project either dried up or were too salty to use."
> – Member of W&S Committee, Kitui District

6.2.3 Motivation

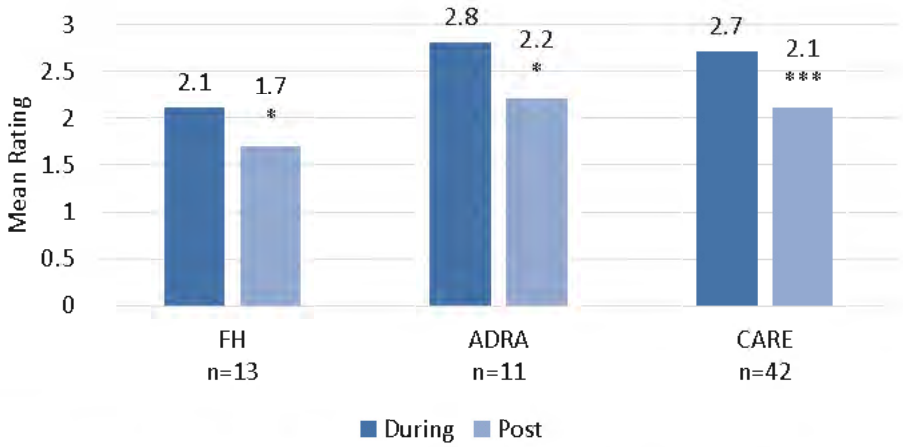
The W&S committee members' motivation to continue service delivery declined across all three project areas after the projects ended (**Figure 6.5**). On a scale of 1 to 3 (1=poor, 3=excellent), the motivation reported by the W&S committees in the FH area decreased from an average 2.1 during the project to 1.7 post-project ($p<0.05$). Qualitative research explored motivation in depth. Because Marsabit District is an extremely arid region, many W&S committee members saw their role in providing water as making the difference between life and death for their communities. Water is needed for all development activities in the area, especially those related to health and livestock. Hence, while the committee members' motivation levels dropped a bit without compensation, many members continued to be motivated by their key role in their communities' survival. In fact, 63.5 percent of the 2011 follow-up survey respondents who had served on a W&S committee during the project reported that they continued to serve on the committees post-project.

CARE W&S committees reported a similar motivation—supporting their communities' access to a vital resource—in FGDs. The water points provided a visible benefit, mitigating the challenges that the communities experienced in obtaining water. For example, the W&S committee for the large-scale water scheme said that people used to have to walk up to 10 km down to Lake Victoria to fetch water, then up a steep slope to return home. Access to a closer water source had revolutionized their lives, reducing the time needed to fetch water, improving health, and increasing agricultural opportunities.

> "Water is life. It is food; it is medicine; it is everything."
> – Member of W&S committee, Bondo District

In the ADRA areas, only 25.0 percent of W&S committee respondents reported "low motivation" to continue service delivery post-project. In this arid area, water is the linchpin of most development activities and a crucial resource.

Figure 6.5. W&S Committee Members' Rating of Motivation to Serve, During and Post-Project



Source: 2011 W&S Committee Member Surveys.
Note: Significance based on Wilcoxon signed rank test; *p<0.05, **p<0.01, ***p<0.001.

6.2.4 Linkages

A key aspect of the ADRA and FH W&S sector sustainability strategy was to link the W&S committees to relevant GOK offices for continued training, technical advice, and know-how once the projects ended. CARE, on the other hand, largely emphasized independent operation of its trained W&S committees, although it attempted to link the aforementioned large-scale water scheme to GOK technical entities.

The sustainability of these linkages varied by project area. In the ADRA areas, 66.7 percent of the W&S committees reported being registered as community-based organizations (CBOs) with the GOK, but none reported receiving support from the government post-project. By contrast, in the former FH project sites, vertical linkages between W&S/NRM committees and the government were slightly better maintained. The percentage that received support from the Ministry of Water remained at 14.3 percent during and after the project, and the percentage that reported receiving post-project support from the National Environmental Management Agency rose from 0.0 percent during the project to 28.6 percent post-project. W&S committees in the Northern Chalbi areas reported the need to have strong relationships with the GOK officers. They understood that even the officers relied on the water points and were therefore personally invested in their success.

In the CARE project area, the W&S committees were intended to be largely self-sustaining post-project. Even though the government linkage was promoted during the project, many committees said that they were not interested in cooperating with the government because they did not want to lose control over their water resources. FGDs revealed that CARE's W&S committees were mentally prepared for CARE's exit from the outset of the project and had no illusions that CARE would continue to support them indefinitely. The W&S committee for the very large-scale water scheme maintained linkages with the Lake Victoria Basin Water Board, but continued to serve as the primary overseer of the water scheme in order to protect the communities' control over its natural resources.

6.3 Sustainability of Water and Sanitation Service Use

Table 6.1 summarizes the retrospective self-reports of beneficiary participation in W&S committees and water infrastructure-related activities during and after the awardees' projects. Across all three projects, participation in W&S committees dropped slightly, though the majority of respondents who reported participating during the project reported continuing to participate post-project. Notably, the CARE figures are relatively higher because the sampling design included only direct participants in the water, sanitation, and education for health project component, as opposed to FH and ADRA, who relied on a population-based sampling design.

Participation in water-related infrastructure construction and maintenance projects, such as latrines, water points, and handwashing stations, promoted in both the FH and CARE projects, declined significantly post-project. While 65.4 percent of FH households and 27.5 percent of CARE households reported participating in infrastructure construction and maintenance during the project, only 30.4 percent and 14.8 percent of FH and CARE households, respectively, reported continued participation post-project (both declines significant at $p<0.001$). The majority of these beneficiaries cited lacking service availability and insufficient resources in the form of time and finances as their main obstacles to participation in infrastructure construction and maintenance activities post-project. Furthermore, only 43.3 percent of CARE beneficiaries who were involved in maintaining or repairing water points during the project reported continuing those activities post-project. However, CARE households were also asked about their participation in *trainings* related to various water project construction and maintenance, which a relatively high percentage (72.8 percent) continued receiving post-exit, reportedly from "other CBOs or

individuals." Data pertaining to water-related construction and maintenance in the ADRA region were not available.

Qualitative data provided insight into why participation in these activities may have declined after the awardees' exit. Existing infrastructure continued in many cases to function, but new infrastructure was not widely added once the awardees withdrew. This result is not surprising, as the projects' sustainability strategies did not explicitly address mechanisms by which new infrastructure would be created. Furthermore, data from FGDs revealed that maintenance of existing infrastructure declined because some W&S committees reportedly did not have the capacity and/or materials needed to make the repairs without external technical support. Overall, despite the fact that most W&S committees remained functional, many individual beneficiaries reduced their participation in maintaining and improving upon the infrastructure put in place during each of the projects.

Table 6.1. Sustainability of W&S Activity Participation among Project Beneficiaries, by Awardee

Service/activity	Participated during	Participated post	Sustained participation[a]	Sig.[b]
FH		n=780		
Joined a water management committee	8.2%	5.8%	63.5%	***
Participated in water-related construction project(s)[c]	65.4%	30.4%	37.6%	***
CARE		n=606		
Joined a water management committee	65.8%	62.8%	92.6%	**
Received training on water-related construction/ maintenance	99.5%	72.9%	72.8%	***
Participated in water-related construction project(s)[c]	89.7%	47.0%	43.6%	***
Participated in maintenance and repair of water points	27.5%	14.8%	43.3%	***
ADRA		n=500		
Joined a W&S committee	17.4%	15.0%	61.6%	NS

Source: 2011 Follow-Up Household Surveys, Participation Module.
Note: Participation refers to respondent or anyone in household.
[a] Sustained participation calculated as the percentage of households participating during the project that reported also participating post-project.
[b] Significant change in participation based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; *p<0.05, **p<0.01, ***p<0.001.
[c] Project activities included construction of latrines, tanks, boreholes, wells, and/or handwashing stations.

6.4 Sustainability of Water and Sanitation Practices

The sustainability of targeted W&S practices, which included use of latrines, improved water sources, and payment of water user fees, varied by awardee. Unlike the hygiene practices promoted by CHWs discussed in the MCHN section of this report, W&S practices were closely linked to W&S committee activities. FH households reported decreased access to latrines, but sustained high use of improved water sources, while CARE households reported decreased usage of water from an improved source and a decline in payment for water usage. ADRA project beneficiaries reported relatively low but sustained payment of water user fees and use of improved water sources.

6.4.1 Latrine Use/Access

Table 6.2 shows that latrine access, defined as having a latrine on or near the homestead, declined in the FH area but was sustained in the CARE sites. At the end of the FH project, 66.3 percent of households reported latrine access, which dropped to 44.9 percent at follow-up ($p<0.01$). However, nearly all of these respondents who reported latrine access also reported that at least one person in the household was *using* the latrine. CARE data showed no statistically significant change in latrine access, with 68.5 percent of households reporting access in the 2011 follow-up survey, compared to 75.6 percent in the 2008 endline evaluation survey. Notably, the CARE questionnaire did not distinguish *access* from *use*. Qualitative data provided additional insight into latrine use in areas that maintained latrine access. The Luo villages of the CARE project area had cultural taboos against public latrine use, so that even if there was a latrine on a family compound, family members sought privacy in the bush.

While ADRA endline data were unavailable for comparison, follow-up data from the 2011 household survey showed that 75.4 percent of beneficiaries reported having pit latrines in their compounds. FGDs with beneficiaries in Kitui revealed that some chiefs had mandated that every household have a latrine. While many residents reportedly resisted at first because of the perceived expense, after they were trained to build the latrines cheaply with local materials, most complied.

Table 6.2. Sustainability of Recommended W&S Practices (FH, CARE, and ADRA)

Characteristic	Endline (2008)		Follow-Up (2011)		Endline to Follow-Up[a] (ppt Δ[b])
	n	%	n	%	
FH	n=598		n=780		
Households accessing water from an improved source[c] during the dry season	563	95.9%	724	92.9%	−3.0 NS
Households accessing water from an improved source[c] during the rainy season	401	68.4%	486	62.4%	−6.0 NS
Households with access to a pit latrine	385	66.3%	348	44.9%	−21.4 **
Households with access to a latrine reporting at least one household member using the latrine	375	91.2%	330	94.8%	+3.6 NS
CARE	n=246		n=606		
Households accessing water from an improved source[c,d]	190	77.2%	327	54.0%	−23.2 ***
Households paying for water service	107	43.5%	120	19.8%	−23.7 ***
Households with access to a pit latrine	186	75.6%	415	68.5%	−7.1 NS
ADRA	n=599		n=500		
Households with a pit latrine in the compound	n/a	n/a	377	75.4%	n/a
Households reporting "all" members using the latrine in the compound	n/a	n/a	374	99.2%	n/a

Sources: 2008 FH and CARE Endline Surveys; 2011 Follow-Up Household Surveys.
Note: n/a=not available.
[a] Significance based on Pearson's chi-square test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[b] ppt Δ=percentage point change.
[c] Improved water sources include taps, boreholes, wells, water tanks, and roofs (FH only).
[d] The 2008 CARE Final Evaluation Report cited a baseline of 20 percent using improved water sources; baseline figures are not included in the table because of limited availability of baseline data across all three projects.

6.4.2 Use of Improved Water Sources

Use of improved water sources, another key behavior intended to result from the work of the W&S committees, appeared to have been sustained in the FH and ADRA project areas, but decreased in the CARE project area (Table 6.2 and **Table 6.3**). Table 6.2 shows that, among FH households, nearly all endline and follow-up survey respondents reported accessing improved water sources in the dry season and about two-thirds of households did so in the rainy season, with no significant difference between endline and follow-up. Although FH respondents reported accessing improved water sources, FGDs revealed that the quantity of water was seriously restricted because of the drought and associated water shortage.

Table 6.3 presents data from the 2011 follow-up survey administered to ADRA households. Slightly *more* households reported harvesting rainwater and collecting water from a community-owned capped water source *after* the project (78.6 percent and 55.2 percent, respectively) than *during* the project period (76.4 and 51.4 percent, respectively). Furthermore, about 95 percent of ADRA beneficiaries that reported practicing these two behaviors during the project reported continuing to practice them post-project. By contrast, CARE households reported less usage of improved water sources at follow-up (54.0 percent) than in the endline evaluation (77.2 percent) ($p<0.01$; Table 6.2). Despite this decrease in usage, the 54.0 percent at follow-up is a significant improvement over the 20.0 percent that reported using improved water sources at baseline. Moreover, the high availability and use of WaterGuard to purify drinking water (discussed in Section 5.4) indicates that many households were able to access safe, potable water.

Table 6.3. Sustainability of Additional Recommended W&S Practices (ADRA)

Practice	Practiced during project	Practiced post-project	Respondents practicing during project that reported practicing post-project	Respondents not practicing during project that practiced post-project	Sig.[a]
n=500					
Harvesting rainwater	76.4%	78.6%	95.5%	24.6%	NS
Collecting water from a community-owned capped spring, well, or water pump	51.4%	55.2%	94.6%	13.6%	**
Paying a fee for using water from a community water point	28.8%	33.8%	93.8%	9.6%	***

Source: 2011 ADRA Follow-Up Household Survey, Participation Module.
Note: Respondents were asked to recall experiences during versus after the project, as there was no comparable endline data for these indicators.
[a]Significance based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

6.4.3 Paying for Water

While there was a slight *increase* in the percentage of ADRA households that reported paying for water from a community-owned source, from 28.8 percent at endline to 33.8 percent in the 2011 follow-up survey ($p<0.001$), quantitative data revealed a significant reduction in the percentage of CARE households paying for water service, from 43.5 percent at endline to 19.8 percent at follow-up ($p<0.001$) (Table 6.2).

Participants in FGDs attributed the declines in both use of and payment for improved water among CARE beneficiaries to dissatisfaction with the reliability, accessibility, or taste of the "improved" water sources.

When wells temporarily broke down after CARE's exit, households often returned to using unprotected water sources. Often the wells were repaired, but the community did not return to using the well and paying user fees. Some FGDs also revealed a community perception that the W&S committees were mismanaging funds, leading to distrust and a further lack of use of and payment for water from improved sources.

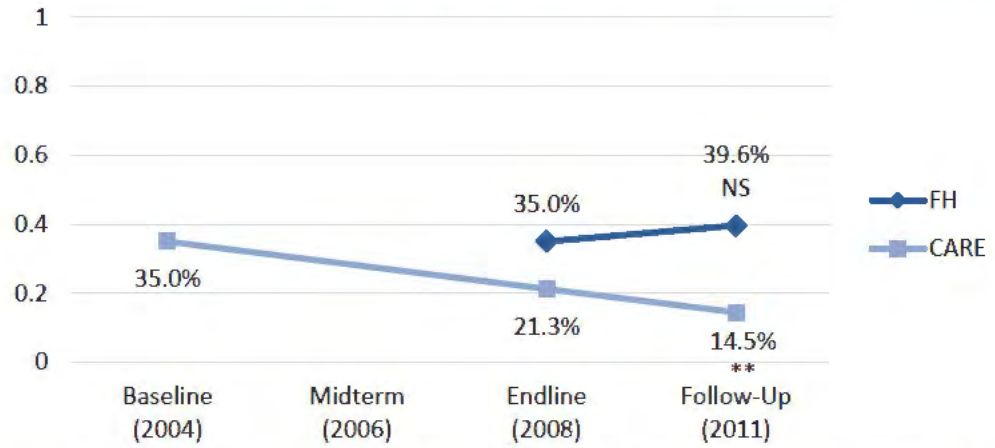
In the ADRA project area, many boreholes dug by ADRA were not functioning because of technical problems beyond the capacities of the W&S committees to resolve, lack of water supply due to shifting water tables, or poor water quality due to high levels of salinity. Many beneficiaries said that they had reverted to earlier water sources, such as hand-dug holes in dry riverbeds or rivers, despite the poor water quality. They also said that the advantage of the original water sources was that they did not need to pay a user fee. While FH W&S committees had similar challenges in maintaining water reliability and quality because of the drought, FGDs suggested that demand at functioning water points was high and pastoralists in the lowland areas were generally willing to pay for water access, particularly for their livestock. However, data were not collected on water user fee payments by FH households.

In the areas where the boreholes were functioning well, the fee-for-service formula was implemented more successfully, and community members said in FGDs that their entire community benefited from the boreholes. They said that a clean supply of water was beneficial to their entire household. In some areas, FGDs indicated that the boreholes reduced travel distance to fetch water from 10 km to 1 km. The time savings and perceived visible benefits for people and livestock contributed to continued collection of water from the functioning boreholes.

6.5 Sustainability of Water and Sanitation Impacts

W&S interventions were intended to help reduce the incidence of diarrhea and morbidity from water-borne infections in children. Quantitative data on these indicators suggest that endline impacts were generally sustained 3 years post-project. **Figure 6.6** graphs the changes in diarrhea prevalence from 2003 to 2011 in the CARE and FH project areas.

Figure 6.6. Trends in Prevalence of Diarrhea from Baseline to Follow-Up (FH and CARE)



Sources: 2008 CARE Final Evaluation Report (baseline); 2008 Endline Surveys; 2011 Follow-Up Household Surveys.
Note: The FH indicator is defined as "households reporting a diarrheal episode in the past 3 months for a child under 24 months of age." The CARE indicator is defined as "households reporting a diarrheal episode in the past 14 days for a child under 60 months of age."
Sample sizes for FH data: baseline (n=343), midterm (n=429), endline (n=973), follow-up (n=644). Sample sizes for CARE data: endline (n=417), follow-up (n=1,129); baseline and midterm sample sizes unavailable.
Significance from endline to follow-up based on Pearson's chi-square test: NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

Among CARE households, reported prevalence of diarrheal episodes among children under 5 years of age within the past 14 days declined from 35.0 percent at baseline to 23.1 percent at endline and 14.5 percent at follow-up (significant change from endline to follow-up at p<0.01). FH's indicator increased slightly from 35.0 percent at endline to 44.3 percent at follow-up, though the change was not statistically significant.

ADRA measured morbidity impacts by asking respondents about the most common diseases in their areas. However, self-report of disease prevalence is imperfect because respondents may not be able to distinguish clearly among diseases with similar symptoms. Because of discrepancies in the ADRA endline report, results are not presented here. Analysis of the responses to the 2011 follow-up questionnaire, however, found that fewer than 10 percent of households reported dysentery, amoeba, bilharzia, or diarrhea as common in their areas; 94.2 percent of households reported that malaria was common.

6.6 Water and Sanitation Sector Sustainability: Lessons Learned

Box 6.2 summarizes key findings of the assessment of exit strategies and sustainability within the W&S sector. The W&S sector sustainability strategy in each of the project areas was intended to develop the capacity of self-sustaining W&S committees to facilitate the construction and maintenance of water points and latrines and to manage clean water resources. Most W&S committees continued to function post-project, despite their perceived reductions in available resources and external assistance. However, as experiences in the drought-stricken areas showed, even highly functional W&S committees faced serious external risks to their continued operation.

Box 6.2. W&S Sector Sustainability: Key Findings

WHAT WORKED

- Many W&S committee members were able to maintain infrastructure and do basic repairs because of their technical training during the projects.
- The fee-for-service model generated resources when there was sufficient community demand and ability to pay.
- Consumer willingness-to-pay was higher when the provided water supply was reliable, adequate, and of good quality.

WHAT DID NOT WORK

- Shifting water tables, saline water, and other supply issues affected community willingness-to-pay for the resource.
- Cultural norms around rights to water access sometimes undermined fee structures.
- Inadequate fee collection sometimes led to inoperable water points.
- External shocks incapacitated many W&S committees by making water unavailable or non-potable.

The quantitative and qualitative analyses found that, overall, W&S committees were motivated and had the capacity to function after the awardees withdrew, though ratings of perceived capacity and motivation showed slight declines in the post-project period. With few exceptions, committee members reported that the technical and managerial training that they received was sufficient for their continued independent operations. Furthermore, motivation was largely sustained through committee members' sense of obligation to the community and the recognition of the importance of water resource stewardship in their arid areas.

W&S committees were largely able to maintain and repair infrastructure, but this capacity appeared to decline post-project, in conjunction with the reduced ability to draw on community water user fees. The ability of W&S committees to enforce payment of user fees differed by project area. Unreliable water resources and resources of questionable quality were significant deterrents to sustained demand among households, especially where less costly water resources were available, even if inferior in quality. Additionally, W&S committees in some areas found it difficult to enforce user fees when their constituencies could not pay, as many viewed water as a fundamental right.

The following conclusions can be drawn regarding the W&S interventions across the three project areas:

- Although there was a reported decrease in capacity and motivation, these factors did not have profound functional consequences, as most W&S committees were able to continue operation despite limited resources and external support. Technical and management capacity can help committees use whatever resources are available as efficiently as possible. Without strong training in these areas during the project period, it is unlikely that W&S committees could have sustained themselves for as long as they did.
- The fee-for-service model was successful in generating resources when there was sufficient community demand and ability to pay. However, willingness-to-pay varied among communities and appeared to depend largely on the improved accessibility, availability, and reliability of new infrastructure.
- Even when a W&S committee achieved key components of sustainable operations (resources, capacity, and motivation), external shocks can incapacitate the committees by making water

unavailable or non-potable. Mechanisms to mitigate these risks should be considered in future interventions, perhaps by developing strategic external linkages.

- Cultural norms around rights to water may undermine the ability of W&S committees to maintain fee structures. Cultural norms may also affect the willingness of beneficiaries to maintain certain practices. These should be considered when assessing the likelihood that proposed behavior changes will be maintained once external reinforcement ends.

7. Results: Agriculture and Natural Resource Management Sector

This section first summarizes the elements of the projects' agriculture and NRM sector interventions that were intended to lead to sustained or expanded benefits. The subsequent subsections present results related to the implementation of these sustainability components and the de facto exit processes, in association with the documented sustainability of: 1) service delivery (discussed separately for farmer associations and seed multiplier/tree seedling producers and organized by factors related to resources, capacity, motivation, and linkages), 2) service use, 3) uptake and continuation of recommended practices, and 4) impacts. The final subsection summarizes key agriculture and NRM sustainability findings and lessons learned.

7.1 Agriculture and Natural Resource Management Sector Sustainability Plans and Exit Strategies

ADRA and FH employed a similar model to promote the sustainable adoption of improved agricultural practices. Community-based extension farmers (EFs) and model farmers were to demonstrate the feasibility and benefit of applying new technologies to improve yields, post-harvest storage, and marketing. CARE did not rely on community-based EFs. Instead, it assumed that improved agricultural practices would be organically disseminated from farmer to farmer. The assumption of all three projects was that beneficiary farmers who experienced increases in yields and income resulting from these practices would be motivated to continue the practices. In ADRA and FH areas, it was also assumed that project-trained EFs would continue to reinforce existing positive practices and disseminate recommended practices to new beneficiaries. FH EFs were expected to continue to lead by example, without compensation, while ADRA instructed some of its EFs to start charging fees for their services after the end of the project (though farmers were not told how or on what basis to set a rate, and very few EFs actually attempted to recoup a fee). Aside from this slight variation, the sustainability plan for EFs across the two awardee projects was similar to the one for CHWs, and EFs from both ADRA and FH projects faced similar challenges to those faced by CHWs in sustaining their activities. (Section 5.2 discusses the sustainability of this type of CHW/EF service provider model.) Additional results specifically related to EF sustainability can be found in the *Comprehensive Kenya Exit Strategies Study Report*.[11]

In addition to training, CARE and ADRA formed and built the capacity of farmer associations (referred to here as producer associations [PAs]) (ADRA referred to the groups that were targeted for commercialization support as "Commodity Business Units"). Awardees worked to link these groups with input markets and with contract buyers. Farmers were expected to pay dues to sustain PA activities, and the assumption was that the relatively greater profits from cooperative sales would continue to incentivize PA group participation after the FFP development projects ended.

The promotion of improved NRM through soil and water conservation was another part of the overall strategy to increase agricultural production in a sustainable way in all three projects. NRM activities included the establishment of tree nurseries, terracing, and stone/trash lines on farmers' land. Participation in these labor-intensive activities was typically incentivized with FFW rations, which were to be withdrawn at the end of the projects. The assumption was that farmers would gain the capacity to maintain these communally and individually owned assets through their FFW experience and would be motivated to continue to do so after witnessing the benefits firsthand.

[11] The *Comprehensive Kenya Exit Strategies Study Report* is available from Tufts University upon request.

ADRA also identified and trained community-level seed multipliers and tree seedling producers. The seed multipliers were charged with the task of seed bulking to improve community access to seed materials during the planting season. Farmers were linked with a credit program so that they could purchase the seeds, and the seed multipliers were intended to sustain themselves financially by charging a small fee for their seeds. Tree seedling producers were trained to tend to the nurseries created during the ADRA project and also charged fees for their seedlings. ADRA planned to foster partnerships between the seed multipliers, tree seedling producers, and the Ministry of Agriculture (MOA), to ensure continued support post-exit. **Box 7.1** summarizes the sustainability strategies employed in the agriculture and NRM sector, along with their implicit key assumptions.

Box 7.1. Summary of Agriculture and NRM Sector Sustainability Strategies and Key Assumptions

SUSTAINABILITY STRATEGIES	KEY ASSUMPTIONS
• Train EFs to continue service delivery post-exit (ADRA and FH).	• EFs will work for free or start to charge a fee for service after awardee exit. • Beneficiary farmers will continue to demand EF-provided services.
• Link EFs and PAs to the MOA for ongoing supervision, training, and supplies.	• The MOA will have the resources, capacity, and motivation to supervise, train, and provide supplies to EFs and PAs.
• Teach seed multipliers and tree seedling producers to charge for their products to cover costs and earn a profit (ADRA).	• Beneficiary farmers will continue to demand and afford seed multiplier- and tree seedling producer-provided goods and services.
• Train farmers to adopt improved cropping practices that they can sustain once they observed visible benefits.	• Farmers will continue to purchase inputs, and practice improved farming methods after seeing the benefits of improved yields. • Farmers will be able to continue to implement project-learned practices despite recurrent drought.
• Train PAs to engage in contract agriculture and non-contract commercial sales, using profits to motivate and sustain these activities.	• Farmers will continue to utilize markets after seeing the benefits of sales. • Contracts and other market linkages will remain accessible and profitable for farmers.

7.2 Sustainability of Agriculture and Natural Resource Management Service Delivery: CARE and ADRA Producer Associations

Both CARE's and ADRA's agricultural interventions emphasized the creation and strengthening of PAs, though the long-term success of these PAs varied widely between and within the two projects. **Table 7.1** summarizes the changes in PA membership, as reported retrospectively in the 2011 follow-up household questionnaire. As illustrated in the table, CARE agriculture beneficiaries appeared to have sustained a high level of participation in PAs. Though membership dropped slightly, 94.4 percent of CARE's PA members reportedly retained their membership post-exit. The qualitative data suggested that some PAs were very active post-project, particularly basmati farmers in the rice-growing regions. These farmers

continued to buy inputs and market their rice through the PAs. However, the quantitative evidence of "sustained membership" is potentially misleading, as qualitative data also suggest that members of many less-active PAs were participants in name only.

Membership in ADRA's PAs declined from 33.8 percent during the project to 24.0 percent post-project ($p<0.001$). The percentage of ADRA PA members who received marketing training or assistance from the PAs decreased from 40.9 percent to 14.8 percent post-project ($p<0.001$), and just 3.9 percent of PA members participated post-project in a village marketing co-op in the 3 years after ADRA's exit, compared with 20.0 percent during the project ($p<0.001$).

Table 7.1. Participation in PAs (CARE and ADRA), During and Post-Project

	Participated[a] during	Participated post	Sustained participation[b]	Sig.[c]
CARE	n=597			
Member of a PA	69.0%	66.3%	94.4%	**
ADRA	n=500			
Member of a PA	33.8%	24.0%	40.2%	***
PA members participating in village marketing co-op	20.0%	3.9%	5.3%	***
PA members receiving any marketing training/ assistance from PA	40.9%	14.8%	17.7%	***

Source: CARE and ADRA 2011 PA Member Surveys.

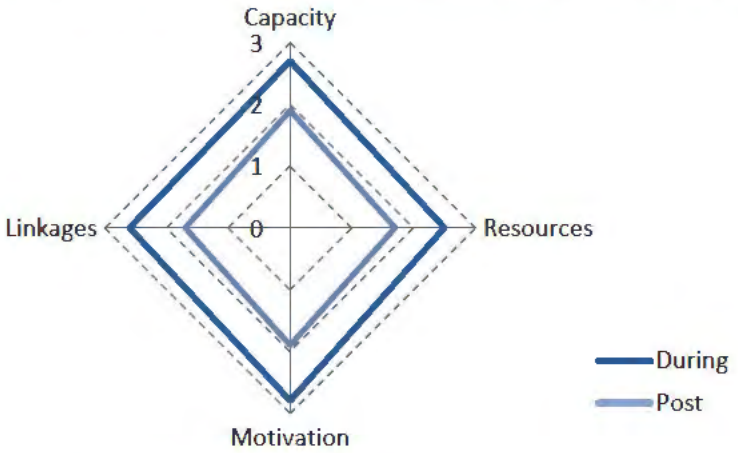
[a] "Participation" refers to respondent or anyone in the respondent's household.

[b] The percent of households participating during the project that reported also participating post-project.

[c] Significant change based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; *p<0.05, **p<0.01, ***p<0.001.

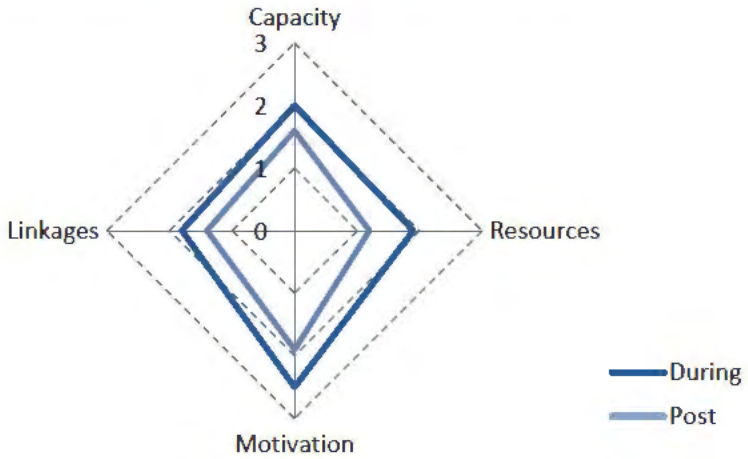
In both CARE and ADRA areas, many farmers found that PA participation yielded insufficient benefits relative to individual operation. For instance, ADRA's flagship PA, composed of chili farmers, continued to share knowledge and practices with fellow chili farmers. However, while they had worked cooperatively during the project, by the third round of qualitative interviews, they were largely tending their own farms and purchasing inputs and marketing their chilies individually. **Figure 7.1** and **Figure 7.2** illustrate the declines in PA members' ratings of resources, capacity, motivation, and linkages. These data come from the retrospective service delivery questionnaires administered at follow-up to a total of 42 CARE PA members and 15 ADRA PA members. As discussed in the subsequent sections, negative feedback loops were born in the post-project period, with insufficient managerial and technical capacity yielding inadequate benefits, reduced demand, and, as a result, insufficient resources and interest to continue the cooperative approach without the reinforcing presence of the awardees.

Figure 7.1. CARE PA Members' Mean Service Delivery Ratings, During and Post-Project



Source: CARE 2011 PA Member Survey, n=42.
All changes significant at p<0.001 based on Wilcoxon signed rank test.

Figure 7.2. ADRA PA Members' Mean Service Delivery Ratings, During and Post-Project

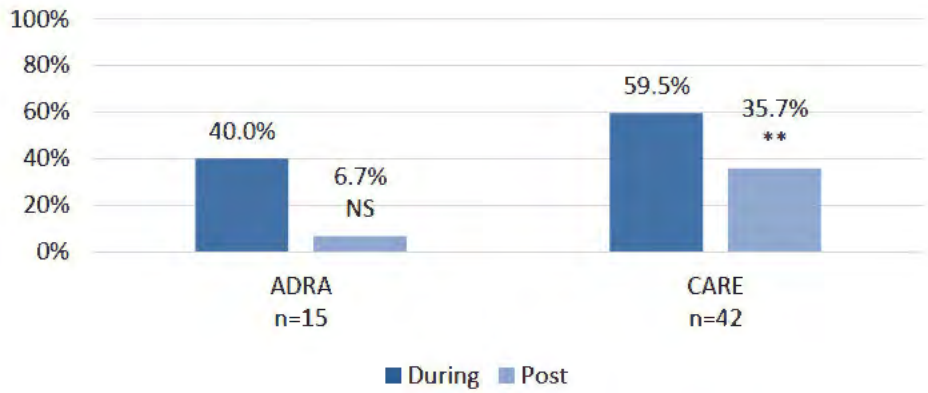


Source: ADRA 2011 PA Member Survey, n=15.
All changes significant at p<0.05, though change in motivation rankings significant at p<0.01 based on Wilcoxon signed rank test.

7.2.1 Resources

Despite the assumption that PAs would be able to fund their post-project operations through member dues, many CARE and ADRA PAs experienced unreliable revenue streams, which posed significant constraints to their sustained functioning. Nearly all (92.9 percent) of the ADRA PA respondents in the follow-up survey cited insufficient resources as a problem after ADRA's exit. This issue had its roots in the project cycle. Only 40.0 percent of ADRA PAs interviewed said that they had had sufficient resources during the project period to cover expenses. This figure declined to 6.7 percent in the post-project period, though the decline was not statistically significant (**Figure 7.3**). Furthermore, only 33.3 percent of the ADRA PAs interviewed had any source of revenue at all post-project. Only 20.0 percent of ADRA PA members reported having a reliable source of market information during the project, which fell to 6.7 percent post-project.

Figure 7.3. Percentage of ADRA and CARE PAs with Sufficient Resources to Cover All Expenses, During and Post-Project



Source: 2011 ADRA and CARE PA Member Surveys.
Significance based on McNemar's test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

While there was no significant change in the percentage of CARE PA leaders that had a source of revenue to pay for expenses at follow-up (66.7 percent post-project), both qualitative and quantitative data suggested that resources remained a challenge. In the follow-up survey, only 35.7 percent of CARE PAs felt that the revenue generated from membership dues and crop sales was sufficient to cover expenses, a significant decline from 59.5 percent during the project ($p<0.01$; Figure 7.3). In FGDs with ADRA and CARE PAs, many members reported that resources declined because their groups were not as active or cohesive as they had been during the projects, making it difficult to maintain membership levels and collect dues.

The difficulties that many PAs faced in financing their activities in the post-project period can also be traced to the approach that each awardee took to the exit process. ADRA PAs received financial support through ADRA until the very end of the project. CARE, on the other hand, used a graduated cost-share approach, particularly with rice-growing PAs, that proved more successful in preparing these farmers for independent operations. CARE's intervention attempted to convince farmers to plant basmati instead of traditional shindano rice seeds for commercial sale. Though they provided farmers with premium basmati seeds up front, at harvest time the farmers were required to pay CARE back for the seeds. By the second harvest, the farmers assumed the initial cost of the seeds themselves. CARE intended for farmers to operate independently to obtain their own resources well before the project's exit. Also, by utilizing this graduated approach to needed resources, CARE strived to mitigate the risks of behavioral adoption while maximizing the benefit. The qualitative data showed that this graduated approach with the basmati rice growers was more successful than some other models, used in other projects, that provided resources for free until the very end of the project. This approach also resulted in viable PAs that continued to function and garner needed resources at the time of the follow-up survey.

7.2.2 Capacity

CARE PAs maintained stronger institutional capacity in the post-project period than ADRA PAs, though certain indicators of organizational systems were sustained within both groups (**Table 7.2**). The majority of CARE PAs interviewed in the follow-up survey still retained charters (95.2 percent), provisions for regular rotation of leadership (95.2 percent), a plan for replacing leadership if necessary (88.1 percent), registration as a CBO (85.7 percent), and a mechanism for training replacements (64.3 percent) in the period after CARE's exit. ADRA PA members reported declines in these indicators of capacity, and a

large decline in training received to manage the PAs, from 86.7 percent during the project to only 6.7 percent post-exit (p<0.001).

Table 7.2. Change in Capacity of PAs (CARE and ADRA), During and Post-Project

	CARE n=42			ADRA n=15		
PAs had:	**During project**	**Post-project**	**During to post[a] (ppt Δ[b])**	**During project**	**Post-project**	**During to post[a] (ppt Δ[b])**
Constitution/charter	92.9%	95.2%	+2.3 NS	100.0%	80.0%	−20.0 NS
Provision for regular leadership rotation	92.9%	95.2%	+2.3 NS	80.0%	66.7%	−13.3 NS
Plan in place for replacing leaders	95.2%	88.1%	−7.1 NS	93.3%	60.0%	−33.3 NS
Registered as a CBO with the government	85.7%	85.7%	0.0 NS	80.0%	66.7%	−13.3 NS
Received training to manage the PA	90.5%	64.3%	−26.2 **	86.7%	6.7%	−80.0 ***

Source: 2011 CARE and ADRA PA Member Surveys.
[a] Significance based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[b] ppt Δ=percentage point change.

One potential reason for the slight difference between the two groups of PAs is that CARE's project worked only with pre-established community groups that were already eager to collaborate with an external organization. ADRA formed new PAs as part of its project and used them as the umbrella coordinating body for all of ADRA's activities in the community. As such, the ADRA PAs served a less organic purpose, had more diverse responsibilities, and started at a lower baseline level of institutional capacity.

Despite slight differences within project areas in the results shown in Table 7.2, both CARE and ADRA PAs perceived a decline in their groups' capacities post-project. CARE PA member respondents rated their groups' capacity at a mean of 1.9 (on a scale of 1 to 3, 1=poor, 3=excellent) post-project compared to 2.7 during the project (p<0.001). Among ADRA PAs, the mean capacity rating fell from 2.0 to 1.6 post-exit (p<0.05). Members of ADRA PAs attributed this decline in capacity to the lack of any available source from which to obtain ongoing technical assistance, despite the intended sustainability strategy of transferring oversight and support of PAs to government extension officers from the MOA. According to PA members who participated in qualitative interviews, government extension officers were stretched thin and lacked the resources to make field visits. Furthermore, despite efforts to train PA leaders properly, some groups in the ADRA project area cited inadequate leadership as a principal reason for the capacity declines and eventual disbanding of the groups. Although ADRA PA leaders were often influential individuals appointed by the community, after ADRA's withdrawal, they realized there was little personal benefit to gain from managing the PA and stepped down. As explained in FGDs, once the original trained leaders left their positions, few new leaders were able or interested enough to take their places.

The percentage of CARE PAs who received training to manage the groups dropped from 90.5 percent to 64.3 percent (p<0.01, Table 7.2), and the majority who reported receiving post-project training noted receiving it from the MOA. Though these PAs fared better than those in former ADRA areas, in FGDs certain CARE PA members said that the lack of linkages with the MOA hindered their continued capacity development.

7.2.3 Motivation

Across both ADRA and CARE PAs, motivation to participate in PA activities decreased in the post-project period. In the 2011 follow-up survey, CARE PAs rated their motivation levels as significantly lower in the post-project period, at 1.9 (on a scale of 1 to 3) compared with 2.8 during the project period ($p<0.001$). Similarly, ADRA PA members rated motivation to participate during the project at a mean of 2.5, compared to 1.9 post-project ($p<0.01$).

FGDs suggested that benefits offered through the PAs were considered relatively less rewarding than the benefits accrued to individual PA members who opted to act independently of their groups. This may have something to do with the problem of free-ridership within the context of the PAs. The scale of benefits that were expected to accrue to farmers through participation in the PAs are predicated on someone within the organization facilitating relationships with input suppliers and markets for sale and then organizing farmers to collectively engage with these opportunities. However, if individual farmers believe that their collective market relationships might be jeopardized by other individual farmer's lack of productivity, poor quality of produce, or other risks, then collective action is more likely to break down, leaving individual farmers to act independently.

In ADRA areas, these issues were compounded by the severe drought that affected the area during Rounds 1 and 3 of the qualitative research. Soon after ADRA's exit, severe drought conditions caused agricultural production to grind to a halt and households became dependent on food aid. With no harvest, there was no perceived benefit to participating in PAs. By Round 2 of the qualitative research in 2010, most communities had received better rains and improved harvests. Many things rebounded, such as farmers' individual continuation of the "improved" practices that they had learned from ADRA and individual marketing of commercial production. However, by that point, many PAs had already become fragmented and non-operational, suggesting a lack of institutional resiliency to withstand what were not entirely unexpected shocks.

7.2.4 Linkages

CARE and ADRA worked to link PAs to the local MOA departments, with the hope of enhancing the PAs' access to technical support after the projects exited. CARE also generated linkages and facilitated interaction among PAs, input suppliers, and contract buyers, with the intention that these relationships would eventually be independently sustained. While the strength of these linkages declined in both the former CARE- and ADRA-supported contexts, the linkages were initially weaker in the ADRA project area and the decline was much more pronounced. For instance, as **Table 7.3** shows, none of the ADRA PAs interviewed reported receiving governmental support—technical, financial, or managerial—either during or post-project. Table 7.3 also shows that 61.9 percent of CARE PAs continued to receive some sort of external support post-project, a relatively small, albeit statistically significant decline of 16.7 percentage points ($p<0.05$). Of the CARE PAs receiving external support post-project, 31.0 percent reported receiving it from the MOA, which represents an *increase* of 14.3 percentage points from the project period, as the government extension officers presumably filled some of the void left by CARE's departure. While connections to the MOA did not suffer severely, other linkages did. For instance, the follow-up survey results showed a 54.8 percentage point decrease in the percentage of PAs that had developed any formal arrangements with buyers, down to 38.1 percent ($p<0.001$), and a significant decline to 28.6 percent from 73.8 percent of those engaging in formalized relationships with input suppliers ($p<0.001$). In addition, only 31.0 percent of PAs had a reliable source of market information post-project, a decline of 47.6 percentage points ($p<0.001$) (not shown).

Table 7.3. Maintenance of Linkages among PAs, During and Post-Project

	CARE n=42			ADRA n=15		
	During project	Post-project	During to post[a] (ppt Δ[b])	During project	Post-project	During to post[a] (ppt Δ[b])
Received any technical support	78.6%	61.9%	−16.7 *	73.3%	0.0%	−73.3 **
Received any technical support from the MOA	16.7%	31.0%	+14.3 NS	0.0%	0.0%	0.0 NS
Developed formal arrangements with buyers to facilitate a market for PA members	92.9%	38.1%	−54.8 ***	40.0%	6.7%	−33.3 NS
Developed formal input supply arrangements for PA members	73.8%	28.6%	−45.2 ***	26.7%	0.0%	−26.7 NS
Entered into a formal contract with buyers/ suppliers without external assistance	28.6%	47.6%	+19.1 NS	26.7%	20.0%	-6.7 NS

Source: 2011 CARE and ADRA Follow-Up Household Surveys, Participation Module
Note: Only one individual per group was interviewed to avoid intra-cluster correlation issues.
[a] Significance based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[b] ppt Δ=percentage point change.

Two key factors appear to have affected the viability of the ADRA and CARE PA linkages. One was the thoroughness of the effort and timing of the "linking" process and the other was the resources, capacity, and motivation of the PAs, government, and private sector to maintain relationships. ADRA took a less extensive approach to facilitating relationships between the PAs and the MOA and was less explicit about how it expected the relationship to operate post-exit. The presence of MOA officers at training or other events was more ceremonial than substantive. In contrast, CARE seriously engaged the government and the private sector throughout the process and appeared to have been more successful as a result.

However, even in the CARE project, there were timing challenges and limitations to what could be achieved within the project cycle. In a key informant interview, a former CARE agriculture officer said that it took longer than anticipated to sensitize the community to shift from subsistence farming to commercial crops. CARE did not have enough time to solidify the market linkages for the horticulture groups, and the PAs did not have time to operate independently to iron out issues in the value chain before CARE exited. This issue affected not only the PAs' ability to generate future contracts with potential buyers, but also their input supply relationships and access to market information. In contrast to some of the CARE horticulture PAs, basmati rice PAs reported that they managed to maintain their linkages to the National Cereal Board, as they had more time for gradual independent operation before CARE's exit. CARE gradually reduced its involvement in negotiating contracts and prices across each rice harvest during its FFP development project, and the PAs were operating independently long before CARE's exit from the area. This illustrates the importance of graduated independent operation and/or transfer of responsibility to a link, such as the government or private sector, *before* the end of a project to improve the likelihood of sustainable results.

The second critical factor relates to the resources, capacity, and motivation of the PA, government, and private sector to maintain established relationships. In the ADRA context, the GOK was unable to extend any extension services to the PAs and, in turn, the PAs did not appear to have been capacitated to access these services. ADRA field staff reported that it was a challenge after many years of relief operations in

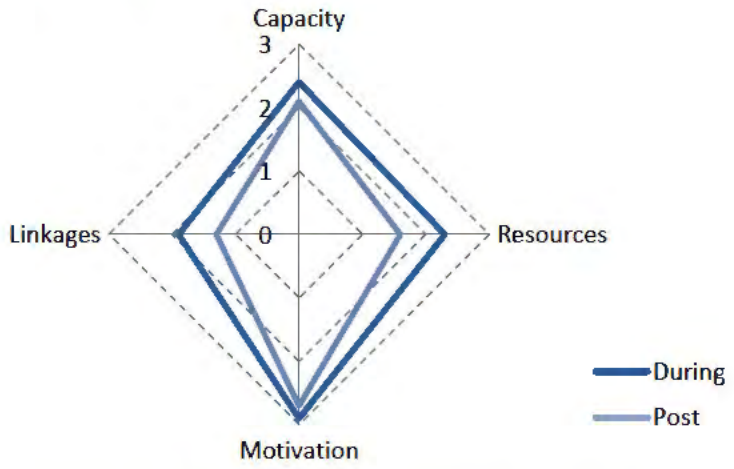
that area to shift the communities' view of themselves as passive recipients of free food to people proactively taking responsibility for improving their well-being.

Among the CARE PAs, the issue was less whether PAs had the motivation to maintain the linkages to the private sector and more about the capacity and resource constraints they faced given the challenges that accompanied these relationships. For instance, pineapple growers were unable to maintain their contract with the Nairobi Fresh an Juici Company because they could not supply the volume of fruit they had committed to contractually. They also felt unable to renegotiate contracts without CARE's assistance. Despite the fact that many of the linkages that CARE facilitated between PAs and private sector entities weakened after the project period, many farmers acted independently of the PAs to forge new (non-contractual) market linkages that they felt were more geographically convenient and better suited to their production capabilities. Though the decline of PAs and contract farming may have contributed to the overall decrease in income from crop sales between the endline and follow-up surveys, as Section 7.6 suggests, farmers who continued to sell through contracts generated greater revenues than those who did not.

7.3 Sustainability of Agriculture and Natural Resource Management Service Delivery: Seed Multipliers and Tree Seedling Producers (ADRA)

Unlike the EFs, who experienced unsustainable resources, capacity, motivation, and linkages, and low demand for their services after project exit, the ADRA project-targeted seed multipliers and tree seedling producers offered not only information but also, according to FGDs with beneficiaries, a valuable product for sale that was in high demand post-project. At follow-up, 19 seed multipliers and tree seedling producers were surveyed to determine to what extent their activities had been sustained. The questionnaire asked them to compare their situation during and after the project. **Figure 7.4** shows how they rated perceived resonrces, capacity, motivation, and linkages before and after the ADRA project.

Figure 7.4. Seed Multiplier and Tree Seedling Producers' Mean Service Delivery Ratings, During and Post-Project



Source: 2011 ADRA Seed Multiplier and Tree Seedling Producer Survey, n=19.
Based on Wilcoxon signed rank test; changes in ratings of capacity and motivation significant at $p<0.05$, resources and linkages significant at $p<0.01$.

7.3.1 Resources

In contrast to EFs, who provided services free of charge, ADRA seed multipliers and tree seedling producers were taught to operate under a for-profit business model that was meant to motivate service delivery and facilitate access to needed inputs. However, this business model lacked resilience to the repeated episodes of drought that plagued the former ADRA project area, which affected both the seed multiplier's and tree seedling producer's supply and the demand for their products.

During the ADRA project, seed multipliers and tree seedling producers were instructed to charge for the sale of tree seedlings and drought-resistant seeds to cover the costs of replenishing their inputs and to generate a small profit. Initially, ADRA provided the multipliers/producers with drought-resistant seeds, farming tools, and equipment. ADRA also occasionally replenished their seeds and seedlings following drought-related losses. Along with providing access to appropriate seeds, ADRA offered flexible repayment plans.

> "Whenever we asked ADRA for seeds, they would deliver immediately. Even when payment was involved, they would collect what one had and wait patiently for the rest of the money."
> – Seed multiplier, Kitui District

After ADRA's withdrawal, seed multipliers and tree seedling producers were suddenly entirely dependent on product sales to maintain their operations, as no contingency plan had been considered for dealing with external shocks and there had been no independent operation prior to ADRA's exit. Seed multipliers and tree seedling producers rated their "ability to acquire necessary resources" in the post-project period significantly lower (1.6 on a scale of 1 to 3, 1=poor, 3=excellent) than during the project period (2.3) ($p<0.01$). In the follow-up survey, only 26.3 percent of respondents reported receiving payment for their products both during and after the project.

Qualitative data suggest that this unreliable revenue stream reflected supply challenges, drought-related product losses, and drought-related curtailed demand more than an inherent lack of community interest in or support for the seed multipliers' and tree seedling producers' services. For example, there was no provision during the project to ensure sustained multiplier/producer access to needed inputs. Some of the seed multipliers, for instance, reported that local dealers did not offer the drought-resistant seeds that ADRA had provided and sold seeds that were ill-suited to their particularly arid region. Many of the seed multipliers and tree seedling producers reported that their entire stock had been wiped out by drought after ADRA's withdrawal.

Because droughts in the ADRA implementation area tended to be cyclical, during the second round of qualitative research visits, which occurred after a period of adequate rainfall, seed multipliers and tree seedling producers reported that community demand for their products had again risen as farmers prepared to plant. With the increase in sales, they were able to replenish their resources. However, at the time of the follow-up survey a year later, the area was once again suffering from severe drought, which may explain the low quantitative ratings related to sustained resources.

Interestingly, qualitative interactions suggested that community members were generally more willing to pay for goods such as seeds or tree seedlings than for the educational services offered by extension workers. One possible explanation for this dynamic, drawing from the qualitative results, is that ADRA required community members to pay for these products from the outset of the project, so they never expected to receive the products for free. EFs, on the other hand, worked for free during the project and were instructed by ADRA to start charging for their services after ADRA left, an approach that was unsuccessful. Also, demand for seeds and seedlings was continual (during periods of adequate rainfall),

whereas the value of and demand for the EFs' information declined when the information was not refreshed through linkages to higher-level technical expertise.

7.3.2 Capacity

Despite small declines in perceived capacity ratings, seed multipliers and tree seedling producers reported in 2011 that their capacity to continue service remained relatively high. In the follow-up survey, seed multipliers and tree seedling producers rated their "knowledge and capacity to manage operations" at 2.1 on a scale of 1 to 3 for the post-project period, compared with 2.4 for the period during the project (Figure 7.4). Though the decline was statistically significant at $p<0.05$, a mean rating of 2.1 signifies that many survey respondents perceived their capacity to be at least "good." The qualitative results also reflected the confidence of the seed multipliers and tree seedling producers in their capacity to deliver services after ADRA had exited. In fact, many seed multipliers and tree seedling producers reported an increase in their sense of preparedness over time, which they attributed to growing experience and confidence with each new harvest.

> "Our gardens are better now and we have more food. The community gets surprised that we are in the same area and our farms are much better."
> – Seed multiplier, Kitui District

The seed multipliers and tree seedling producers recognized that farming is a dynamic process, and this attitude helped make them positive and confident about the future, as they expressed in FGDs.

> "We still apply the same skills and knowledge that we learnt. When we make mistakes, the plants die, but we learn from it the right thing to do next time."
> – Tree seedling producer, Kitui District

7.3.3 Motivation

Interestingly, seed multipliers and tree seedling producers continued to be highly motivated in the ADRA areas despite the cyclical droughts and the accompanying supply and demand challenges. Seed multiplier and tree seedling producer respondents assigned high ratings to their "level of motivation to serve" both during the project (2.9 on a scale of 1 to 3) and after ADRA withdrew (2.7) (Figure 7.4). While the decline was statistically significant ($p<0.05$), 74.0 percent of respondents gave a motivation rating of 3 (corresponding to "excellent") for both time periods, revealing that the majority of seed multipliers and tree seedling producers maintained a high motivation level. Likewise, very few respondents cited "insufficient personal interest," "insufficient personal benefit," or "insufficient demand" as challenges to sustainability. Furthermore, the qualitative survey found that seed multipliers and tree seedling producers expressed a keen interest in their work. The knowledge they gained, especially in tree production and grafting, was specialized and thus valuable to them and the community. During the project, training, certificates, and community status were key motivators.

> "Supervision by ADRA and the status ADRA gave us, especially during field days, were great motivators. So were the material support, the training we received, and the food."
> – Tree seedling producer, Kitui District

After the ADRA project ended, such incentives were no longer offered, and the primary sources of motivation were revenue (or the hope of future revenue) from produce sales. Seed multipliers and tree seedling producers reported in FGDs that when the rains were sufficient, they struggled to keep up with demand. Another motivator was their ability to apply their knowledge and products on their own farms. One tree seedling producer stated that his family had no shortage of fruit from his grafted fruit trees.

Despite statistically significant declines, motivation and perceived benefit levels remained high, and qualitative results suggested that the critical components of sustained motivation—perceived benefits, personal interest, and community demand—were largely intact after ADRA's exit.

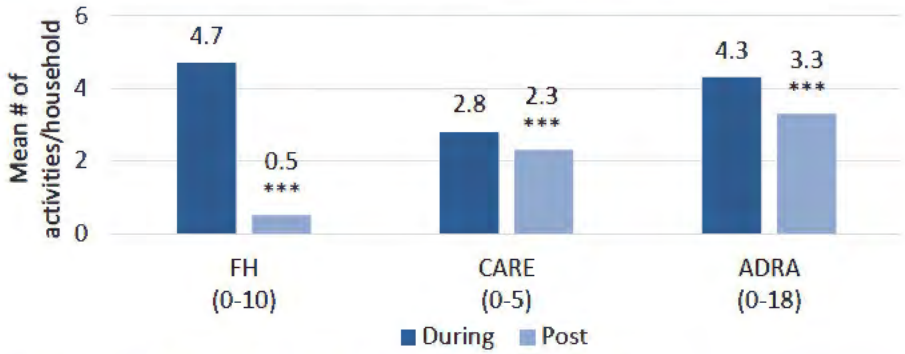
7.3.4 Linkages

ADRA's sustainability strategy, to link the seed multipliers and tree seedling producers to the MOA for sustained technical support, was unsuccessful because of a myriad of constraints the MOA faced in assuming this role. Only 31.6 percent of seed multipliers and tree seedling producers reported interacting with any institutions regarding their work post-project, a decline from 73.7 percent during the project ($p<0.01$). The seed multipliers and tree seedling producers rated their "ability to create linkages or obtain external support" at 1.9 during the project and 1.3 post-project (on a scale of 1 to 3) ($p<0.01$) (Figure 7.4). However, in FGDs, the multipliers and producers seemed more optimistic than the PAs and EFs about their ability to operate independently from any GOK office or institution. This may be because their product had inherent continued value, whereas the value of the EFs' services diminished once they had saturated their local markets with the information they had learned during the projects. Seed multipliers and tree seedling producers did suffer, however, from the lack of a dependable linkage to drought-tolerant seeds and other business inputs. These inputs had been sourced by ADRA during the project and, as mentioned above, local seed suppliers did not have reliable supplies of the varieties appropriate for their arid region.

7.4 Sustainability of Agriculture and Natural Resource Management Service Use

The use of various agricultural services and activities declined post-exit in the FH and ADRA agricultural areas but decreased only slightly in the CARE agriculture areas. **Figure 7.5** shows the changes in the mean number of agriculture sector services and activities respondents participated in during and post-project. These participation data were derived from a set of retrospective questions, asked of a sample of farmers during the follow-up survey, about their participation in activities/services that had been offered by the projects and were intended to continue post-project. While the specific services and activities varied by project, they included training, receipt of inputs, participation in PAs, participation in local markets, and other community-based activities. While reported participation decreased significantly among all beneficiaries, households in the CARE agriculture area reported the smallest change in the mean number of agricultural activities they had participated in, from 2.8 out of 5.0 during the project to 2.3 out of 5.0 post-project ($p<0.001$).

Figure 7.5. Participation in Agriculture Activities During and Post-Project, by Awardee



Source: 2011 Follow-Up Household Surveys, Participation Module.
Note: Significance based on Wilcoxon signed rank test; *p<0.05, **p<0.01, ***p<0.001. X axis ranges indicate the number of agricultural activities that could be reported by respondents.

Table 7.4 presents data related to beneficiary participation in *specific* agriculture activities during and post-project. Agricultural training decreased across all three projects, but remained high in the CARE agriculture areas. Though participation in training dropped slightly, 86.4 percent of CARE farmers who received training during the project also received training post-exit. CARE's sustainability strategy intended training to be continued by MOA extension officers. It appears this strategy had limited success, as only 25.2 percent of those who received training received it from government extension workers. Notably, 47.0 percent of those who received post-project training received it from other CBOs. After closing the FFP development project, CARE implemented a carbon exchange program with funding from another donor that promoted tree planting and NRM activities in some of its former FFP development project areas. Another NGO, Women of Color United, entered the rice-growing regions around Nyando and Kisumu. They hired former officers of CARE's agriculture interventions and continued training the rice farmers and even linked them to credit facilities that loaned them money for inputs and tools. The relatively high rates of continued training participation may capture the activities of this new project rather than the sustainability of the FFP development project.

Table 7.4. Sustainability of Agriculture Service Use among Project Beneficiaries, by Awardee

	Participated during[a]	Participated post	Sustained participation[b]	Sig.[c]
FH (Mountain Region)	n=390			
Received any technical training	66.8%	20.3%	25.3%	***
Received any visits from an agricultural extension worker	47.2%	8.6%	12.6%	***
CARE	n=597			
Received any technical training	98.3%	86.2%	86.4%	***
ADRA	n=500			
Received any technical training	46.4%	29.9%	50.4%	***
Purchased or acquired tree seedlings from a tree nursery operated by a PA	22.5%	24.6%	58.9%	NS

Source: 2011 Follow-Up Household Survey, Participation Module.
[a] Participation refers to respondent or anyone in the household.
[b] Sustained participation calculated as the percent of households participating during the project that reported also participating post-project.
[c] Significant change in participation based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

In contrast to CARE beneficiaries, ADRA and FH beneficiaries participated less in agricultural training both during and after their projects ended. During the project, 46.4 percent of ADRA households and 66.8 percent of FH households reported receiving some type of technical training. The awardees' sustainability plans assumed that EFs/model farmers would continue to provide this type of training post-exit. Yet only 50.4 percent of ADRA beneficiaries and 25.3 percent of FH beneficiaries (both significant at $p<0.001$) who had received training during the projects reported *continuing* to receive training post-exit. In both areas, such training was reportedly provided not by EFs, but by NGOs or the GOK. In Marsabit, FH was still providing limited services post-exit, using other donor funds. Qualitative research supports the quantitative findings. Many farmers in both areas described having no further access to training to learn new farming techniques from the project-trained EFs. While there was community demand for new information, trained EFs could not meet this demand without external support or refresher training and could not continue training the community.

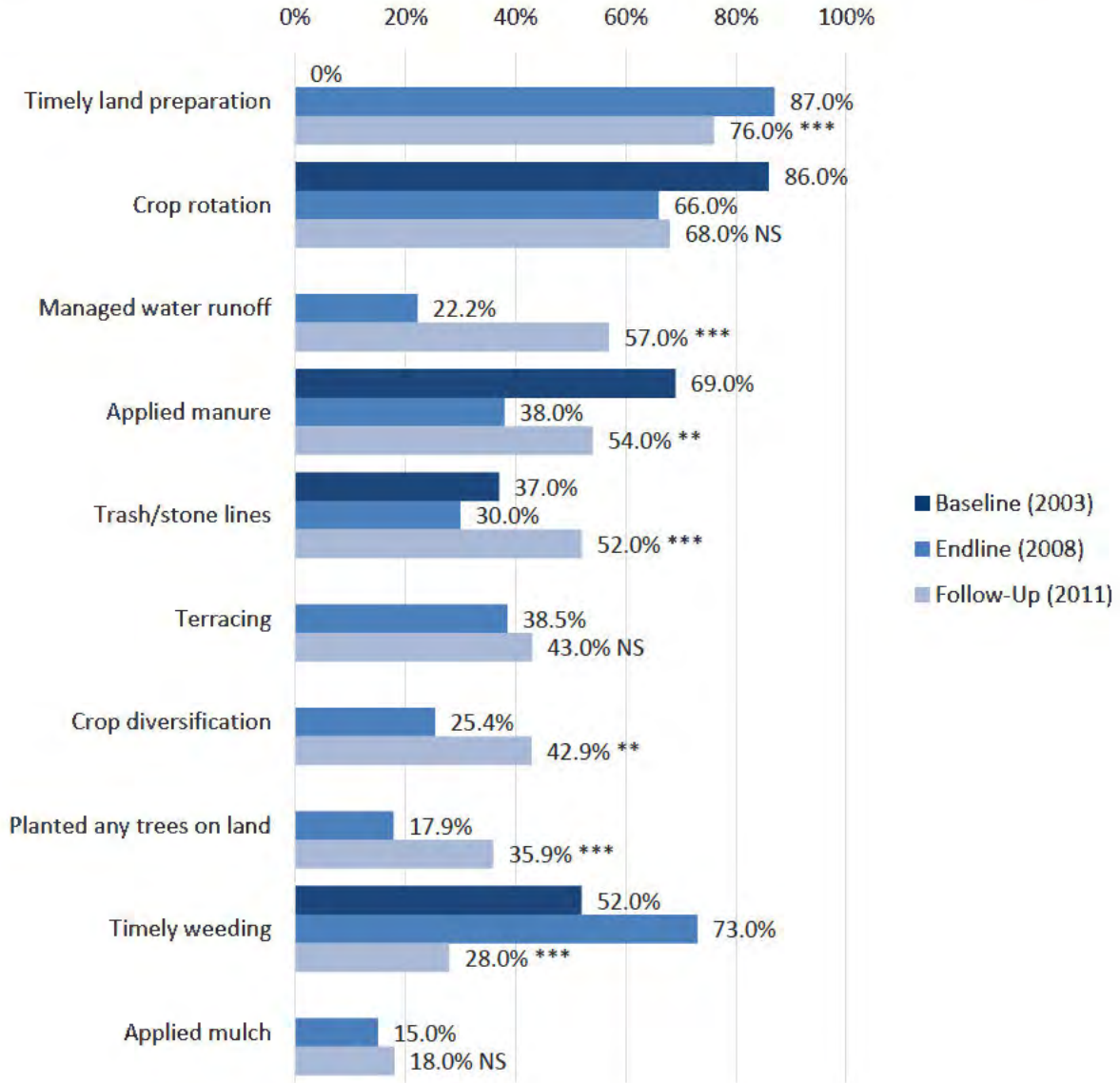
One activity that was fairly well sustained in the ADRA project area was the purchase of tree seedlings from tree nurseries. The follow-up survey asked beneficiaries about these purchases specifically from PA-operated tree nurseries, but qualitative data suggest that farmers were referring to purchases not from PAs but from the seed multipliers and tree seedling producers. At follow-up, 22.5 percent of farmers recalled purchasing tree seedlings during the project and 24.6 percent reported purchasing them post-project. Furthermore, nearly half of the farmers who said they purchased the seedlings post-project said they had *not* purchased them during the project, pointing to the successful expansion of this activity. Though purchase levels were relatively low at both time points, the sustainability of the levels points to the success of seed multipliers and tree seedling producers, even in trying times, and contrasts with the struggles faced by the EFs and PAs. Farmers were generally more willing and able to continue utilizing seed multiplier and tree seedling producer services than EF and PA services, partly because the former provided immediate, visible benefits, whereas EF and PA services were no longer perceived as worth the costs of participation.

7.5 Sustainability of Recommended Agriculture and Natural Resource Management Practices

Despite the challenges faced by many of the agricultural service providers in continuing operation post-exit, results from the 2011 follow-up survey showed overall improvements in beneficiaries' use of the improved agricultural practices promoted by each project. Across all three projects, overall use of improved practices appeared to have increased, but some practices were better sustained than others.

With few exceptions, all recommended agriculture and NRM practices in the FH project area appeared to be either sustained or higher than endline levels at follow-up. **Figure 7.6** shows changes in the utilization of key farming techniques promoted by the FH project from baseline (where data were available) to follow-up, ordered by highest reported utilization at follow-up. The mean percentage of land covered by improved practices (as estimated by farmers) increased from 44.1 percent at endline to 65.1 percent at follow-up ($p<0.001$). The practices with the greatest improvements (increasing by over 100 percent from endline to follow-up; $p<0.001$ for both) were managing water runoff and planting trees. Weeding during the first 2 weeks after planting dropped from 73.0 percent at endline to 28.0 percent at follow-up ($p<0.001$), and applying mulch did not change significantly from the prevalence of 15.0 percent at endline.

Figure 7.6. Trends in the Percentage of Farmers Using Improved Agricultural Practices (FH), from Baseline to Follow-Up

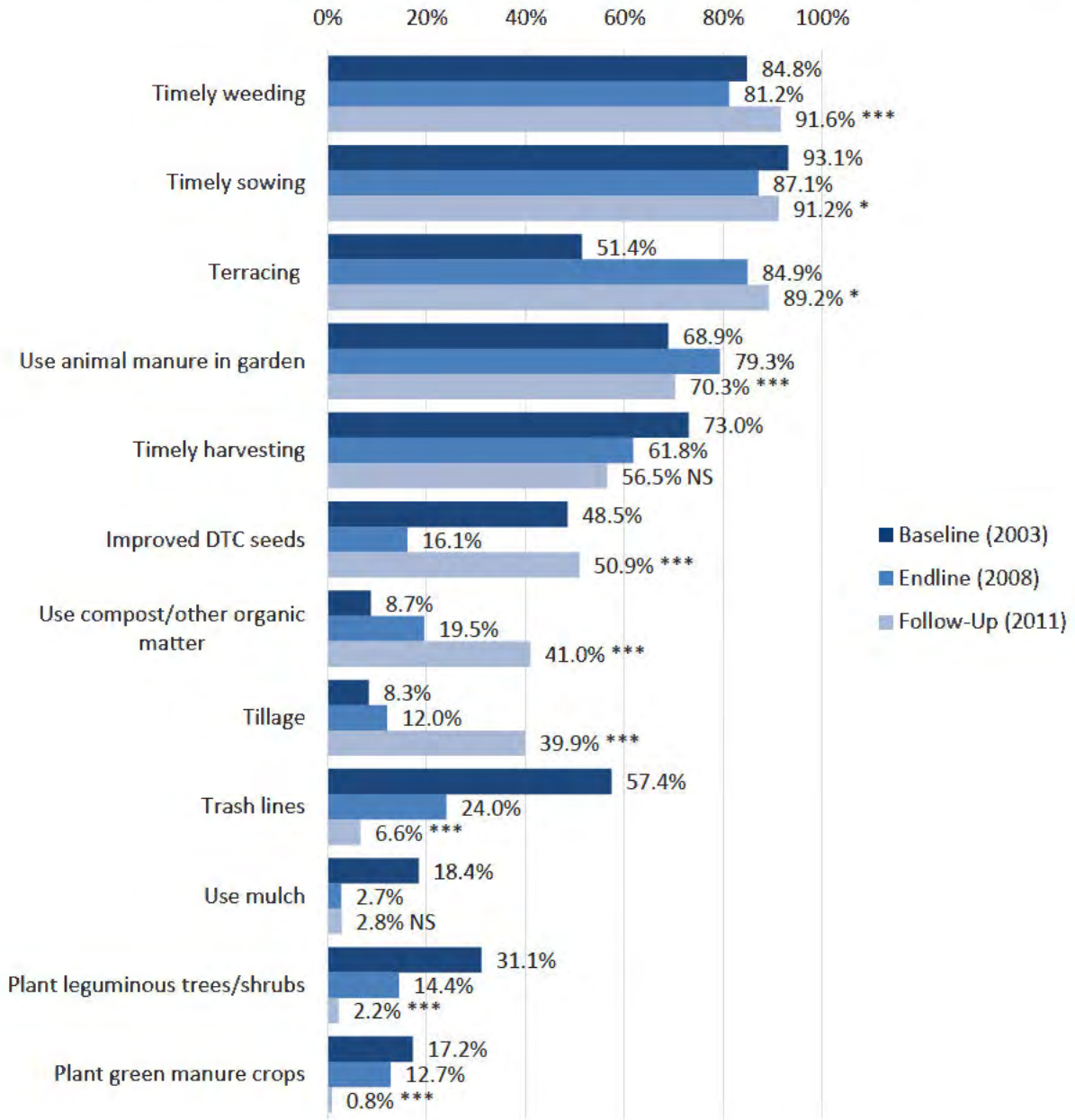


Sources: 2008 FH/USAID Final Evaluation Report; 2011 FH Follow-Up Household Survey.
Note: Missing baseline bar reflects missing data, unless noted with a "0%"; years reflect when surveys were administered. Surveys asked farmers to recall practices from the season prior. Significance from endline to follow-up based on Pearson's chi-square test (using Rao-Scott correction); NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
Sample sizes: Baseline (unavailable), endline (n=252), follow-up (n=245).

Among ADRA beneficiary farmers, practices promoted by the FFP development project were also generally well sustained, with the exceptions of applying mulch, planting of leguminous and green manure crops, and constructing trash lines. As **Figure 7.7** shows, timely weeding, timely sowing, and terracing were all practiced by around 90 percent of farmers at follow-up, with terracing showing the most improvement, from 51.4 percent at baseline to 84.9 percent at endline and 89.2 percent at follow-up ($p<0.05$ from endline to follow-up). Use of compost or other organic matter and tillage also substantially increased from endline to follow-up; application of compost or other organic matter steadily increased from less than 10 percent at baseline to 19.5 percent at endline to 41.0 percent at follow-up ($p<0.001$).

Among the unsustained practices mentioned above, trash line construction declined most drastically, from 57.4 percent at baseline to 24.0 percent at endline to only 6.6 percent at follow-up (p<0.001 from endline to follow-up). Farmers explained in FGDs that trash lines were not as effective as terracing for soil conservation. The decline in this practice reflects the successful adoption of terracing and underscores the fact that useful, visibly beneficial practices have a greater likelihood of being sustained.

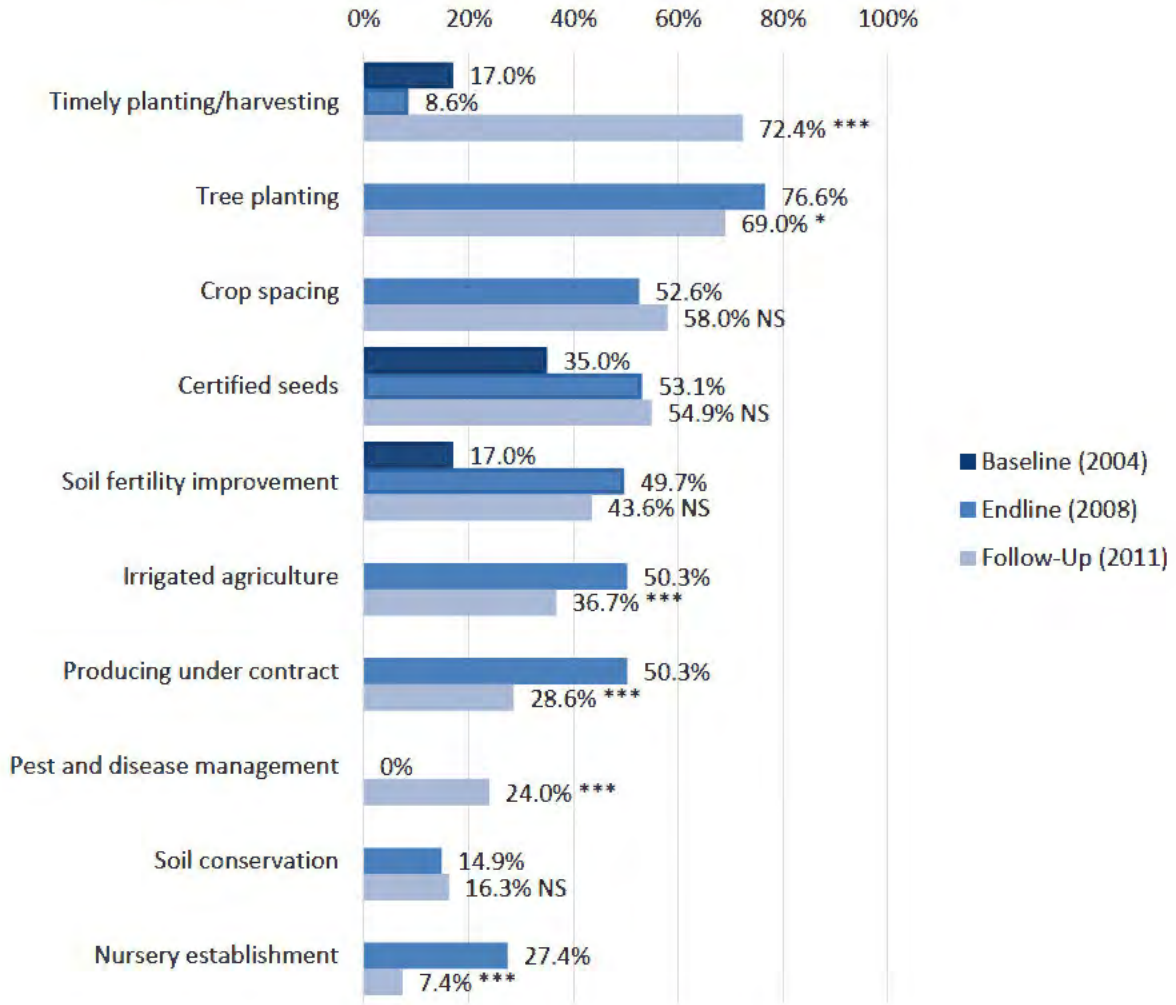
Figure 7.7. Trends in the Percentage of Farmers Using Improved Agricultural Practices (ADRA), from Baseline to Follow-Up



Sources: 2008 ADRA Final Evaluation Report; 2011 ADRA Follow-Up Household Survey.
Note: Years reflect when surveys were administered. Surveys asked farmers about current practices. Significance from endline to follow-up based on Pearson's chi-square test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
Sample sizes: Baseline (n=800), endline (n=599), follow-up (n=499).

Figure 7.8 shows that farmers in the CARE agriculture area also reported high use of improved practices. "Timely planting/harvesting" showed the largest improvement, from 17.0 percent reporting the practice at baseline to 8.6 percent at endline to 72.4 percent at follow-up ($p<0.001$ from endline to follow-up). The decrease in this indicator between baseline and endline and the subsequent significant and dramatic increase between the end of the project and the follow-up survey was surprising. The qualitative inquiry did not have the opportunity to investigate this result, but it is possible that these effects were due to factors exogenous to the project, such as climate conditions. Aside from increased use of pest and disease management, no other practices significantly increased in use from endline to follow-up. Meanwhile, farming techniques that were significantly less practiced between endline to follow-up were irrigated agriculture (from 50.3 percent to 36.7 percent; $p<0.001$), nursery establishment (from 27.4 percent to 7.4 percent; $p<0.001$), and producing under contract, as farmers struggled to maintain the market linkages facilitated by CARE officers.

Figure 7.8. Trends in the Percentage of Farmers Using Improved Agricultural Practices (CARE), from Baseline to Follow-Up



Sources: 2008 CARE Final Evaluation Report; 2011 Follow-Up Household Survey.
Note: Missing baseline bar reflects missing data, unless noted with a "0%." Years reflect when surveys were administered. Surveys asked farmers about current practices. Significance from endline to follow-up based on Pearson's chi-square test; NS=not significant, *$p<0.05$, **$p<0.01$, ***$p<0.001$.
Sample sizes: Baseline (unavailable), endline (n=175), follow-up (n=597).

FGDs with farmers during the 3 years post-project revealed that, once the farmers completed a harvest cycle and were able to experience the benefits of the improved practices, they often remained committed to the changed behaviors. One PA member in Homa Bay, Nyanza Province, who had adopted butternut squash production, reported that she continued to pay for her children's education using revenue from butternut squash sales, which motivated her to continue:

> "The income generated from our farming activities helps us pay school fees for our children and has generally improved our living standards."
> – PA member, Nyanza Province

In key informant interviews with ADRA field staff, farmers admitted being reluctant to adopt land terracing in the beginning of the project because it was an unfamiliar technology and extremely labor intensive. However, once the project had established terracing in the EFs' fields, the community saw the bumper harvest they received and adopted these soil conservation techniques throughout the area.

> "The farmer's lives were changed. The terraces were very helpful because the food output increased."
> – EF, Kitui District

Notably, the drought in the FH and ADRA project areas did not deter farmers' commitment to practicing the improved farming techniques, as the benefits they had experienced the previous year were sufficient motivation for them to continue these behaviors.

7.6 Sustainability of Agriculture and Natural Resource Management Impacts

The agricultural components of all three FFP development projects in Kenya were designed to increase crop yields, increase agricultural income, and ultimately improve household food security. However, despite the persistence of many key cultivation and NRM practices post-project and improved yields during the project cycles, yields in FH and ADRA declined significantly 3 years post-exit. Severe drought affecting both FH and ADRA areas at the time of the follow-up survey likely explains these declines. Among CARE farmers, yields declined significantly for two crops but were maintained for others.

Table 7.5, **Table 7.6**, and **Table 7.7** include yield data for key crops in each of the three project areas. In the FH area, mean yields reported at follow-up (in comparison to endline) decreased for every crop, with the exception of sorghum and teff grown by FH farmers. However, these two crops were planted by fewer than 10 percent of FH farmers at follow-up and only 3 and 2 percent of farmers, respectively, reported any harvests for sorghum and teff. Similarly, very few FH farmers reported growing cow peas. Hence, the decline in cow pea yields was not found to be statistically significant. While CARE farmers reported lower mean yields of maize, sorghum, and beans at follow-up than at endline, the decrease was only statistically significant for maize and sorghum harvested during the long rains season ($p<0.001$ for both crops). Short rain season yields of these three crops and long rain season bean yields did not change significantly from endline to follow-up and thus appear to have been sustained. Follow-up survey yields were much higher for CARE farmers, who were unaffected by the drought that hit both the former FH and ADRA implementation regions. By contrast, most FH and ADRA farmers (88.2 percent in FH and 32.6 percent in ADRA) reported no harvests at all at follow-up. ADRA farmers also struggled with low yields at follow-up, though without access to ADRA's endline datasets, it was not possible to calculate whether these declines were statistically significant.

Table 7.5. Sustainability of Agriculture Sector Impacts (FH)

	Endline (2008)[a] n=252		Follow-Up (2011)[a] n=245		Endline to Follow-Up (ppt Δ[b])
Crop	**# of farmers who reported planting crop**	**% of farmers who planted crop who reported any harvest of crop**	**# of farmers who reported planting crop**	**% of farmers who planted crop who reported any harvest of crop**	
Maize	241	34.9%	242	5.8%	−29.1 ***
Sorghum	17	3.0%	20	8.8%	+5.8 NS
Cow peas	10	21.1%	9	0.0%	−21.1 NS
KAT bean 1[c]	51	21.8%	65	11.8%	−10.0 *
Wheat	38	35.1%	20	0.0%	−35.1 **
Teff	46	43.5%	21	9.5%	−34.0 *
Mean seasonal crop yields					
	n[d]	**Kg/acre**	**n[d]**	**Kg/acre**	**Δ Kg/acre**
Maize	239	34.1	223	13.1	−21.0 *
Sorghum	17	0.2	16	11.6	+11.4 NS
Cow peas	10	14.2	9	0.0	−14.2 NS
KAT bean 1[c]	50	31.0	61	14.6	−16.4 *
Wheat	38	57.6	19	0.0	−57.6 ***
Teff	46	61.3	21	49.5	−11.8 NS

Sources: 2008 FH Endline Survey; 2011 FH Follow-Up Household Survey.

Note: Implausible yields (>3 IQRs above 3rd quartile for non-zero yields) excluded; significance based on independent samples t-test: NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

[a] Surveys asked farmers to recall yields from previous season.

[b] ppt Δ=percentage point change.

[c] KAT bean 1 is drought-resistant bean variety.

[d] Differences between N and number of farmers who reported planting crop due to missing values.

Table 7.6. Agriculture Sector Impact Trends (ADRA), from Baseline to Follow-Up

Impact	Baseline (2003)	Endline (2008)	Baseline to Endline (ppt Δ[a])	Follow-Up (2011)	Endline to Follow-Up (ppt Δ[a])
Food security	**n=800**	**n=599**		**n=500**	
Households storing crops for more than 9 months	39.0%	26.1%	−12.9	24.8%	−1.3 NS
Households reporting having enough food during the past 3 years	15.0%	16.0%	+1.0	7.2%	−8.8 ***
Annual crop yields (mean bags/acre)					
Cow peas	4.9	3.9	−1.0	1.5	−2.4
Green gram	5.1	4.2	−0.9	1.3	−2.9
Beans	3.5	4.3	+0.8	1.3	−3.0
Sorghum	6.7	4.4	−2.3	1.4	−3.0
Pigeon peas	3.6	5.6	+2.0	1.0	−4.6
Maize	4.8	7.3	+2.5	2.1	−5.2
Millet	3.3	9.2	+5.9	0.8	−8.4

Sources: 2008 ADRA Final Evaluation Report; 2011 ADRA Follow-Up Household Survey.
Notes: Significance tests were not possible for change in crop yields as only means were reported in ADRA's final report; significance based on Pearson's chi-square or independent samples t-test: NS=not significant, *p<0.05, **p<0.01, ***p<0.001. Ns not available for baseline and endline crop yields.
[a] ppt Δ=percentage point change.

Household food security, which was measured in the CARE and ADRA evaluations, reportedly improved in the CARE project area but deteriorated in the ADRA project area at the time of the follow-up survey. Table 7.7 includes changes in food security among CARE's agricultural beneficiaries between the midterm, endline, and follow-up surveys. Food security was measured by asking respondents whether there had been a time in the past year when they could neither produce nor purchase enough food for the household. Despite some observed declines in crop output, food security appeared to have been sustained or improved from midterm to follow-up in the Homa Bay, Suba, and Migori districts. The biggest improvement was in Migori District, 80.5 percent of whose households reported food insecurity at endline, compared to 31.4 percent at follow-up ($p<0.001$). By contrast, ADRA's two measures of food security appeared to have worsened in the ADRA project area, which was severely affected by a drought. Though approximately one-quarter of households reported storing crops for more than 9 months at both endline and follow-up, the percentage of households reporting "having enough food during the past 3 years" decreased from 16.0 percent at endline to 7.2 percent at follow-up ($p<0.001$; Table 7.6).

Table 7.7. Agriculture Sector Impact Trends (CARE): Annual Crop Yields and Food Security

	Baseline (2004) n=n/a	Midterm (2006) n=n/a	Endline (2008) n=175	Baseline to Endline (ppt Δ[a])	Follow-Up (2011) n=597	Endline to Follow-Up[b] (ppt Δ[a])
Mean yields (kg/acre): Short rains season						
Maize	114.0	1,037.9	241.2	+127.2	213.4	−27.8 NS
Sorghum	82.0	843.1	257.3	+175.3	217.4	−39.9 NS
Beans	55.0	779.3	256.8	+201.8	74.8	−182.0 NS
Mean yields (kg/acre): Long rains season						
Maize	185.0	384.9	354.1	+169.1	194.0	−160.1 ***
Sorghum	188.4	1,780.5	349.3	+160.9	163.1	−186.2 ***
Beans	70.6	648.7	310.2	+239.6	74.8	−235.4 NS
Households with inadequate food supply in the past year[c] (%)						
	Baseline (2004) n=n/a	**Midterm (2006) n=n/a**	**Endline (2008) n=175**	**Midterm to Endline (ppt Δ[c])**	**Follow-Up (2011) n=597**	**Endline to Follow-Up[a] (ppt Δ[c])**
District: Homa Bay	n/a	81.5%	52.4%	−29.1	36.1%	−16.3 NS
District: Suba	n/a	94.1%	48.9%	−45.2	49.3%	+0.4 NS
District: Migori	n/a	91.5%	80.5%	−11.0	31.4%	−49.1 ***

Sources: 2008 CARE Final Evaluation Report; 2008 CARE Endline Survey; 2011 Follow-Up Household Survey.
Note: n/a=not available.
[a] ppt Δ=percentage point change.
[b] Significance based on either independent samples t-test (performed on transformed variables when yields were not normally distributed) or Pearson's chi-square test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[c] Rachuonyo and Nyando districts excluded from this analysis because of data limitations.

In addition to crop yields, CARE and ADRA collected data on agricultural income. However, as these data were not included in the ADRA final evaluation report, comparisons could not be made with the ADRA follow-up data. Therefore, changes in agricultural income from endline to follow-up could only be analyzed for CARE; this information is presented in **Table 7.8.** Survey data showed that the percentage of all households in CARE's agriculture area reporting any income from agricultural sales declined significantly, from 88.0 percent at endline to 58.6 percent at follow-up ($p<0.001$). Additionally, the percentage of households earning at least US$1 a day from agricultural sales (of those with any sales) declined from 29.1 percent at endline to only 15.6 percent at follow-up ($p<0.001$). The decrease in median annual agricultural income from endline to follow-up from $226 (in 2011 US$) to $142 was not statistically significant and can be considered sustained.

Table 7.8. Sustainability of Agriculture Sector Impacts (CARE): Agricultural Incomes

Impact	Endline n=175		Follow-Up n=597		Endline to Follow-Up[a] (ppt/$ Δ[b])
	n	Value[c]	n	Value[c]	Value
Households with any agricultural Income	154	88.0%	350	58.6%	–29.4 ***
Households earning ≥ US$1/day from agriculture sales[c]	51	29.1%	93	15.6%	–13.5 ***
Median annual agriculture income (US$)[d]	154	$226[e]	350	$142	–$84 NS

Sources: 2008 CARE Endline Survey; 2011 CARE Follow-Up Household Survey.

[a] Significance based on either Pearson's chi-square test or Wilcoxon signed rank test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

[b] ppt Δ=percentage point change.

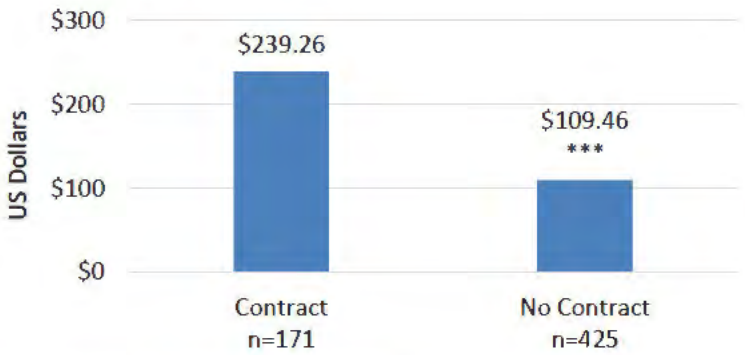
[c] Values are % or median.

[d] Of those households with any agricultural income.

[e] Endline value inflated to 2011 US$.

When follow-up data were disaggregated by whether or not the farmer produced under a contract, there was a large and significant difference between annual agricultural incomes of the two groups (**Figure 7.9**). Contract farmers reported a median income of US$239 for the 2010/2011 season, while non-contract farmers (with any sales) reported a significantly lower income of US$109 (p<0.001). These income trend results should be read with some caution, as the method used in the CARE endline evaluation survey (and in the follow-up survey to preserve the comparison) did not adhere to best practice principles of income measurement. Farmers were asked to report their agricultural income as a lump sum rather than by detailed income components, which could have led to some measurement error.

Figure 7.9. Median Total Agricultural Income During the 2010/2011 Season by Engagement in Contract Agriculture (CARE)



Source: 2011 CARE Follow-Up Household Survey.

Note: Significance difference based on Wilcoxon signed rank test; *p<0.05, **p<0.01, ***p<0.001.

Through participatory rating exercises in FGDs, farmers reported a series of visible benefits from adopting agricultural practices introduced by CARE and ADRA. In many cases, farmers said these benefits persisted and improved after the projects ended. Individual farmers in ADRA's area realized the benefits of adopting improved agriculture techniques, such as terracing and harvest storage once they received rain. Commodity business unit farmers (the term given to groups of farmers formed by ADRA to improve commercial opportunities for production and sales of crops such as chili and rice) reported that the income they received from their crops had life-changing impacts on their households. Though the benefits varied across groups, in general they tended to improve over time with refinement of the

practices. **Table 7.9** shows the benefits reported by farmers from CARE's Awach Rice Scheme in Nyando District during a participatory rating exercise that asked farmers to describe any benefits from participation during and after the project and to rate the magnitude of benefits received on a scale from 0 to 10 (10 implying maximum benefit). The farmers reported that improvements (tin rather than thatched roofs, nice furniture, improved chicken and cow sheds) were visible in the community and that their household food security had improved since they had been able to eat the rice and sell it to buy other foods to vary their diet.

Table 7.9. Reported Benefits of Participating in CARE Agriculture Activities: Awach Rice Scheme Farmers, Nyando District

Benefits	Participatory group rating	
	During project	Post-project
Improved household income	2	7
Household food security	3	8
Ability to pay school fees	5	9
Community improvement	5	9

Source: 2011 Awach Rice Scheme Farmers Participatory Rating Exercise.

7.7 Agriculture and Natural Resource Management Sector Sustainability: Lessons Learned

Box 7.2 summarizes key findings of the assessment of exit strategies and sustainability within the agriculture and NRM sector. All three FFP development project awardees in Kenya designed their agricultural interventions with a similar implicit sustainability strategy. Each project utilized a variation of a farmer-to-farmer model to disseminate improved farming methods, the adoption of which was assumed to be self-sustaining once the benefits of improved yields became apparent. It was assumed that trained EFs in ADRA and FH projects would continue training and disseminating best practices. Furthermore, the projects intended to create linkages to the MOA for ongoing supervision and refresher training of the community-based EFs whose capacity they had helped develop. CARE and ADRA also focused heavily on establishing market linkages that would prove profitable and thereby motivate farmers to continue commercializing and utilizing improved farming techniques.

Box 7.2. Agriculture and NRM Sector Sustainability: Key Findings

WHAT WORKED

- Use of most improved farming practices expanded post-project as farmers retained and shared knowledge from EFs with new beneficiaries, motivated by visible benefits.
- Many farmers persisted in their shift from subsistence farming to commercial agriculture. While not all contracts were maintained, farmers sought new, more flexible market opportunities post-project.
- Farmers engaging in contracts had higher incomes post-project than those without contracts.
- Seed multipliers and tree seedling producers were largely able to sustain their businesses despite drought-related setbacks, as their products were in high demand.
- Though few PAs experienced gradual, independent operation before project exit, those that did were more likely to sustain activities post-project.

WHAT DID NOT WORK

- The EF model was similar to the CHW model and saw a similar decline in services because of a lack of new information to share, and limited resources, linkages, and demand.
- The MOA did not have sufficient capacity to support project-trained EFs post-project.
- Most PA activities, and associated resources, capacity, linkages, and participation, declined post-project. Many farmers preferred independent operation to cooperative activity.
- Improvements in crop yields were not sustained, largely because of extreme drought conditions.

Across all three project, there was a marked decline in the delivery of agricultural extension services post-exit. Few beneficiaries continued to receive agricultural training or participate in PAs, most of which were unable to sustain capacity needed to continue functioning or to offer farmers sufficient benefits of membership. The exception was found among CARE basmati farmers, who confidently continued to operate after CARE's exit. The rice farmers' success could be attributed to the fact that CARE started working with them earlier in the project cycle than with other farmers, meaning that there was more time to consolidate the uptake of the new variety, to institutionalize market linkages, and to withdraw gradually before project exit. Also, these farmers were already selling shindano rice, so transitioning to basmati was simpler and perceived as less risky. CARE required more time to convince farmers in non-rice-growing areas to shift from subsistence production to what were perceived to be riskier cash crops, such as butternut squash and pineapples. This left little time for CARE to consolidate market linkages before the end of the final project cycle.

With the exception of ADRA's seed multipliers and tree seedling producers, who marketed accessible and useful inputs to the community when drought did not threaten their product, service providers cited post-project declines in resources, capacity, and linkages. Additionally, EFs acutely felt the decline in demand for the information-only products that they had to offer. These products declined in value because they had been imparted for free during the project and there was no mechanism to update the information after the project ended. With little external support and no source of revenue or other inputs, EFs struggled to

continue offering a valuable service to beneficiaries. They became less valuable in the eyes of the community, and these negative feedback loops prompted further reductions in service delivery and demand. The EF model was unsuccessful as a mechanism for ensuring *ongoing* access to new information, as the MOA was not able to provide supervision and training to the EFs post-exit.

Nonetheless, the prevalence of application of many of the farming practices promoted during the projects were sustained and, in several instances, increased 3 years post-exit. Farmers experienced enough direct and immediate benefits to continue implementing the low-cost methods that they had learned without continued reinforcement from EFs. While the EFs were no longer able to deliver services without additional support, the information that they had imparted during the project continued to be disseminated from farmer to farmer. Results from the CARE project area show the importance of contracts, as farmers who engaged in contracts reported using more improved practices and earning higher incomes. However, sustainability of recommended practices did not appear to translate into higher yields in any of the project areas. Among ADRA and FH farmers, yields declined significantly post-project, largely because of the severe drought at the time of the follow-up survey. While the effects of this shock are external to the sustainability of the projects' interventions, they suggest a potential missed opportunity to build farmer resilience to this type of recurring event.

8. Results: Livestock Sector

This section first summarizes the elements of the projects' livestock sector intervention that were intended to lead to sustained or expanded benefits. The subsequent four subsections present results related to the implementation of these sustainability components and the de facto exit processes, in association with the documented sustainability of: 1) service delivery (organized by factors related to resources, capacity, motivation, and linkages), 2) service use, 3) uptake and continuation of recommended practices, and 4) impacts. The final subsection summarizes key livestock sector sustainability findings and lessons learned.

8.1 Livestock Sector Sustainability and Exit Strategies

The livestock sector interventions in the FH and ADRA projects (CARE's project had no livestock component) shared a common sustainability strategy (**Box 8.1**). Both awardees identified individuals from the community to serve as community-based animal health workers, henceforth referred to as "paravets." The projects gave paravets business and animal health training and kits of essential drugs and basic equipment. The paravets were expected to charge a small fee for their services to cover the recurrent cost of essential drugs and supplies and to generate a profit that would motivate them to continue their work. To ensure that the paravets had the technical support and supervision needed to continue to provide quality services after project exit, linkages were made to the GOK district veterinary officers (DVOs). FH also linked paravets with the management committees of the livestock markets that it developed so that the animal health workers could offer services during market days.

In the FH areas, whose beneficiaries were primarily pastoralists, the livestock sector was a key component of the overall FFP development project. In addition to its focus on livestock health, FH's holistic approach involved developing peace and reconciliation institutions and livestock markets. This report, however, presents results related only to the sustainability of the paravet component of the livestock strategy. Results related to peace and reconciliation and livestock markets models can be found in the *Comprehensive Kenya Exit Strategies Study Report*.[12]

[12] The *Comprehensive Kenya Exit Strategies Study Report* is available from Tufts University upon request.

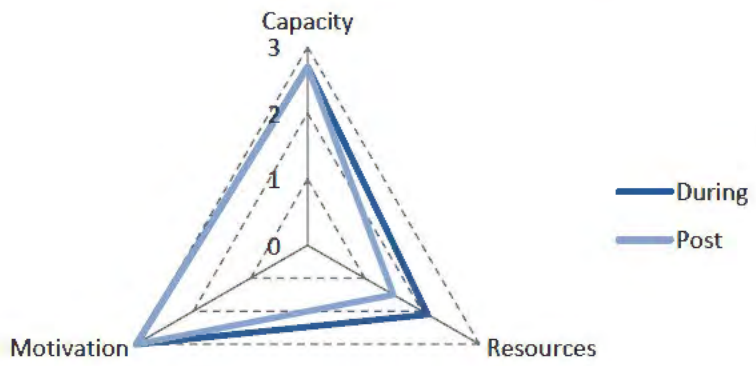
Box 8.1. Summary of Livestock Sustainability Strategy and Key Assumptions (Paravet Component)

SUSTAINABILITY STRATEGIES	KEY ASSUMPTIONS
• Train paravets to provide services.	• Demand for paravet services will be high among pastoralist and agro-pastoralist communities where GOK coverage is low.
• Instruct paravets to charge fees for service from the beginning of their operation.	• Fees raised will allow paravets to replenish their kits and pay for transportation. • Profits received from fees will sustain paravet motivation.
• Link paravets to the Department of Veterinary Services for continued access to technical assistance.	• Continued technical support from the GOK will maintain paravet service quality and access to resources.

8.2 Sustainability of Livestock Service Delivery among Paravets

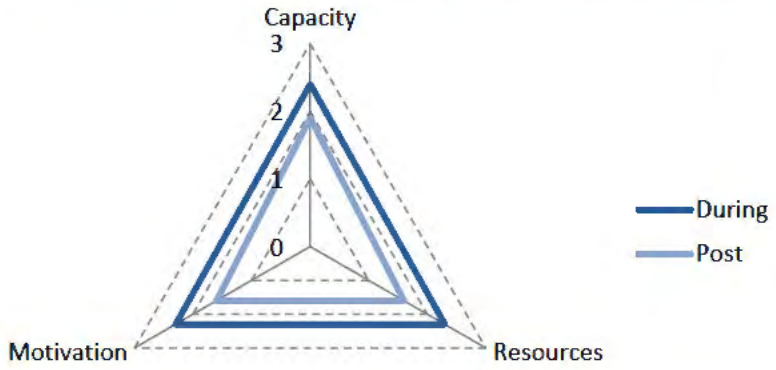
The paravet self-financing business model emerged as one of the most sustainable activities of the two FFP development projects in Kenya that employed it. This sector was one of the few in which many service providers maintained the level of effort devoted to service delivery after FH's and ADRA's exits. Community demand for their services, increased capacity and confidence, an ensured resource base, and strong linkages were a strong combination for sustainability. Ratings of perceived resources, capacity, and motivation are presented in **Figure 8.1** and **Figure 8.2** and discussed in the following sections. These data come from the retrospective service delivery questionnaires administered at follow-up to a total of 15 ADRA paravets and 12 FH paravets.

Figure 8.1. ADRA Paravets' Mean Service Delivery Ratings, During and Post-Project



Source: 2011 ADRA Paravets Survey, n=15.
No change in mean ratings of motivation and capacity; change in resources ratings significant at $p<0.01$ based on Wilcoxon signed rank test.

Figure 8.2. FH Paravets' Mean Service Delivery Ratings, During and Post-Project

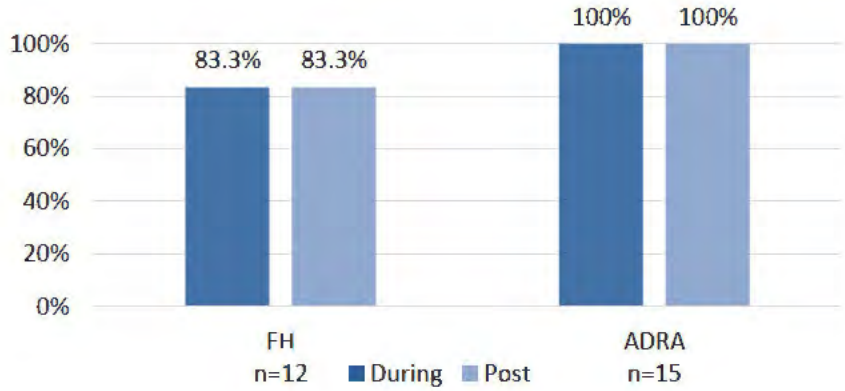


Source: 2011 FH Paravet Survey, n=12.
Change in ratings of motivation and capacity significant at $p<0.05$; change in resources ratings significant at $p<0.01$ based on Wilcoxon signed rank test.

8.2.1 Resources

Figure 8.3 presents results from the follow-up survey of paravets' access to resources during and post-project. Among FH and ADRA paravets, there was no significant change in the percentage who said that they were charging fees for their services, with 100 percent of ADRA paravets reportedly charging fees both during and after the project and 83.3 percent of FH paravets doing so during and after.

Figure 8.3. Percentage of Paravets Charging Fees for Service (FH and ADRA), During and Post-Project



Source: 2011 Paravet Surveys.
Note: All respondents reported no change in charging fee for service between during and post-project.

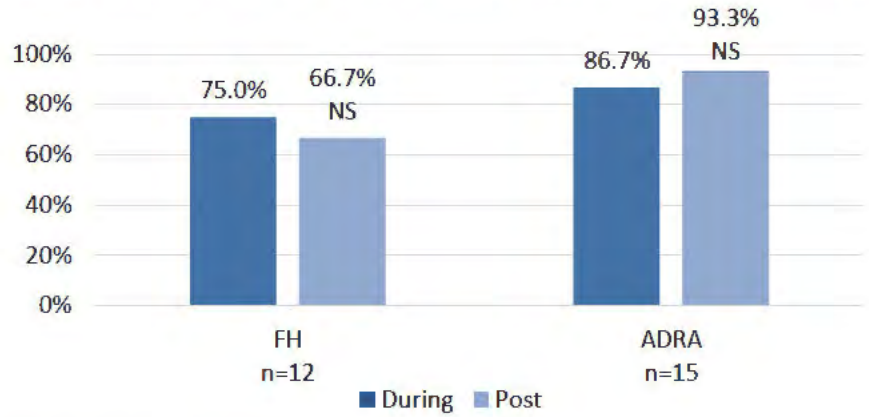
As shown in **Figure 8.4**, the percentage of ADRA paravets who reported being able to replenish their supplies rose (though not significantly) from 86.7 percent during the project to 93.3 percent post-project. In FGDs, these paravets reported that their ability to replenish their supplies increased over time because they were able to increase their client base and offer a more diverse menu of services.

> "Now that we have more customers, we are able to increase the amount of fees we are collecting. We are able to build our capital. Before we did not have the same client list and we had a lack of

exposure to the farmers. With little income, it was hard to replenish the kit."
– Paravet, Yatta District

The percentage of FH paravets who were able to replenish supplies in the post-project period declined slightly, but this decline was not statistically significant.

Figure 8.4. Percentage of Paravets Able to Replenish Supplies (FH and ADRA), During and Post-Project



Source: 2011 Paravet Surveys.
Note: Changes not significant based on McNemar's test.

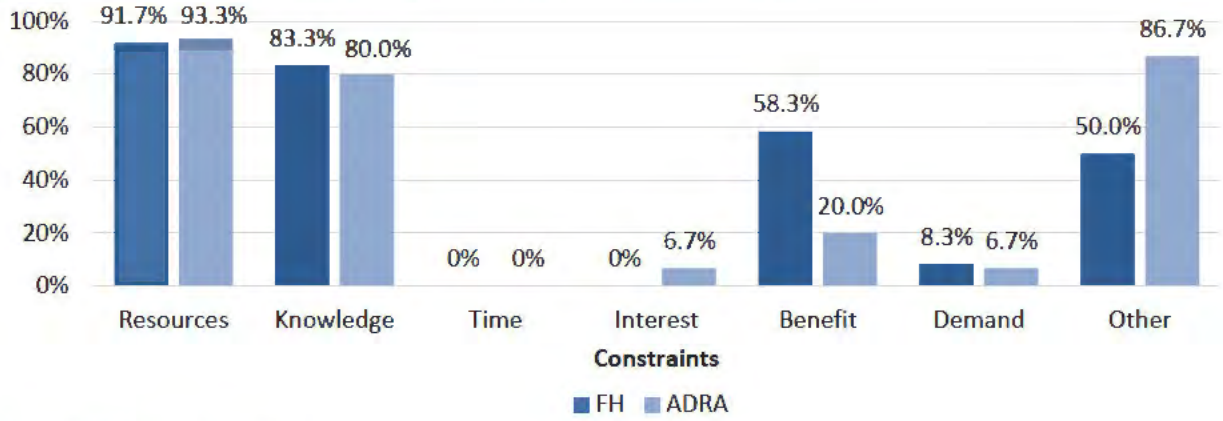
However, other results related to resource sufficiency suggest that resource constraints remained a concern. **Figure 8.5** shows that 93.3 percent of ADRA paravets interviewed cited "insufficient resources" as a challenge for continuing their service delivery. FGDs highlighted the lack of several types of resources as restricting further business expansion. For example, paravets in Kwa Vonza said that they lacked a reliable mode of transportation. They had limited access to bicycles, but believed mopeds would allow them to visit more clients. When asked about challenges in the 2011 follow-up survey, 20.0 percent of all ADRA paravets specified transportation as a challenge (captured in the "other" category in Figure 8.5). Every paravet FGD mentioned the need for a castrating tool (*badiso*) for bulls to expand their menu of services. The tool is expensive to purchase, though paravets could sometimes borrow one from government veterinary officers. A group of paravets in Konyongonyo noted in a FGD that they planned to purchase the tool together and share it.

Similarly, 91.7 percent of FH paravets reported that "insufficient resources" was a constraint to continuing their activities post-project. Paravets in the FH area faced even more transportation resource constraints than ADRA paravets. FH paravets needed to follow the herds into the pasturelands during seasonal migration. Traveling long distances and staying away from their families was costly and stressful. Some paravets reported in FGDs that they obtained loans to purchase bicycles but that, for the most part, the money earned from their work could not overcome systemic resource constraints.

The qualitative data also reflected a slight decrease in the paravets' ability to obtain the resources they needed to continue their activities, specifically during the third round of data collection that coincided with the drought emergency. Whereas the first two rounds of qualitative research found that the paravets could replenish their kits with fees charged, by the third round the full effect of the drought was felt and many livestock owners had lost their entire herds. The paravets reported that livestock owners often defaulted on payment during the emergency. Paravets did not refuse to treat animals if they could, as they felt that it was their duty. As pastoralists themselves, they knew that livestock was the only means of

survival in the region. The paravets explained that drought was cyclical and that, once the community and the environment had recovered, fee compliance would no longer be an issue.

Figure 8.5. Constraints to Continuing Paravet Services Post-Project



Source: 2011 Paravet Surveys.

8.2.2 Capacity

Even without continued formal training, ADRA's paravets were one of the few groups who reported a sustained high level of capacity and preparedness to do their job. They attributed this, through FGDs, to the fact that they had steadily accumulated practical experience on the job since the project ended, and therefore did not suffer a drop in capacity after awardee exit. Their services were in such high demand that they had built up their clientele and become more confident and experienced in their work. At the time of the follow-up survey, ADRA paravets rated the likelihood that they would continue in their roles at 2.9 (on a scale of 1 to 3, 1=poor, 3=excellent), reflecting commitment and confidence in their abilities.

> "We are confident now. We have had real applications and experience with the issues now. We have gained so much exposure to the techniques now, real field experience. We also have experience in dealing with different challenges and have developed ways to deal with them. The GOK/DVO really sells us to the community, so we are doing a lot of business. We also have good networking among our members. The community recognizes us now."
> – Paravet, Yatta District

In contrast to the ADRA paravets' experience, the FH paravets reported a decline in their perceived capacity in the quantitative follow-up survey (Figure 8.2). Nonetheless, qualitative data showed a slightly different story. In participatory rating exercises held in the FH project lowland areas, many focus groups of paravets rated their "current feeling of preparedness" to have increased over time, despite the lack of routine refresher training. They felt that they had improved their clinical and business skills from ongoing practice with clients. Though refresher training was not routinely available, some paravets reported receiving training from the DVO on vaccine or disease campaign days, when local paravets were used by the DVO to vaccinate livestock or educate owners about the prevention of a disease outbreak.

8.2.3 Motivation

Motivation levels among both groups of paravets remained high in the post-project period. The mean rating of their "motivation to continue serving as a paravet" among ADRA paravets in the follow-up survey was a 3 out of a possible 3, both during and after the project period (Figure 8.1). ADRA paravets

reported in focus groups that they were motivated by the income they received, as well as by community appreciation and a sense of duty to serve after being selected by their communities for training.

> "Someone donated me [chose me from the community] to learn, to gain knowledge for my community. It is my duty to serve others now."
> – Paravet, Yatta District

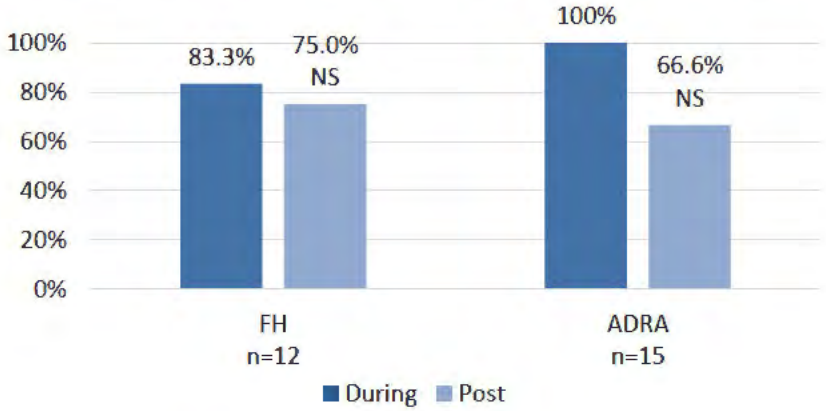
> "We work hard because we must meet our daily needs, we have children in schools. Moreover, the community chose us so we feel we must serve them. The community knows that ADRA trained us to help them, so we can't let them down. We are happy when we see their animals no longer die. The community's trust and confidence in us is quite a boost to our morale. Their comments like 'When I see so and so, I know my animal will live' make us proud."
> – Paravet, Kitui District

In qualitative discussions, FH paravets also reported being motivated by the income earned for their services and the desire to serve their community. Therefore, it was surprising that the quantitative survey found a decrease in the "level of motivation to serve as a paravet" (Figure 8.2). The mean rating decreased from 2.3 out of 3.0 for the project period to 1.6 post-project ($p<0.05$). Some of these decreases may have been due to the pressures and challenges of the drought that coincided with the survey.

8.2.4 Linkages

Whereas linkages to the GOK after project exit were weak in most of the sectors studied, linkages between the DVOs and paravets did not decline significantly post-project. The follow-up survey found that 75.0 percent of FH paravets and 66.6 percent of ADRA paravets had maintained linkages with the DVO since the end of the project (**Figure 8.6**).

Figure 8.6. Percentage of Linkages between Paravets and DVOs Maintained, During and Post-Project



Source: 2011 Paravet Surveys.
Note: Changes not significant based on McNemar's test.

This symbiotic relationship was mutually beneficial; DVOs were resource strapped and could not provide adequate extension services themselves, while the paravets benefited from continued access to DVO technical expertise and equipment. Unlike in other sectors, where linkages were not well formed or institutionalized before exit, many of the linkages in the livestock sector were established early on in the project cycle. During joint training sessions, the Department of Veterinary Services was connected to the paravets to assist in building their capacity. The qualitative survey results suggested that, in the post-project period, DVOs often reached out to the paravets to enlist their help with vaccine campaigns and

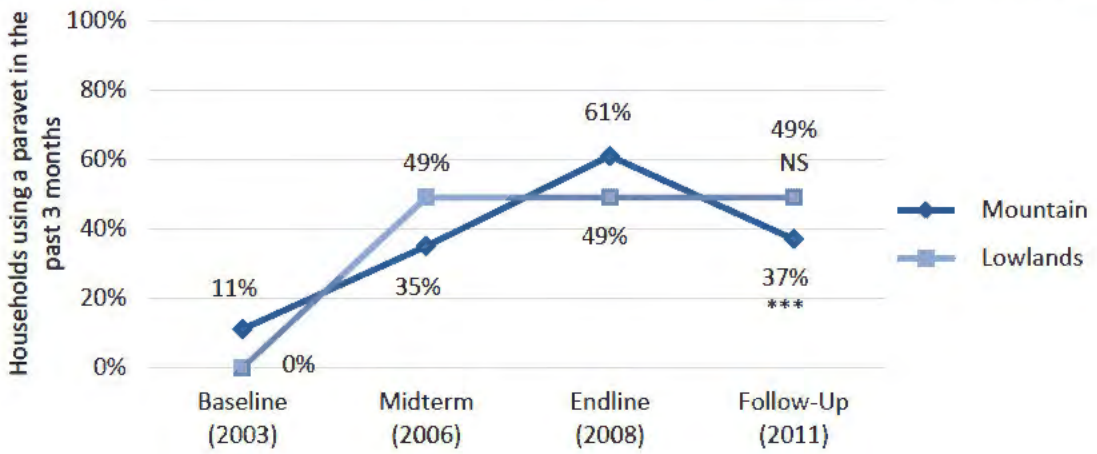
disease outbreaks and even referred cases to them. As time went on, the paravets worked more independently as they increased their client base and developed their respective service catchment areas.

Despite the overall maintenance of linkages, some paravets explained in FGDs that they were no longer able to visit the DVOs as easily or as often after the awardees exited because of transportation constraints. They found it challenging to link with paravets in neighboring communities for the same reasons. As a result, many spent most of their time working independently in their own communities, which became increasingly feasible for them as their capacity was solidified.

8.3 Sustainability of Paravet Service Use

In both the FH and ADRA project areas, use of paravet livestock services by community members was largely sustained post-project. As **Figure 8.7** illustrates, paravet use increased dramatically during the FH project cycle in both the mountain and lowlands areas, though mountain households then reported a drop in utilization of services from 61 percent at endline to 37 percent at follow-up ($p<0.001$). Lowland households' utilization remained at 49 percent from midterm to follow-up. This variation is not surprising because the lowlands are composed primarily of pastoralists and the mountain region beneficiaries mostly practice sedentary agriculture.

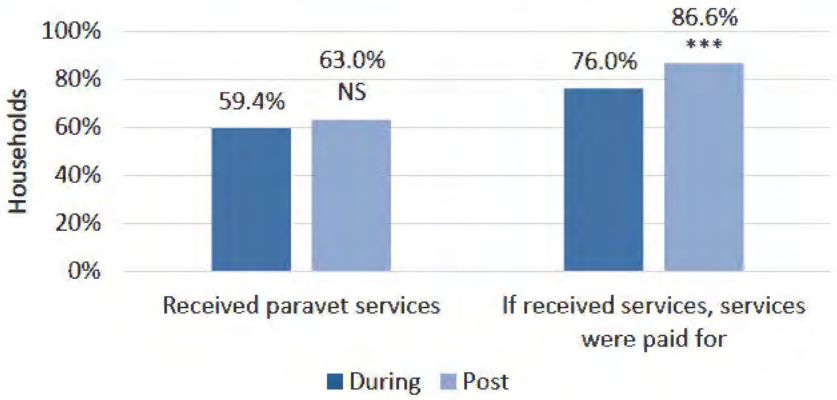
Figure 8.7. Use of Paravet Services among Livestock Owners (FH), from Baseline to Follow-Up



Sources: 2008 FH/USAID Final Evaluation Report (baseline and midterm); 2008 FH Endline Survey; 2011 FH Follow-Up Household Survey.
Notes: Of households reporting a trained paravet in the area. At baseline, FH had already implemented a previous FFP development project in the mountain region, explaining the presence of paravets at the time of the 2003 baseline. Significance from endline to follow-up based on Pearson's chi-square test (using Rao-Scott correction); NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
Sample sizes: Baseline and midterm unavailable, endline (n= 605), follow-up (n=702).

There was no significant change in the percentage of households receiving paravet services during and post-project in the ADRA areas, according to the retrospective survey administered in 2011 (**Figure 8.8**). About 60 percent of households reported receiving services in both periods. Moreover, 86.6 percent of those households reported *paying* for the services received post-project, 10.6 percentage points *more* than the percentage that reported paying during the project ($p<0.001$). In FGDs, ADRA beneficiaries said that they tended to seek out the paravets rather than the GOK veterinary officers because they were available and closer to the community.

Figure 8.8. Sustainability of Paravet Service Use (ADRA), During and Post-Project



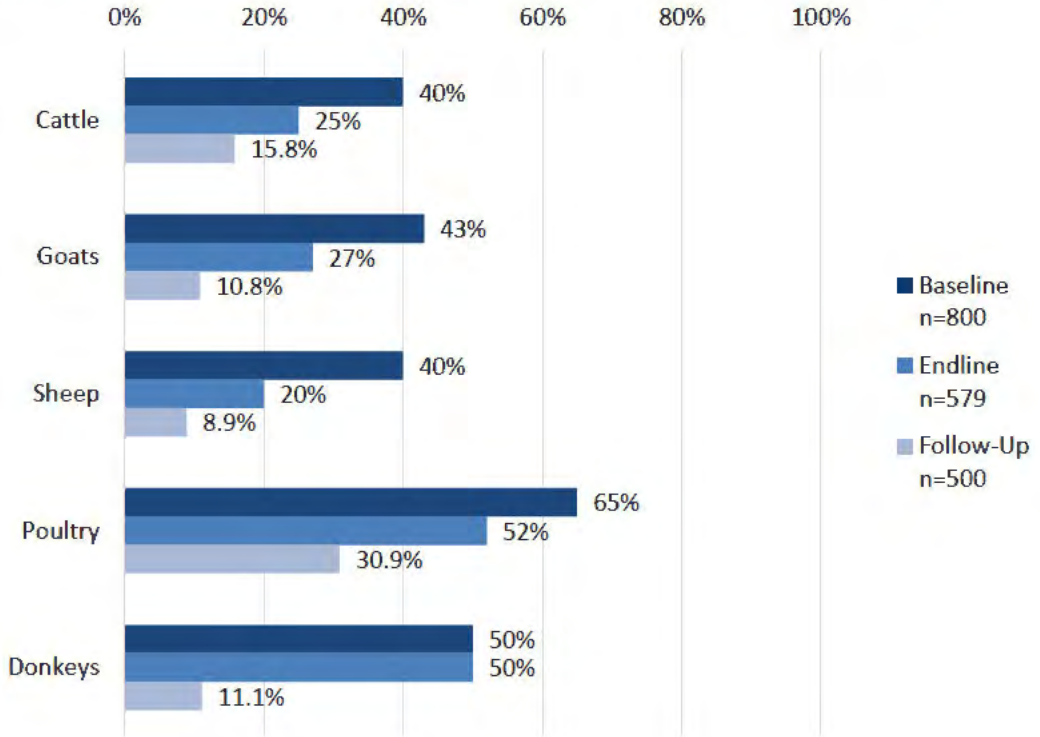
Source: 2011 ADRA Follow-Up Household Survey, Participation Module, n=500
Note: Significance based on McNemar's test: NS=not significant, *p<0.05, **p<0.01, ***p<0.001.

8.4 Sustainability of Livestock Health Impacts

Both FH's and ADRA's livestock programming were designed to help reduce the number of livestock deaths from disease by making veterinarian services more accessible through the paravets.

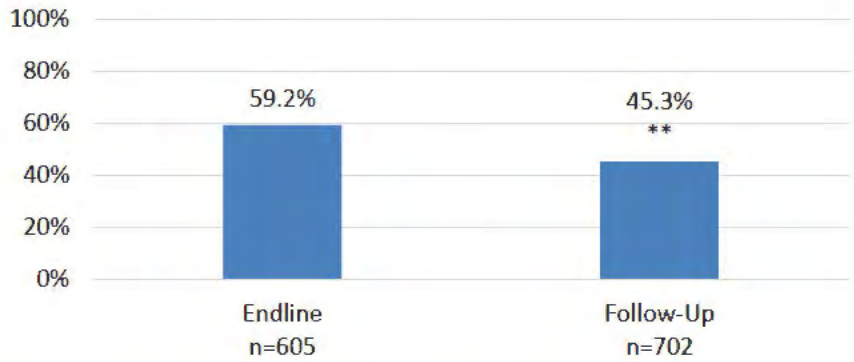
Figure 8.9 and **Figure 8.10** show that livestock deaths from disease fell among ADRA and FH households between the endline and follow-up surveys. Among FH beneficiaries, the percentage of livestock owners who lost an animal to disease in the previous December to May season dropped from 59.2 percent at endline to 45.3 percent at follow-up ($p<0.01$). However, the survey question asked specifically about "death due to disease" and did not capture the full range of livestock mortality from starvation or thirst occurring at the time of the drought in these areas. Pastoralists were forced to herd livestock farther away in search of scarce water and pasture, weakening the animals and leading to high mortality from malnutrition rather than disease. Thus, the comparison in livestock mortality from disease over time likely overstates the sustainability of improvements in livestock survival at the time of the follow-up survey.

Figure 8.9. Mean Percentage of Livestock Lost to Disease in the Past Year (ADRA)



Sources: 2008 ADRA Final Evaluation Report; 2011 ADRA Follow-Up Household Survey.
Note: Percent lost calculated by dividing mean dead over mean owned, as was done in the baseline and endline. Significance tests not possible because baseline and endline datasets were unavailable.

Figure 8.10. Percentage of Households Reporting Loss of any Livestock to Disease in the Previous Season (FH)



Sources: 2008 FH Endline Survey; 2011 FH Follow-Up Household Survey.
Note: Significance based on Pearson's chi-square test (using Rao-Scott correction); *p<0.05, **p<0.01, ***p<0.001.

8.5 Livestock Sector Sustainability: Lessons Learned about the Paravet Sustainability Strategy

Box 8.2 summarizes key findings of the assessment of exit strategies and sustainability within the livestock sector. The deployment of paravets was one of the most sustainable components of the FH and ADRA livestock sector interventions and the FFP development food assistance projects in Kenya in

general. Following the projects' closure, these trained personnel continued to play a critical and highly valued role in the pastoral communities in which the awardees had worked. Having been equipped with the necessary knowledge and supportive connections with the DVO, the paravets had the capacity and linkages needed to carry out the technical aspects of their job. Furthermore, the fee-for-service model that was established from the beginning of their operations provided income that motivated them to continue providing services and enabled them to replenish supplies. On the beneficiary side, use of these services was generally sustained or increased because they were so highly valued by the community and were relatively accessible and affordable. Both project areas saw improvements in livestock mortality from disease post-project, possibly because of the activities of these animal health workers.

Overall, given the harsh circumstances facing livestock producers in the years after the FH and ADRA projects were completed, many components of the projects' sustainability strategies proved successful in maintaining outcomes 3 years after the end of the projects. Managerial and technical training, implementation of the fee-for-service paravet model, and the forging of mutually beneficial linkages were key to achieving sustainability of livestock sector impacts. Transportation constraints remained an issue that should be addressed in future projects. The fact that FH was still operating livestock activities, along with multiple other external organizations that had entered the area to assist in the drought relief effort that began post-project, makes the determination of "pure" sustainability (i.e., continuing to operate without external funding) a challenge in that region. However, success achieved in the ADRA project area can be tied more strongly to the organization's sustainability strategy, as no other organizations entered the area after ADRA's exit.

Box 8.2. Livestock Sector Sustainability (Paravet Component): Key Findings

WHAT WORKED

- The fee-for-service model was largely successful, as paravets offered a valuable service that was in high demand because of a lack of GOK coverage.
- Livestock mortality due to disease declined post-project, a visible benefit to beneficiaries that likely reinforced continued demand.
- Fees charged provided needed resources for replenishing kits and motivating continued service delivery beyond project exit.
- Paravets felt that their capacity improved over time with practice.
- Linkages with the Department of Veterinary Services were mutually beneficial and thus largely sustained.

WHAT DID NOT WORK

- Drought adversely affected demand for paravet services and paravet revenue, suggesting that the model, though relatively successful, was vulnerable to setbacks from common, recurrent drought in the targeted regions.

9. Results: Microfinance Sector

This section first summarizes the elements of the projects' COSAMO sector intervention that were intended to lead to sustained or expanded benefits. The subsequent four subsections present results related to the implementation of these sustainability components and the de facto exit processes, in association with the documented sustainability of: 1) service delivery (organized by factors related to resources, capacity, motivation, and linkages), 2) service use, 3) uptake and continuation of recommended practices, and 4) impacts. The final subsection summarizes key COSAMO sustainability findings and lessons learned.

9.1 Microfinance Sector Sustainability and Exit Strategies

Of the three projects, one included a microfinance aspect. CARE operated a COSAMO activity to give community members access to loans and secure savings and enable them to develop a base of savings that they could invest in productive activities. CARE worked with existing CBOs that had expressed interest in being trained in the COSAMO activity. Training covered all aspects of running a community savings group, including negotiation and conflict resolution related to financial transactions and investments. CBOs were to register with the government and identify a community-based trainer (CBT), to be trained by CARE, to provide technical support to the savings groups. CBTs worked in exchange for a fee, paid by the savings groups and calculated as a share of the money they saved.

Savings groups were to be started without any external capital; money for loans would come from the required regular savings contributions by group members. CARE felt that this model offered several advantages for sustaining access to credit after CARE's withdrawal. The model was based on the following principles.

- No external investment was required—members were to create their own capital, potentially giving them a stronger stake in the success of their group. CARE's involvement was limited to training and technical support.
- Transactions and accounting were to be done transparently, during public meetings, where every member of the group could observe the process and guarantee the correctness of the accounts.
- The model was designed to establish early and gradual independent operation. After the initial mobilization and training, groups were to operate without assistance from a CARE agent or other external support.
- COSAMO groups paid fees to CBTs to facilitate the continuation of the CBTs' work once the group graduated to operate independently of CARE.
- The model emphasized self-regulation. The savings groups were encouraged to set their own rules. Each group could decide the amount of the weekly contribution, the interest rate of loans, and the objectives. As in other microfinance models, social pressure was meant to ensure that the members repaid their loans on time.
- The assumption was that members should feel a strong sense of obligation and responsibility to pay back their loans, because any member taking a loan has invested personal savings in the association.

This model was intended to empower and capacitate new groups and take them to the point of independent functioning within a relatively short time period, enabling CARE to phase out its presence in the area entirely. **Box 9.1** summarizes CARE's microfinance sustainability strategy and assumptions.

Box 9.1. Summary of CARE's Microfinance Sustainability and Exit Strategy and Key Assumptions

SUSTAINABILITY STRATEGIES	KEY ASSUMPTIONS
• Work only with pre-existing CBOs.	• Pre-existing CBOs will have strong institutional capacity.
• Do not provide external investment; generate all seed capital from group members.	• Contributing personal funds will lead to greater participant buy-in.
• Teach savings groups to be self-regulated and self-governed.	• Profits will motivate members to continue participation. • Social pressure will encourage timely loan repayment.
• Train resource people to provide technical assistance for a fee, after CARE's exit.	• Training fees will motivate CBTs to continue providing technical assistance.

9.2 Sustainability of Microfinance Service Delivery

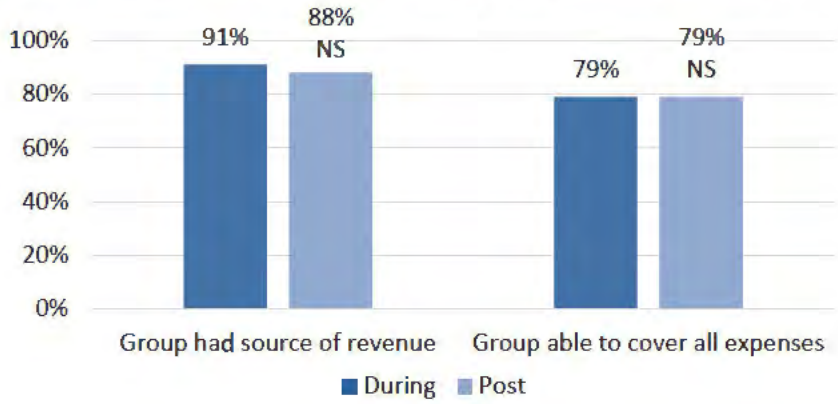
Three rounds of qualitative research, as well as quantitative results from a 2011 questionnaire administered to 42 COSAMO group leaders, revealed that the microfinance services and activities offered through the COSAMO activity continued to thrive after CARE's exit, with groups reporting high levels of sustained resources, capacity, motivation, and linkages.

9.2.1 Resources

The quantitative follow-up survey showed that access to resources for COSAMO groups did not change significantly post-project. Roughly 90 percent of leaders interviewed reported having access to *any* revenue for group expenses both during and post-project, and for both time periods, 79 percent of all leaders reported the revenue was sufficient to cover all expenses (**Figure 9.1**). In general, the lack of dependency on outside resources was identified as a key factor in the sustainability of the COSAMO groups. Strong bylaws prevented default and protected the groups from needing outside inputs. If a member did happen to default on a loan, the bylaws stated that household belongings, such as furniture or livestock, would be taken by the group to be sold to recoup the funds. However, in FGDs, COSAMO beneficiaries said that this liquidation of assets to recoup debts rarely happened, as the groups counseled and supported their members to help them avoid defaulting.

CBTs were able to continue service delivery largely because of the resources made available through the fee-for-service model. CBTs reported that they were paid a set fee of 300 Kenyan shillings (approximately US$4) per day for training new groups. They were also provided transportation money if they had to travel beyond their own communities. CBTs reported in FGDs that they felt that the fee-for-service system worked well.

Figure 9.1. Percentage of COSAMO Groups with Access to Revenue, During and Post-Project



Source: 2011 COSAMO Member Survey (n=42).
Notes: Data are from retrospective 2011 questionnaire. Changes not significant according to McNemar's test.

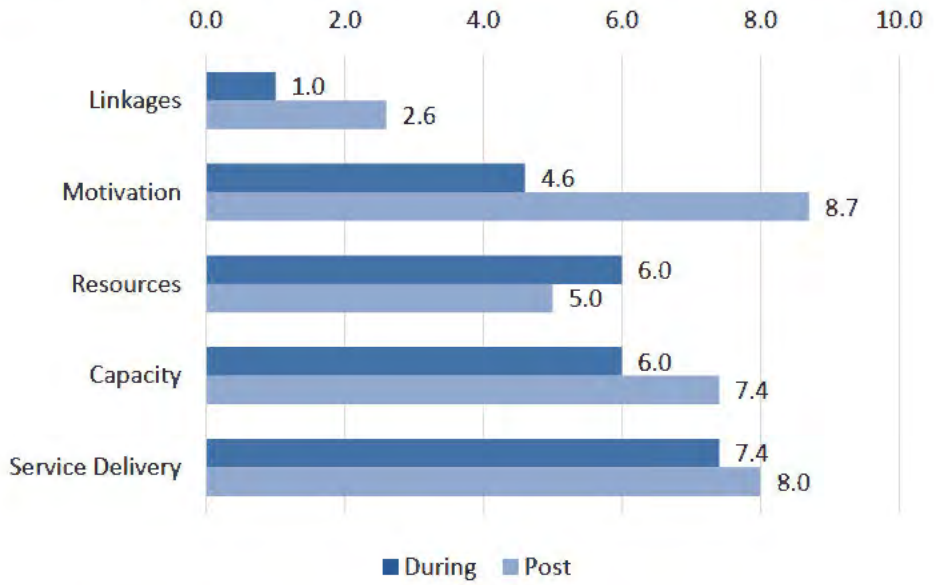
9.2.2 Capacity

CARE implemented an intensive, year-long, graduated training program designed to build the capacity of the COSAMO groups and develop strong constitutions and bylaws. Because CARE did not provide any seed money, the initial training phase was rigorous. This strategy proved effective, as beneficiaries rated their groups' capacity to manage operations highly in each round of data collection. Beneficiaries could not believe at first that they would be able to save enough money to lend out to the groups.

> "When the CARE teacher told us she was going to help us develop our own bank, we thought she had lofty dreams, but we have seen it happen."
> – COSAMO member, Suba District

The results of a participatory rating exercise conducted in 2011 during FGDs with COSAMO beneficiaries showed that the process of graduated independent operation appeared to be successful (**Figure 9.2**). COSAMO beneficiaries were asked to rate their service delivery, resources, capacity, motivation, and linkages during and after the project on a scale of 1 to 10, with 10 representing the highest achievable level. On average, FGD participants rated their capacity after the project at higher levels than they recalled during the project. Respondents explained how over time they were able to refine their group management skills. Quantitative data from the 2011 retrospective questionnaire showed that there was no significant change in the organizational capacity of these groups, as 100 percent of COSAMO leaders reported that their group had constitutions both during and post-project, as well as a provision for regular rotation of group leadership. While the percentage of group leaders receiving training or support decreased slightly (as expected) from 88.1 percent during the project to 73.8 percent post-project ($p<0.05$), the percentage reporting providing training or support to *other* COSAMO groups increased from 88.1 percent to 90.5 percent.

Figure 9.2. Participatory Ratings of Change in COSAMO Service Delivery and Related Factors



Source: 2011 COSAMO Participatory Rating Exercise.
Note: Average results from 2011 participatory rating exercises conducted in nine FGDs of individuals who were members of COSAMO during the CARE project. Ratings followed a Likert scale from 1 to 10, with 10 representing the highest amount or level of the factor being rated.

According to qualitative interviews, the role of the CBT in the community was a key factor in the sustainability of the COSAMO groups. In FGDs, COSAMO members described a paradigm shift in groups when they realized that they did not have to depend on CARE agency staff.

> "Though the CARE staff only visited us occasionally, we still looked up to them and had less confidence in our CBT. We would sit on our problems until the special appearance of CARE. With CARE's exit, we realized our own CBT was just as competent in clarification and is available every time we meet. Every meeting has therefore become a learning experience."
> – COSAMO member, Rachuonyo District

9.2.3 Motivation

Motivation to participate in COSAMO not only was sustained but increased in the period after CARE's exit. FGD participants described how, over time, with each financial cycle of the COSAMO group, the benefits of participation steadily increased. In a participatory rating exercise done with COSAMO members during the follow-up survey, the groups reported that their motivation dramatically increased, from a mean of 4.6 out of 10.0 during the project to 8.7 out of 10.0 post-project (Figure 9.2). Beneficiaries also reported that they became more experienced and astute in their individual businesses, which motivated them to continue in COSAMO groups. As the pool of funds available for loans increased, they were able to access more credit for expanding their businesses; members with strong business plans and a proven history of repayment were then able to take increasingly larger loans.

Qualitative research found that the main motivators were the visible benefits to the participants' lives. COSAMO participants reported that they were able to replace their thatched roofs with metal roofs; pay for their children's school fees, uniforms, and books; and purchase water tanks, livestock, farm tools, and furniture as a result of their participation in COSAMO groups. Moreover, parents stated that they were able to afford a balanced diet and that their children were better fed and were not ill as often as before.

These benefits were life-changing for participants and consequently acted as strong motivators to sustain involvement in the COSAMO groups.

9.2.4 Linkages

Horizontal linkages among COSAMO groups were well sustained after CARE's exit. Of the COSAMO leaders surveyed at follow-up, 95.2 percent reported being linked to other COSAMO groups both during and after the project. Many of the group members belonged to an original CARE-trained COSAMO group and then joined a second-generation group formed by community members who had seen the successes of the original group. Often, members participated in two or even three different COSAMO groups, which reportedly increased their access to loans. However, the main benefit of multiple memberships seemed to be assisting other community members in sharing the COSAMO success, as veteran participants were able to share their experience with the new groups. This shared membership helped maintain linkages between groups. Although vertical linkages with government officials were not part of the COSAMO design, as they were not necessary for the groups' success, *horizontal* linkages among groups proved beneficial for capacity building and expansion of the COSAMO model to new beneficiaries.

9.3 Sustainability of Microfinance Service Use

The vast majority of original COSAMO activity participants sustained their participation in group savings and loan activities post-project. Results of the 2011 follow-up survey are shown in **Table 9.1**. The questionnaire asked respondents to rate their participation in various COSAMO activities during the time of the CARE project and in the period between the end of the project and the follow-up survey of 2011. About 96 percent of original COSAMO members reported continuing to attend group meetings and depositing savings with the COSAMO groups. The rate of loan-taking actually increased from 86.5 percent during the project to 90.1 percent post-project ($p<0.001$). Additionally, the percentage of original COSAMO beneficiaries depositing savings and taking loans from non-COSAMO microfinance institutions significantly increased. The percentage saving with another microfinance institution increased from 18.5 percent during the project to 27.1 percent post-project, while the percentage taking loans from other microfinance institutions increased from 10.6 percent to 15.3 percent (both significant at $p<0.001$). The only element of the COSAMO activity that declined was financial training, from 98.3 percent during the project to 88.2 percent post-project ($p<0.001$). These trainings were largely provided by other COSAMO members or the CBTs. Overall, participation in COSAMO and other group savings and loan activities remained strong 3 years after CARE's exit.

Table 9.1. Utilization of Financial Services by COSAMO Beneficiaries (CARE), During and Post-Project

Service/activity element n=585	Participated during[a]	Participated post-project	Sustained participation[b]	Sig.[c]
Attended a meeting as a member of a COSAMO group	99.2%	95.9%	96.0%	***
Received any financial training	98.3%	88.2%	88.5%	***
Deposited savings with a COSAMO group	96.9%	96.7%	97.7%	NS
Took loans from a COSAMO group	86.5%	90.1%	97.6%	**
Deposited savings with another microfinance institution	18.5%	27.1%	87.0%	***
Took loans from another microfinance institution	10.6%	15.3%	77.4%	***

Source: 2011 CARE Follow-Up Household Survey, Participation Module.

[a] "Participation" refers to respondent or anyone in the respondent's household.

[b] The percent of households participating during the project that reported also participating post-project.

[c] Significance based on McNemar's test, testing if there was a significant change in within-subject responses for the during vs. post-project period; NS=not significant, *$p<0.05$, **$p<0.01$, ***$p<0.001$.

9.4 Sustainability of Microfinance Practices and Impacts

COSAMO members' continued use of the group savings and loan services allowed them to make investments that substantially improved their lives. At both endline and follow-up, 98 percent of COSAMO beneficiaries reported engaging in at least one income-generating activity. To fund these activities, beneficiaries used the start-up capital sources shown in **Table 9.2**. A comparison of endline and follow-up survey data showed that COSAMO beneficiaries *increased* utilization of loans from the COSAMO groups to fund their income-generating activities from 2008 to 2011. The percentage that reported loans as their main source of start-up capital increased by 22 percentage points to 42.2 percent post-project ($p<0.001$).[13] The increase in loans as the main source of start-up capital and the significant decrease in drawing from savings and/or family and friends are strong indications that the COSAMO model worked. Beneficiaries realized that they could reduce their livelihood risks by taking loans from collective savings instead of depending on others or drawing down individual savings and assets to mitigate unforeseen shocks or make livelihood investments.

Table 9.2. COSAMO Members' Main Source of Start-Up Capital for Income-Generating Activities

Main Source of capital[a]	Endline n=173		Follow-Up n=585		Endline to Follow-Up (ppt Δ[a])
	n	%	n	%	
Loans	35	20.2%	247	42.2%	+22.0 ***
Savings	95	54.9%	198	33.9%	–21.0 ***
Donation from family	21	12.1%	31	5.3%	–6.8 **
Friends	6	3.5%	6	1.0%	–2.5 *
Other	17	9.8%	75	12.8%	+3.0 NS

Sources: 2008 CARE Endline Survey; 2011 CARE Follow-Up Household Survey.
Note: Significant change in participation based on Pearson's chi-square test; NS=not significant, *p<0.05, **p<0.01, ***p<0.001.
[a] ppt Δ=percentage point change.

Qualitative research also highlighted the COSAMO groups' impact in economically empowering women, who made up the majority of COSAMO beneficiaries. The COSAMO activities were implemented in an area of Kenya where the local tribe is polygamous. Many women reported in FGDs that the profits from the COSAMO groups enabled them to send their children to school, gave them some financial independence, and earned them respect from their husbands.

> "Before COSAMO, we women used to depend solely on our husbands, and when they had no money, domestic wrangles emerged. Now we are able to work at something to be able to repay the loans."
> – COSAMO member, Rachuonyo District

> "Accessing loans has enabled us to build houses; educate our children; and not borrow food, clothing, or money from neighbors or make up long tales when borrowing money. Indeed, we now have money and food so we no longer have domestic squabbles, because as spouses we cost share bills."
> – COSAMO member, Rusinga Island

[13] For the endline survey, the recall period for the start-up capital question was "during the 2004–2008 project"; for the follow-up survey, the recall period was "since the project ended."

Many women also expressed the value of group cohesiveness as a benefit of COSAMO participation. They reported that before COSAMO there was little sense of community among the neighbors. At the point of Round 3 qualitative data collection, they reported that they had grown to love and support one another. They had developed into each other's safety nets, supporting each other during difficult times.

9.5 Microfinance Sector Sustainability: Lessons Learned

The COSAMO groups were another of the most sustainable initiatives examined in this study. As **Box 9.2** summarizes, many of CARE's key assumptions proved true, making the sustainability strategy extremely successful. The COSAMO model contained all of the elements hypothesized to contribute to sustained service delivery and beneficiary utilization. CARE exemplified a commitment to exit and dedication to sustainability from the outset. It chose to work with existing self-help groups or CBOs that came with the motivation and commitment to participate. Through this approach, CARE selected community partners with high initial capacity and motivation, increasing the likelihood of longer-term sustainability.

Box 9.2. Microfinance Sector Sustainability: Key Findings

WHAT WORKED

- Intensive modular training built solid technical and managerial capacity.
- Graduated independent operation allowed COSAMO groups to build and sustain capacity.
- Not providing external seed money led to greater buy-in from COSAMO group participants.
- Trained resource persons continued providing valuable services to new groups and were successfully motivated by charging fees.
- Linkages between COSAMO groups strengthened as groups multiplied and shared knowledge.
- Strong constitutions and social pressure enforced loan repayment.
- Beneficiaries continued depositing savings and taking loans from COSAMO groups as profits increased financial security.
- Women were empowered by financial independence and developed strong communal bonds with other COSAMO group members.

WHAT DID NOT WORK

- *All microfinance sector sustainability strategies examined in this study were successful.*

Individual savings and loan groups were trained intensively in self-management, with written bylaws that were strictly enforced even after CARE exited. This incremental, yet systematic approach to building capacity, coupled with the expectation that groups would operate with only minor backstopping from CARE after achieving key milestones, was critical to the sustainability of the activity. CARE deliberately withdrew gradually, serving as a technical resource after the first savings cycle before leaving the fully capacitated groups to operate on their own. This phased approach enabled COSAMO participants to take ownership of running their groups while allowing needed technical assistance to work through constraints and obstacles during the early stages of operation. Additionally, the division of large groups into smaller groups and formation of new groups strengthened horizontal linkages that allowed groups to transfer knowledge, build capacity, and share benefits.

The model also succeeded because it required no outside capital from the outset. Thus, there was no need to find an alternative source of resources after the end of the CARE project. Furthermore, participants had greater buy-in and more stake in the COSAMO groups because all of the funds came exclusively from members. Finally, using a fee-for-service model for the CBTs incentivized them and allowed them to continue providing training and therefore to strengthen the capacity of existing and newly formed COSAMO groups.

Accessing credit for the first time had a huge, visible impact on the lives of participants, including creating a sense of empowerment. The benefits were, in participants' words, truly life-changing. Participants were highly motivated by the financial gain from income-generating activities, which allowed them to pay school fees, improve their homesteads, and grow their businesses. The visible impacts caused demand for COSAMO services to spread beyond the original beneficiary groups, allowing the project to achieve not only sustainable results for those directly involved in this aspect of CARE's FFP development project, but also for new beneficiaries.

10. Overall Findings

The following are key findings on the sustainability and exit strategies used in Kenya that cut across sectors and individual FFP development projects.

Evidence of impact at the end of the FFP development food assistance projects in Kenya did not consistently predict sustained benefit 3 years later.

All three of the FFP development projects studied in Kenya demonstrated notable improvements in key impact indicators during their project cycles. Study data showed that certain improvements were maintained and even significantly improved 3 years post-exit, but many of the achievements across the five sectors covered by these projects deteriorated between the withdrawal of external support and the follow-up research. Many of the declines were apparent not long after exit, at the time of the first round of qualitative data collection. These declines could be traced to a combination of inadequate design and implementation of sustainability strategies and exit processes and, to a lesser but not insignificant extent, external factors, such as drought. This study identified several factors and processes that are likely to lead to more sustained benefits, summarized below.

Sustaining service delivery requires ensuring sustained resources, capacity, motivation, and often linkages.

This study identified four key factors that must be considered to achieve sustainable service delivery, demand, utilization, and practices that appeared critical to maintaining benefits over the longer term in the Kenya development projects. These factors are interrelated and synergistic. Three of these factors were necessary to ensure sustainable results, and a fourth was frequently required. The three necessary factors were:

- A sustained source of **resources** for each input previously provided by a project or alternative inputs required once a project withdraws. Resources may come from activities that are run profitably using a business model, funds secured through government operating budgets, contributions by community members in cash or in kind, or other types of innovative finance. Required resources may also include a continued source of technical support and training to ensure that capacity is maintained. Resources in the form of profits or income appear to encourage more sustained service delivery.
- High-quality technical and managerial **capacity** throughout the service delivery chain, as well as mechanisms to maintain that capacity.
- A continued source of **motivation** for service providers. Financial incentives and in-kind benefits were found to be the most successful motivators in this study. Personal commitment, community service, and prestige were also important, but were frequently insufficient to sustain active service delivery.
- **Effective linkages** were frequently required throughout the delivery chain—to government, input suppliers, and other service providers—to allow continued actualization of resources, capacity, and motivation. While some linkages in the Kenya projects were not critical (e.g., COSAMO, W&S committees), weak or poorly consolidated linkages were often bottlenecks to sustainability at the community level, especially for services that were not offered on a fee-for-service basis. The potential viability of linkages must be assessed realistically early in the project cycle, as linking community-based service providers to entities that cannot provide reliable ongoing resources, capacity building, or motivation will likely be ineffective. Developing linkages requires

relationship building from the outset of a project, as well as the development of operating norms, communication channels, and clearly delineated responsibilities.

A prime example of the need for these vital factors and the breakdown that occurred when they were not available was shown in the sustainability findings in the MCHN sector for all three of the Kenya projects studied. The projects planned to transfer supervisory responsibility for volunteer CHWs to the government, but CHW service delivery began to decline soon after the projects ended. By the time of the follow-up surveys, CHWs were active in name only. Though they were motivated to retain their title by the possibility of future opportunity, they dramatically reduced the time spent in professional contact with people in their communities. The MCHN sector exit strategies assumed that CHWs would be linked to the government for continued supervision, but this approach was unsuccessful because the GOK at that point was not sufficiently decentralized and did not have adequate resources at the community level to support the CHWs. None of the three awardees that operated through CHWs devoted enough time to fostering linkages with government entities, aside from joint training sessions or occasional ceremonial activities. The result of this unconsolidated linkage was that CHWs had no way to acquire new knowledge and skills, which they considered their main value to the community, and beneficiaries were not interested in hearing the same messages over and over. This unfulfilled linkage also meant that CHWs did not have a way to obtain other needed resources for service delivery, such as weight scales and growth charts. The maxim "Know thy linkage" applies here. It became clear that the potential success of linking vertically must be assessed realistically at project outset, and a strategy must be developed to bolster weak links before exit. It is possible that earlier and more-concerted efforts to build government interest and capacity to assume CHW supervision upon exit would have yielded more successful sustainable results for the Kenya projects.

In contrast to the CHW model, the CARE project's COSAMO microfinance model combined all of the factors identified above as contributing to sustainability. COSAMO participants were trained in self-management through an intensive, year-long, graduated program. Groups were operating independently in a year, well before CARE's exit. CARE's deliberate strategy of graduated, independent operation meant that it withdrew progressively, serving as a technical resource after the first saving cycle and then leaving the fully capacitated groups to operate entirely on their own. The model required no outside capital from the outset, thus there was no need to find an alternative source of resources after support from CARE ended. No vertical linkages were established, leaving COSAMO groups less vulnerable to weak linkages to the GOK. However, horizontal linkages among different COSAMO groups were maintained, with members of the early COSAMO groups transferring knowledge to newly established COSAMO group members.

Sustaining beneficiary utilization of services and practices required sustained demand as well as supply.

All three of the Kenya projects emphasized building the capacity of key resource persons, infrastructure, and institutions to assume responsibility for service delivery once the projects ended. However, the projects did not appear to pay similar attention to ensuring that conditions were right for continued beneficiary demand for, access to, and utilization of the services provided. There were examples of this across several of the targeted sectors in the Kenya projects. For instance, demand for CHWs and EFs declined, as did participation in growth monitoring and PAs. From this, it seems it is critical in designing sustainability plans to give equal consideration to both sides of the sustainability equation (supply and demand). That is, for project activities, outcomes, and impacts to continue, the study found that there must be sustained beneficiary demand for, access to, and utilization of services, which requires beneficiaries to have the resources, capacity, and motivation to take advantage of the services offered. In

addition, to sustain demand, the findings of this study suggest that beneficiaries must perceive that the provided services meet a felt need and lead to notable improvements in their well-being both during the project and post-project.

Practices that required external resources were less likely to be sustained.

For beneficiaries to maintain "improved" behaviors promoted during a project or to continue using project-initiated services, the Kenya study's findings suggest that the perceived benefits of these behaviors must outweigh the perceived costs. In the Kenya study, practices that offered a visible benefit were not incentivized through outside injections of funds, and those that did not require continued external resources were more likely to be sustained than those that did. For instance, practices like use of dish racks, keeping courtyards clean, keeping animals away from food, handwashing (in some areas), and improving water storage appear to have been sustained because they had a visible impact and could be done with existing resources. Notably, handwashing declined in areas that were hardest hit by drought, as water became more difficult to access.

In addition, the Kenya study findings suggest that beneficiaries' cost-benefit calculus shifts once external support is withdrawn. For example, provision and then withdrawal of food aid can create expectations that undermine sustainability, as was seen in the dramatic decline in participation in growth monitoring sessions once food rations were removed. Mothers no longer saw a visible effect on their children's health or received food their households would otherwise have had to buy. At the same time, the opportunity costs of walking great distances to the growth monitoring sessions remained high. With many of the CHWs inactive, fewer growth monitoring points were accessible. As it was, participation dropped off significantly in the first years after the awardees' exit and resumed when food was once again offered for free in FH and ADRA areas through health centers as part of the 2011 drought relief effort.

Finally, the timing of the introduction and withdrawal of external resources seemed to be almost as important as the fact that whether they were introduced or withdrawn at all. For example, FH and ADRA supported paravets in charging fees for their services from the outset of these projects, so beneficiaries grew accustomed to paying for them. This experience contrasted with the EF system in the ADRA project, in which the awardee asked farmers to begin implementing a fee scale after it exited. It was apparent that people were more willing to continue paying for services than to begin paying for something they had previously received for free. In the example of the drop-off in growth monitoring participation that followed the removal of food rations, it is possible that if the supplementary rations had been phased out earlier and alternative food sources or a different incentive structure had been identified and implemented sooner, this decline might have been averted.

Fee-for-service and profit models were useful but may not always be sufficient for sustainability.

The findings of the Kenya study showed that strategies that relied on creating the capacity of CBOs or individuals to operate in accordance with a self-financing business model to provide continued access to resources seemed to be most promising for achieving sustainability because they did not rely on questionable vertical linkages. Paravets, tree seedling producers, and seed multipliers, among others, were encouraged to charge fees for their services to cover their costs. The fee-for-service approach both incentivized resource persons to continue their work and provided the means for them to do so. In addition, water management committees were almost uniformly structured to charge small fees for water usage. This may have had a positive effect for a slightly different reason. Though committee members were unpaid, the revenue provided committees with the resources needed to cover maintenance and operating costs.

These types of business models may have more potential for sustainability than other strategies under many circumstances. However, new small business enterprises are risky and prone to failure everywhere. Effective demand is critical, and external threats to supply, high prices of inputs, and debt can threaten the viability of a business. The businesses of tree seedling producers, seed multipliers, and paravets all suffered during the drought. W&S committees in some project areas could not enforce user fee collection because demand had dropped with the decline in the reliability and quality of the water supply.

Successful sustainability models were not identified in every sector.

While the factors predicting sustainability may be generalizable, this study found that not all sectors studied had "best practice" models. This was, in part, because of constraints inherent in the structure of some of the sectors. For instance, the agriculture sector interventions allowed for some aspects of sustainable design that were difficult to achieve in the MCHN sector. In the agriculture sector, profit-based models incentivized sustained behavior adoption. Farmers who saw increased profits from commercial engagement were more likely to maintain the improved agricultural practices that they felt led to these increased profits. A virtuous cycle of improved yields and profits from crop sales enabled the purchase and reinjection of needed inputs. By contrast, the sustainability of service delivery in the MCHN sector was more challenging because of certain sector-specific constraints. Though a fee-based model was untested in this context, qualitative discussions suggested that beneficiaries' willingness to pay for primary preventive health services appeared to be low. Also, the profit incentives for sustained behavior adoption that were possible in the agriculture sector did not translate into the MCHN sector, except indirectly in terms of the potential for higher future earnings from improved health and disability averted. Furthermore, without obvious alternatives for ensuring resources, capacity, and motivation, vertical linkages in the MCHN sector were critical for sustainability. However, at least in Kenya, the government was in no position to assume this responsibility at the time of the study.

Clearly, contextual constraints have to be assessed carefully and thoughtful innovation applied to overcome them. It may also be necessary in some circumstances to accept that sustainability is not possible. In such situations, programmatic efforts may be better spent maximizing immediate health and nutrition impacts that can have long-term positive effects for the individual beneficiaries than attempting a sustainability strategy that has no hope of success. It is critical to realistically assess the possibilities and transparently communicate a project's intentions to sustain certain components and not others.

Most sustainability plans did not consider external shocks.

Most FFP development project beneficiary populations are vulnerable to multiple risks, and many shocks, such as drought in the Horn of Africa, are cyclically recurrent. In Kenya, the sustainability of the activities, outcomes, and impacts of FFP development food assistance projects was adversely affected by drought, especially during the severe food emergency in northern Kenya in 2011, but also during other intermittent and less acute episodes in 2008/2009. Sustainability planning should consider contingencies for predictable external events that can erode the progress made during development projects.

Ensuring that project benefits reach new beneficiaries and communities after exit appeared more challenging than ensuring persistence of benefits among project participants.

It is useful to distinguish between two types of sustainability: 1) benefit maintained among individuals who received services during a project and 2) benefit expanded to individuals who were not reached by the project. The study team identified three different manifestations, or *forms*, of sustainability associated with each type.

1. **Original beneficiaries:** Sustainability at the individual beneficiary level was seen in at least three forms in the Kenya projects studied. The first was lasting benefits from project investments, whether or not they resulted in modified behavior after the project ended. The best example of this was investment in preventing malnutrition or treating disease in young children to achieve long-lasting gains in cognitive development, productivity, and health. A second form of sustainability at the individual level was continued practice of improved behaviors learned during projects, such as water purification and use of dish racks. For the third form of individual-level sustainability, individuals drew on resources or knowledge gained through the project to independently innovate and deepen knowledge or capitalize on investments made during the projects. For example, at the Horr Ghuda Spring in North Horr, the community decided to revegetate far beyond the initial spring boundaries created during the project in order to "roll back" the Chalbi Desert. Basmati rice farmers in the former CARE project area tracked down former CARE project officers who were working for a credit union so that they could access new sources of finance. The capacity of paravets to carry out their job grew more sophisticated with time and practice. In these examples of the third form of individual beneficiary sustainability, individuals used the initial project investment to catalyze and multiply their benefits.

2. **New beneficiaries:** Expansion of benefits to individuals not originally reached by the project also took three forms in the Kenya projects examined in this study. First, trained resource persons continued to offer services, reaching individuals who had not participated in these services during the project. Second, new individuals were reached through horizontal, peer-to-peer dissemination of practices. The COSAMO groups continued to subdivide and sprout, often with "old" group members training members in new groups. Third, there was intra-household or intra-generational transfer of practices and knowledge. Women in Marsabit District reported that they were teaching their daughters project-promoted birth-spacing, health, and hygiene practices that they found beneficial.

Focusing only on achieving impact during the project period can compromise expansion sustainability. Ensuring that benefits will continue to reach an ever-expanding number of individuals after a project ends requires putting mechanisms in place for sustained service delivery. This can be more time consuming and less easily quantifiable than directly delivering benefits that yield individual-level, shorter-term outcomes and impacts. Currently, awardees tend to be rewarded for the latter and, often by doing so, the former is implicitly de-emphasized. Project investments that can generate continued expansion of project-related benefits to new individuals are generally preferred, yet the costs and feasibility of such investments must be weighed against the benefits.

Beneficiary reactions to project exit were fluid and evolving.

Three rounds of qualitative data collection in the same communities revealed dynamics that may not have been visible at the time of the quantitative endline or follow-up surveys. For example, the first round of qualitative data, after ADRA's exit, found a general decline in community practice of project-sanctioned methods to improve agricultural yields and profits. One conclusion from that round was that many of these practices had not been sustained. While the prevailing drought had clearly impeded the sustainability of behaviors adopted during the project, it was not apparent until Round 2 that the resolution of the drought had enabled and motivated the community to resume behaviors that they had simply put on hold.

Another example of these dynamics was the attitude in many communities toward the withdrawal of the awardees' presence, particularly in projects that did not have a philosophy of exit early on. In the first round of qualitative work, the study team noted a phase of shock, grief, and resentment soon after projects ended in some areas. Beneficiaries complained in FGDs about feeling abandoned and accused the

awardees of not keeping their promises. FGDs in these areas were often heated and highly emotional. However, by the second round of qualitative data collection, many groups and individuals seemed to have accepted the departure of project staff and resources and were determined to use what they had gained for maximum benefit. Beneficiaries expressed forgiveness and understanding that the projects had ended. From this, it became clear that communities need time to prepare for the withdrawal of an awardee's presence and to configure how they will move forward independently. This can be a dynamic process that takes time.

11. Recommendations

The findings of the Kenya study suggest the following recommendations.

- Sustainability plans and exit strategies must be mainstreamed into programming. To sustain service delivery and/or beneficiary utilization of services and practices, **it is critical to consider at the project design stage how four key factors—resources, technical and management capacity, motivation, and linkages—will be sustained** in order to lead to sustained service delivery (where relevant) and beneficiary demand, access, utilization, and benefit.
- A sustainability plan and an exit strategy should be more than a vague description in the project proposal (e.g., "CHWs will be phased over to government"). **The sustainability plan must be carefully operationalized**, with potential weak links in the sustainability chain identified and managed while the project is ongoing. Ensuring a strong sustainability implementation pathway requires relying heavily on program theory. Awardees should work within a logical framework that extends beyond project impact to include post-project benefits by doing "backward mapping" at the project design stage, starting with the longer-term aims for the post-project period and determining the strategies needed to achieve these aims. This logical framework should be built around the sustainability conceptual framework that emerged from this study and should clearly show how each of the critical components of sustainability (resources, capacity, motivation, and linkages) will be consolidated during the project period in order to achieve continued benefits after exit.
- The aforementioned logical framework should be used as the basis for identifying key monitoring indicators to **track progress toward benchmarks that signal the need to phase out an activity after a period of successful independent operation**. Evaluation must focus on indicators of ensured resources, capacity, motivation, and linkages, as well as conventional measures of project-level impacts. In addition, **evaluation data must be well preserved and utilized** to ensure that learning from project experiences can continue after a project ends.
- **Activities that build toward benchmarks of sustainability must be undertaken throughout the project cycle.** Multisectoral projects may require more than the typical 5-year cycle to achieve these benchmarks; additional cycles should be linked to evidence of progress toward sustainability benchmarks in addition to traditional evidence of shorter-term impact.
- **Project exit should be gradual, and follow a phase of incremental independent operation**. Project-trained service providers need time to "practice" independent operations while the awardee is still present, and beneficiaries need to have the opportunity to gradually identify replacements for the external resources that will be removed when the project exits. For example, the COSAMO groups initiated by CARE were operating independently after 1 year of training. CARE was still in the area during the groups' initial periods of independent operation, but offered only very basic technical support. By the time CARE exited completely, the COSAMO groups had had sufficient time to operate independently and successfully. In the case of user fees for services, these should be introduced at the beginning of the project, as opposed to near or at project exit.
- **Build ownership by key stakeholders and communicate plans for sustainability and exit as early as possible** so that beneficiary expectations can be calibrated accordingly. This recommendation is relevant not only to the plans for withdrawing from an entire project, but also to the process of graduating individuals from specific activities. The transfer of responsibility to the entities charged with sustaining each element should be participatory. One awardee in this study described its approach as "entering each community already exiting." All beneficiaries were aware from the onset of the project that the awardee would leave, and were much more prepared as a

result. This philosophy of exit should be institutionalized not just as part of specific projects, but within implementing organizations and donor agencies alike.

- **Contingencies must be incorporated into sustainability planning.** Development projects must consider the potential for non-programmatic events to derail sustainability plans. Disaster risk reduction and resilience-building strategies are designed to prevent, mitigate, and protect against shocks. Yet almost any broken link in the sustainability implementation pathway will jeopardize sustained benefit. Planning for exit requires ensuring that the sustainability pathway is working at exit and that resources and alternative plans are in place in case it breaks down. Even projects without a "resilience" or "risk reduction" focus should engage in a risk assessment that considers threats to the smooth execution of their sustainability plans and that identifies, tests, and communicates contingency options to all stakeholders.
- The route to achieving maximum short-term impact and the strategy for sustainability can be very different, and are sometimes even at odds with one another. **Donor funding should support and reward projects that strive for sustainability over shorter-term impacts**, and awardees should be incentivized to seek innovative and successful sustainability models for challenging sectors and contexts.
- In line with this important shift in mentality, **dynamic and flexible mechanisms to evaluate projects' activities, outcomes, and impacts must transcend narrow project cycle time horizons** to capitalize on the great potential for continued learning about effective, longer-term development dynamics.
- **Conduct future research to further identify and validate best practices for improved sustainability.** The following are three potential research activities. (1) Conduct sectoral landscape assessments to identify other potentially promising sustainability models for FFP contexts. (2) Compare the relative sustainability of the wide range of social and behavioral change communication strategies used in the health and nutrition sector. An optimal study design would randomly assign households to different social and behavior change communication mechanisms and track them longitudinally. (3) Develop a sustainability index comprised of indicators of motivation, resources, capacity, and linkages that could be used to monitor project progress and assess the likelihood of sustainability at the end of the project. The validity of this index to predict eventual sustainability could be tested through post-project assessments in a variety of FFP contexts.

This study in Kenya has made great strides in identifying a cross-cutting set of factors that are necessary for sustainability and detailing the contextual nuances that can facilitate or threaten the success of sustainable benefits after a project ends. Considering these factors at the stages of planning, implementation, monitoring, and evaluation creates the opportunity to improve the likelihood that the gains from FFP development food assistance projects (and other types of development investments) will be protected, expanded, and continue to yield returns long after projects end.

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