

IMPLEMENTATION FINDING: Repeated droughts may pose a challenge for improving agricultural productivity in the absence of irrigation.

- With depleted soils and increasing frequency of drought, it is a challenge to improve agricultural production. This finding suggests that significant improvements in agricultural production may not be possible without more investment in water retention and management, and irrigation systems.

UNEXPECTED IMPACT: Maintenance and accumulation of productive assets, particularly livestock, is becoming the main strategy for coping with shocks and uncertainties.

- One of the biggest impacts that R4 has had to date is in enabling farmers to increase their asset holdings in good seasons — and to maintain them through drought — by providing alternative ways of managing drought other than asset sales.⁵
- In Tigray, the program enabled maintenance and accumulation of livestock, which is the most important asset among smallholder farmers. The program is supporting a change to more-resilient coping strategies that reduce losses of assets. In one district, participating farmers reduced losses of oxen due to drought by 433 percent among female-headed households relative to control households, and increased accumulation of large animals by two per household. In another district,



Farmers study vegetation maps. Michael Norton/IRI

R4 reduced the losses of large livestock due to the drought by 1.5 animals. Male-headed households have begun to trade livestock as a new strategy to cope with drought in a more positive way.⁶ These households fund initial purchases with saving and credit. We cannot specifically attribute this change to any program activities, however, the qualitative analysis of the evaluation points to the risk reserves and risk-taking components as the most likely to be responsible for most of the changes seen in relation to livestock increases and livestock trading. One of the limitations of the study was the need to reconstruct the counterfactual population. The researchers were successful doing this though and there no major problems for the rest of the study.

// I participated in business management and microgarden production training. I received a credit, rearing sheep in my homestead. Now I have more than 15 sheep and have more than 2,500 saving, and I'm now planning to buy a water pump. My children go to school as well. //

— Hiwot Ekuba, Adiyikoro, Ahferom district

NOTES

1. The food consumption score (FCS) is a proxy indicator of household food security based on the weighted frequency (number of days in a week) of food intake. The FCS measures quantity (frequency of food intake) and quality (food diversity and different food groups) elements of food security.
2. Madajewicz, M. Tsegay, A.H., and Lee, R. (2017). *Helping Smallholder Farmers to Manage Risks: The Impact of R4 on Livelihoods in Tigray, Ethiopia, from 2012–2016*, 26. This is an independent impact evaluation from Columbia University, which was requested and revised by Oxfam America and the World Food Program.
3. RUSACCO stands for Rural Saving and Credit Cooperative.
4. R4 is promoting income generation through raising and fattening livestock, that can then be sold. Livestock acquired for the purpose of selling can be viewed as a form of savings, as these animals can be used to cope with drought without damaging the long-term productive potential of the household. Although some female-headed households practice livestock trading, the great majority of households practicing this coping strategy are male-headed households.
5. The caveat here is that the livestock trading in which households in R4 villages have begun to engage recently does not damage the long-term productivity of households, unlike traditional asset sales.
6. For instance, they are using less negative coping strategies in times of shocks, such as reducing the intake of food, changing their diet to a less nutritious one, migrating, or selling long-term productive assets. Instead, they are resorting to more positive coping strategies, such as using their access to saving and credit to breach income gaps, livestock trading, diversifying their income, and relying more on community solidarity and action.



COVER: Farmers earn insurance through labor on community risk reduction, e.g., water harvesting structures. Mengesha Gebremichael/Relief Society of Tigray

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OXFAM EVALUATION SUMMARY | DECEMBER 2018

MANAGING RISKS IN SMALLHOLDER AGRICULTURE

THE IMPACTS OF R4 ON LIVELIHOODS IN TIGRAY, ETHIOPIA, FROM 2012 TO 2016

Farmers in developing countries are increasingly vulnerable to risks posed by weather and climate. For the world's 1.3 billion people living below the poverty line and depending on agriculture for their livelihoods, this vulnerability is a constant threat to their food security and well-being. The R4 Rural Resilience Initiative, a strategic partnership between Oxfam America and the World Food Program (WFP), offers integrated risk management strategies to build farmers' resilience to climate-related shocks to improve their livelihoods. To evaluate the impacts of R4 in Ethiopia between 2015 and 2016, Oxfam commissioned an independent study. This evaluation, which also includes data and analysis for the periods 2009 – 2012 – 2015 – 2016, was implemented by the Center for Climate Systems Research at the Earth Institute of Columbia University.

In response to weather and climate challenges, in 2011, Oxfam America and the WFP launched the R4 Rural Resilience Initiative to enable vulnerable rural households to increase their food and income security. R4 builds on the initial success of the Horn of Africa Risk Transfer for Adaptation (HARITA) initiative, pioneered in Ethiopia by Oxfam America, the Relief Society of Tigray (REST), and Swiss Re, starting in 2009.

Through the project's unique insurance-for-assets (IFA) model, the poorest farmers have the option to pay their insurance premiums by contributing their labor on long-term risk reduction activities

identified through community-based participatory planning (CBPP), such as building water dams, preventing soil erosion, fertilizing, and preventing desertification, among others. Farmers emphasize the importance of risk reduction activities that divert and retain water and conserve the soil because these improve crop production on drought-prone land. R4 currently is implemented in Ethiopia, Senegal, Malawi, Zambia, Kenya, and Zimbabwe, and reaches over 57,000 farmers (benefiting around 300,000 people). R4 builds the resilience of communities exposed to increasingly severe and frequent climate shocks through its four comprehensive risk management strategies:

improved resource management through community asset creation (risk reduction), insurance (risk transfer), livelihoods diversification and microcredit (prudent risk taking), and savings (risk reserves). The program has been operating in Ethiopia since 2009; it was expanded to Senegal in 2013 and more recently, in 2015, to Zambia and Malawi.





Gebru Kahsay and his grandson inspect a field of teff in Adi Ha. *Eva-Lotta Jansson/Oxfam America*

IMPACTS

IMPACT: R4 is helping smallholder farming households improve their food security.

- The study found that R4 is beginning to improve food security in Tigray, especially among female-headed households (FHHs). According to the food consumption score¹ (FCS), the overall decline in food security from 2013 to 2016, in terms of the quantity and quality of food consumed, was 26 percent smaller for female-headed households in R4 villages than it was in control villages. The improvement occurred during a period of very severe drought, in 2015. The study suggests that female-headed households' increased borrowing during drought and these households' work on microgardens are the two most likely mechanisms through which they have improved their food security.²

IMPACT: R4 participants are better equipped to cope with climate shocks.

- Households in R4 villages, and especially those who bought insurance in 2016, had a greater variety of coping strategies at their disposal than did households in control villages. In particular, participants mentioned that they used their savings as well as credit from the RUSACCO³ revolving

fund reserved for insurance purchasers to cover expenditures and to fund nonagricultural income-generating activities (IGAs). Livestock trading⁴ was a major activity for male-headed households, while female-headed households were engaging in activities such as sheep and goat rearing and fattening, cattle fattening, petty trade, beekeeping, poultry, and dairy production as ways to diversify their income.

IMPACT: Disaster risk reduction (DRR) actions help producers reduce their agricultural losses, diversify their income, and cope better with food price increases.

- R4 participants interviewed in all districts mentioned that the DRR trainings have been highly beneficial in improving their knowledge about nonagricultural sources of revenue, and in building their capacity to diversify sources of income. They have also learned about more-adaptive agricultural practices.
- Farmers emphasized soil and water conservation and compost as the highest-priority DRR activities because they improve crop production on drought-prone land. The soil and water conservation activities protect the community from floods and erosion of fertile lands. River diversion and

rainwater harvesting are helping communities cope with rainfall shocks. The vegetables grown in microgardens provided a source of income and nutrition, especially because the price of vegetables was increasing faster than the price of cereal crops. Using compost saves farmers money because fertilizer is expensive. Compost enhances soil fertility and helps retain moisture, which is critical for yields in a drought-prone environment.

IMPACT: Savings and credit products are rapidly becoming effective financial tools to increase investments in income-generating activities (IGAs).

- R4 improved the accumulation of savings by 85 percent among male-headed households relative to control households, and it increased the probability of borrowing and amounts borrowed among female-headed households relative to control households, in two study districts. The only statistically significant effect among female-headed households is in Raya Azebo, where female-headed households in R4 villages increase their savings more than did households in control villages during the drought. These households could have been relying more on profits from their nonfarm businesses during the drought rather than on savings, because diversification of income sources increased among this group relative to control households over the period of the evaluation.
- One of the benefits of the saving and credit services that farmers emphasized is the capital they provide for investment in IGAs, and particularly nonfarming

activities or off-farm activities. Diversification of income is proving to be a critical pathway toward improving the safety of livelihoods in the drought-prone context of Tigray. Saving and credit groups and associations also contributed to exchange of experiences and knowledge and to build social capital, especially among women farmers.

- In the focus group discussions (FGDs) as well as in the survey, all participants in both R4 and control villages in Saesi Tsaedaemba and Raya Azebo reported that their most important coping mechanism was government support through the PSNP, and this source of support was relatively more important for female-headed households, (see figure). In Kola Temben, participants in FGDs reported that insurance was the most important strategy. However, in the survey, no respondents listed the insurance payout as one of their top three coping strategies. In Saesi Tsaedaemba and Raya Azebo, participants in FGDs mentioned the insurance payout as too small to cover expenses by itself but a useful complement to savings and loans. Sixty-four percent of survey respondents reported that they used the payout in 2015 to buy food, 8 percent reported using at least some of the money to buy agricultural inputs, and 16 percent reported using it for other expenses.

IMPACT: R4 has influenced transformative changes.

- R4 has successfully cultivated extensive relationships with local, national, and international stakeholders engaged in development, including the government, the private sector, and the nonprofit sector. These relationships

Households in R4 villages have begun to use savings or credit to buy livestock early during the drought, when the prices of livestock are low, in order to trade the animals. They then sell the animals when prices rise. Some respondents have reported high profit margins in this activity. Such livestock trading is different from traditional livestock sales and does not damage the long-term productive potential of the household.

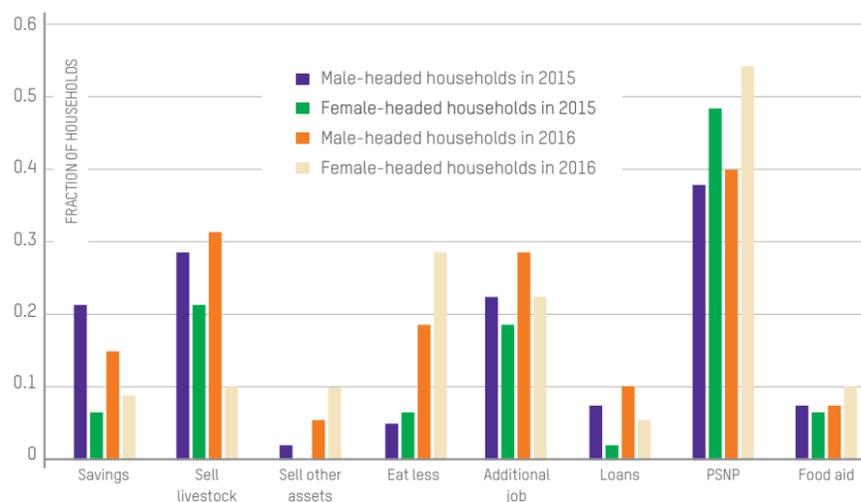
have spawned significant impacts on the practice of risk management for smallholder farmers beyond the reach of the program itself.

- At the local level in Ethiopia, R4 has inspired private insurers to offer weather index insurance as part of their portfolios. R4 and partners have also been invited to lead training sessions on expanding access to finance among farmers through insurance-for-work programs for local nongovernmental organizations (NGOs) and insurance companies. These initiatives are poised to expand access to index insurance for smallholder farmers in Ethiopia beyond the scale that can be achieved by R4.
- At the national level, R4 has been effective in influencing the approach to risk management for smallholder farmers. Thanks to its investment in relationships with government agencies, especially the Ministry of Agriculture, an effort is currently underway to integrate R4 into the PSNP. Furthermore, R4 informed the government's Disaster Risk Management Strategic Program and Investment Framework, an initiative of the Ethiopian government. In fact, \$424 million will be invested by the Ethiopian government in the next five years as a result of the success of the credit component of R4. In 2015, R4 was selected by the government of Ethiopia as one of the best development programs in the country. Ato Tekelwoini Assefa, executive director of REST, received the award on behalf of the program.

“ My life is improving through the integrated microgarden, credit and saving services, rehabilitation, and water resources through cisterns constructed by the R4 project. Getting access to water from the cistern has improved my life through diminishing the workload and improving my hygiene. ”

— Hagosa Demewoz, Barka-Adisebha village of Atsbi Wonberta district

MOST COMMONLY REPORTED COPING STRATEGIES IN R4 VILLAGES (2015–2016)



EVALUATION APPROACH

The study⁷ was conducted by researchers at Columbia University using a sample of 294 participating households in five villages in three districts. It also included 165 households in five control villages. Using mixed methods, the researchers first conducted a quantitative analysis of household survey data, which examined how changes in major outcomes from year to year differ between R4 and control villages; and second, a qualitative analysis that integrated results from focus group discussions conducted separately with men and women, and interviews with key informants. The data are from two household surveys carried out in the 2015 and 2016 agricultural seasons, and include responses on selected outcomes that farmers could recall from 2014 and 2013 growing seasons.