



# Empowering New Generations to Improve Nutrition and Economic Opportunities (ENGINE)

## Impact Report

### Background

This impact report draws upon focus group discussions, household visits and interviews with Government of Ethiopia (GOE) frontline staff conducted in August 2015 by Land O'Lakes headquarters-based communications, nutrition, crops and livestock staff. It is also strongly informed by monitoring and evaluation, management and reporting documents prepared throughout the project period (referenced in endnotes). It is not intended to provide a comprehensive overview of each ENGINE livelihoods component, but rather highlight key innovations and lessons learned that may inform the design of future nutrition-sensitive agriculture programming in Ethiopia.

The development community's understanding of nutrition-sensitive agriculture has evolved

significantly since the launch of ENGINE, with the 2014 creation of the conceptual pathways by USAID and its partners now informing the design and implementation of agricultural programs that aim to improve nutritional outcomes for mothers and children.<sup>1</sup> ENGINE itself evolved over the course of its implementation, beginning with the inclusion of a livelihoods component. This was based on a general acknowledgement that increased production was essential for improved access to – and ultimately consumption of – nutritious foods, particularly among the poorest households. ENGINE's livelihoods and nutrition components have become increasingly integrated. Looking forward, there is the opportunity to leverage learning from ENGINE to inform the design of future nutrition and agricultural programming in Ethiopia.

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# About Land O'Lakes International Development

Since 1981, Land O'Lakes International Development has applied an integrated approach to international economic development that capitalizes on our parent company's 94 years as a leading farm-to-market agribusiness. We use our practical experience and in-depth knowledge to facilitate market-driven business solutions that generate economic growth, improve health and nutrition, and alleviate poverty. We believe in the value of people and ensuring our work is rooted in honesty, integrity and respect. Our vision is to be a global leader in transforming lives by engaging in agriculture and enterprise partnerships that replace poverty with prosperity, and dependency with self-reliance.

Since our inception, we have implemented more than 280 programs and training initiatives in 80 countries, which have enabled farmers and agribusinesses to become more profitable and to leverage economies of scale through well-functioning cooperatives and producer groups. Funded primarily by the United States Agency for International Development (USAID) and the United States Department of Agriculture (USDA), our programs not only improve production and food security for smaller farming operations, but they foster innovation, market linkages, and strengthen the private sector. Ultimately, they make small and growing enterprises in developing countries more attractive for investment, and build consumer demand for agricultural products produced by smallholders.

## Land O'Lakes Past Programs in Ethiopia

### **Ethiopia Dairy Development Project (EDDP) 2005-2011**

At the outset of USAID-funded EDDP, Ethiopia's dairy industry was wrought with inefficiencies, including poor milk quality, unorganized farmers and systemic problems. But, through incremental improvements, Land O'Lakes increased the quality of milk and milk products, which resulted in a higher demand for the products and an escalated interest in investing in the dairy sector. The project not only provided enhanced income generating opportunities for smallholder dairy producers, but also expanded the availability of dairy-based foods for Ethiopia's growing urban population.

By training participants on the application of new technologies, consumer marketing, and milk collection and cooling, EDDP helped form producer organizations and strengthened existing cooperatives.

With an additional \$4 million from the President's Emergency Plan for AIDS Relief, Land O'Lakes supported people affected with HIV (PLHIV) by collaborating with associations that could provide them with dairy-based livelihoods. Altogether, EDDP established roots for private investment that would generate employment and income for smallholder families and provide affordable, high-quality, nutritious dairy products for Ethiopian consumers. EDDP reached a total of 33,850 smallholder dairy farmers, and the dairy-related incomes of smallholder dairy producers increased by 60 percent.

### **Milk Marketing and Processing 2004-2006**

Under a \$245,000 grant from Irish Aid, Land O'Lakes established milk collection and bulking centers in the Northern Ethiopian State of Tigray towns of Mekele and Humera, which helped farmers turn the centers into sustainable businesses. We focused on processing techniques that could bring healthier products to market more efficiently. Training included animal production and breeding, milk handling at farm and collection center levels, milk processing, quality control and product development. These pilot collection centers served as a model for future investments in Tigray's dairy industry.

**Empowering New Generations to Improve Nutrition and Economic opportunities (ENGINE)** is the **U.S. Agency for International Development's** flagship multi-sector nutrition project in Ethiopia. It builds upon the Government of Ethiopia's National Nutrition Program, as well as the U.S. Government's Global Health and Feed the Future Initiatives.

ENGINE works to reduce maternal, newborn and child mortality by improving the nutritional status of women and children. The core initiative of this large-scale, five-year project (2011 – 2016) is to prevent child undernutrition during the first 1,000 days, from the start of pregnancy until the child is 2-years-old.

In partnership with **Save the Children** and others, **Land O'Lakes International Development** is leading ENGINE's livelihoods component, with a focus on food security and economic strengthening. ENGINE is operating in 100 *woredas* (administrative regions) consisting of 83 Agricultural Growth Program zones and 17 food insecure zones, in the Amhara, Oromia, Tigray and Southern Nations, Nationalities and People's Regions. Livelihood assistance is targeted to the most nutritionally-vulnerable households: those that include women of childbearing age or children under 2 and, through vigorous screening, those facing extremely high levels of food insecurity due to poverty and other factors such as HIV status.

Typically, in the first year of assistance, ENGINE participants receive a package of six basic farming instruments, and seeds for six different nutritious vegetable and fruit crops that they can grow for home consumption and sale at market. The vegetables provided vary slightly based on locale, but generally include beet root, Swiss chard, kale, carrots, orange-fleshy sweet potato, Irish potatoes, head cabbage, and fruit trees including apple, avocado, mango and papaya (with variability based on the local agroecology). Typically, after a year, households were able to access productive sources of animal proteins – typically three goats or sheep and a ram, or 12-17 vaccinated chickens, which could be upgraded through a cost-share to a dairy cow.

Because a core goal of the program is to fully maximize existing Government of Ethiopia (GOE) structures and development initiatives, ENGINE works through established Ministry of Agriculture and Rural Development (MARD) Farmer Training Centers (FTCs) to demonstrate to farmers how to grow crops other than cereals, especially vegetables, and how to prepare them as foods. ENGINE also provided significant capacity building assistance on blended nutrition-sensitive agriculture education and communication to local GOE Development Agents (DAs), and health and agriculture extension workers, who routinely monitor and provide follow-up training and advice to program clients. A critical component of ENGINE's success has been that households received both nutrition education through the DAs and Health Extension Workers and, in most cases, they engaged in nutrition education before receiving support for vegetable production. When production began, project clients were thus primed to focus their efforts on improving consumption patterns.

To improve access to financial services, ENGINE established 466 Village Savings and Loan (VSL) groups, which have between 10 and 50 members. Participation is voluntary and self-managed, with members contributing between five and 10 *birr* per month in savings. The goal is for these VSLs to ultimately link to formal financial institutions and access loans as individuals or groups that support income generating activities. Although only 50% of such groups have begun lending – as the rest are waiting for legal registration – the VSL model is fostering community cohesion and improving the savings capacity of most-vulnerable households.

As ENGINE enters its final year of implementation, indications are that this package of livelihoods interventions is having a significant impact on very vulnerable families. Among livelihoods participants, ENGINE is likely to achieve its target increase in mean number of food groups consumed by women of reproductive age (to 4).<sup>2</sup> Additionally, a number of new approaches to supporting nutrition-sensitive agriculture in Ethiopia have been developed to inform future programming by the GOE and development partners.

# ENGINE Impacts and Lessons Learned



At only 38, **Lalo Winso** already has 10 children. Before ENGINE, she says they solely ate one meal a day of the fibrous stems of the local plant *enset*, which is not suitable for human consumption. She says the family regularly had uncontrollable diarrhea, worms and colds, the children were stunted, and they had no clothes to wear.

After receiving six seeds for nutritious crops, basic tools, some goats and training from ENGINE on production, husbandry and food preparation, life has completely changed.

Lalo sold her last harvest of carrots for 10,000 *birr* (US \$474), says the family is eating a diversified diet three times a day, and has already purchased two cows. What's more: they're no longer stigmatized by their neighbors. "Before, no one kissed my children. Now, people want to play with them," she said.

## Remaining Nimble and Sensitive to the Local Context

*Land O'Lakes designed ENGINE's livelihoods component in a manner that was both sensitive to local conditions and could nimbly adjust specific activities during implementation. Most notably, the type of inputs and training provided varied to some extent based on geographic area – namely between highland and lowland areas – marketability of crops, and communities' ability to safely prepare and consume nutritious foods. This enabled project participants to maximize the production of items that were safe and likely to be consumed.*

### **ENGINE adjusted horticultural and livestock inputs over time, based on local preferences.**

In the first year, ENGINE piloted the distribution of lettuce seeds; this was later withdrawn because many households were unwilling to eat lettuce and did not know how to wash and prepare raw leaves, leading to concerns around food hygiene. Kale and carrots, on the other hand, were scaled up because they had high nutritional value, were easy for families to prepare as complementary foods after receiving basic instruction and participating in cooking demonstrations, and sold well at local markets. While households reaped an economic benefit from ENGINE's small livestock component, in highland areas such as Amhara, the project struggled to overcome cultural taboos around consumption of sheep and goat milk. This limited the nutritional benefit of the component to annual or bi-annual infusion of incomes from selling fattened sheep or lambs. Land O'Lakes addressed this by mobilizing complementary funding for a matching grant program that enabled households to cost-share with ENGINE the purchase of a dairy cow, which was usually facilitated by selling goats or sheep.

### **Backyard forage crops were varied and had high uptake by livestock farmers.**

Backyard forage development was introduced to supplement traditional animal feed sources – mainly open grazing and crop residues – when households faced challenges accessing inputs for homemade feed. Forage crops promoted are specific to each area based on adaptability to the climate, and include *Sesbania* in almost all regions, Tree Lucerne (both of which are rich in protein and vitamin A) and elephant grass. These are generally grown around the boundaries of the homestead, on land that is not typically used for producing other crops. This willingness to adapt, along with ENGINE's approach to rolling out trainings through the DAs, appears to be working well, with 63% (5,171 out of 8,119) of households who were provided with livestock electing to grow supplemental forage.<sup>3</sup>

## Increasing Access to and Consumption of Diverse Vegetables

*Investment in diversification has increased consumption of nutrient-rich vegetables, with opportunities remaining to increase the period of consumption each year and enhance the availability and affordability of locally-sourced inputs.*

**ENGINE households are producing and consuming far more vegetables than before.** Households consistently report that prior to ENGINE, they were producing and consuming very limited quantities of fruits and vegetables. This is reflective of the national scenario, in which only 1% of cultivated land is used to grow vegetables (less than even *chat*).<sup>4</sup> Reported vegetable consumption has increased significantly among clients since the project began, and often lasts most of the year. While fruit tree seedlings have been distributed, they need 3 to 5 years to mature and provide fruit. However, vegetable production is swiftly gaining traction. A majority (50-60%) of the vegetables is consumed by producer households, with some variation among different vegetable crops. In northern districts, Irish potatoes and onions providing the greatest income, while southern districts earned the most from carrots and kale. Meanwhile beet root (radish), tomatoes, orange-fleshy sweet potatoes, and head cabbage are primarily consumed.<sup>5</sup> HEWs and households report consistent education around use of food produced in the gardens. Both groups cited the use of vegetable (particularly kale) cooking water to prepare children's porridge, the preparation of porridge with a mix of grains and vegetables, and adding iodized salt as new practices that were now regularly implemented by households.

**Shage Wachifu** (in checked scarf), 40, says she wasn't food-insecure until she got married. As an itinerant laborer, she used to be paid a daily rate of about 7 *birr* (US \$0.33) or a bag of *enset*. The fibrous *enset* stalks were all they ate, 1-2 times a day. "I was so weak, it was hard to exist," she recalled.

ENGINE provided her with seeds, livestock and a wide range of training on nutrition-sensitive livelihoods. Now, Shage, her husband and 7 children eat 3 nutritious meals a day, with plenty left for sale at the market.

After earning 14,000 *birr* (US \$663) from selling carrots and head cabbage, she bought a plot of land and built a home.

"I am not now, nor will I ever be again, a daily laborer! I am a farmer!" she exclaimed. Today, all of her children are in school, and she is determined to pressure her daughters to wait as long as possible before getting married.



# ENGINE Impacts and Lessons Learned

## **Recommendation: Explore strategies to increase the shelf life of fresh vegetables**

There is significant variation in the number of months that households have fresh vegetables available for home consumption. Some households report harvesting a variety of vegetables for up to eight months of the year and Swiss chard year-round, while others report harvesting for only a month or two. Households able to access their own vegetables for extended periods of time have learned to space plantings, use seedling beds for most vegetables, and cut chard leaves continuously from plants that they water and fertilize on an ongoing basis. Households able to access their own vegetables for extended periods of time have learned to space plantings, use seedling beds for most vegetables, and cut chard leaves continuously from plants that they water and fertilize on an ongoing basis. Households consistently cite promotion of these practices by the DAs and ENGINE's trainings; however, year-round production

and consumption is only possible for households with access to irrigation, or at least potable water, so that they could use a watering can for a home garden watering system.

Households that rely on rain-fed agriculture require additional support to increase the number of months in which vegetables are available. To a degree, the growing season may be stretched for some vegetables even with limited irrigation. Land O'Lakes is also now exploring processing and preservation techniques appropriate for households with limited resources. Promisingly, a small number of households already report using traditional approaches such as smoking cut pumpkin and constructing storage beds for raw carrots. These and other practices may be scaled up in the future, in collaboration with the Ministry of Agriculture.

## **Recommendation: Work with government, private sector and households to expand access to seed inputs**

Since ENGINE's livelihoods component targeted extremely vulnerable households, providing seeds was essential in enabling participants to begin producing vegetables. However, most communities have accessible seed suppliers, and entrepreneurial traders and farmers are starting to engage in buying vegetable seeds and selling them within their communities. While some ENGINE livelihoods households have purchased additional seeds to expand their gardens (mainly with high-value carrots and cabbage), most have not. Future programs should develop linkages with private sector seed suppliers early on. This would include

providing seeds through voucher programs, training to negotiate with input suppliers, and supporting households to plan for group purchase in places where the distance to shops is significant. In areas where shops are not providing certified vegetable seeds in quantities appropriate for small producers, a voucher program would be a powerful incentive to begin doing so. These rural vendors could be supported by efforts to match them with larger and more well-established wholesale distributors and agro-dealers, such as those being funded by the USAID CNFA Agro-dealer project, as well as lending/financial institutions.

ENGINE partnered closely with Government of Ethiopia-run **Farmer Training Centers (FTCs)** to expand their focus beyond cereals to the growth of nutritious fruits and vegetables.

These demonstration plots showcased to farmers key farming techniques, such as adequate row spacing, seed depth and raised plant beds.

At the FTCs, ENGINE program clients learned about the production, cultivation, preparation and consumption of nutritious diets filled with animal protein and vegetables.



## ENGINE SUCCESS STORY

# A House Big Enough for Everyone to Call Home



"We are now on our fourth year of eating a diversified diet, and selling the extra, after we ensure our family eats properly."

— Wenkitu Tola

Crushing poverty used to be so immense for **Wenkitu Tola** and her husband **Chala Gemeshu** that they did the unthinkable: they arranged for three of their children to leave their home and become daily laborers on other people's farms.

"It was the most horrible decision we ever had to make, but we didn't have enough food to regularly feed, let alone clothe them," Wenkitu mournfully explained. "What little we earned went in full to pay for a place to stay. Outside our home, they'd at least be able to eat something, and we had a better chance of providing sustenance to our youngest."

In fact, for many years, the family had no real place to call home. As daily laborers, the entire family constantly migrated from place to place looking for whatever work they could find – typically the most grueling and menial labor. Any limited earnings they made went back to the employer for the privilege of having somewhere to sleep.

Eventually, the desperate moment came when Wenkitu and Chala realized they could not continue to care for all six of their eight children who still lived at home, and they arranged for three of the eldest, who are now 11-year-old twins and an 18-year-old, to begin doing similar daily labor on properties that would guarantee them food and a place to sleep.

But, as a result of the extraordinary nutrition and livelihoods improvements the family has experienced over the past several years as clients of the **USAID-funded ENGINE program**, they finally have a huge home of their own, and are in the process of reuniting the entire family.

The program provided her with six basic farming implements and six types of nutritious seeds – carrots, kale, Swiss chard, head cabbage, beet root and an apple seedling – and trained her on how to plant, harvest and prepare them. A year later, she received three sheep and a ram – along with training on animal husbandry – and she began selling their offspring.

After harvesting sufficient crops for the family, they sold the excess at market for 2,500 *birr*, (US \$118) and sold four of the lamb offspring. With that cash in hand, they bought a plot of land for 7,000 *birr* (US \$331). In just one year, Chalo built their spotless, expansive home, all by himself.

"In all my life, I never thought I'd own sheep, goats or chickens – let alone a cow! We are now on our fourth year of eating a diversified diet, and selling the extra after we ensure our family eats properly," Wenkitu exclaimed.

The family is now eating at least 3 meals a day, every day, combining their *injera* bread with combinations of vegetables, meat and eggs. "My most recent pregnancy as an ENGINE client was different. I didn't have a single headache, and I produced so much milk he couldn't even finish it," she noted, adding, "What's more, his mental capacity is different than the others. He's very active and bright, while the others look stunted and lethargic."

Her husband Chala's confidence has grown, too. "Now that I can provide my family with a home, I feel like a man. We have already brought the 18-year-old back home and have enrolled him in school. We are working hard to bring the 11-year-old twins back home soon, too."

## Innovation to Promote Egg Consumption

*ENGINE has greatly increased consumption of eggs among both participant households and the wider community, with 98% of households who received chickens reporting that they now consume eggs and 76% reporting that they sell eggs to neighbors for consumption and breeding.<sup>6</sup> This was achieved by a number of innovations, including improved genetics and management practices, along with blended nutrition education.*

**ENGINE provided a comprehensive, evidence-based input package.** An informal study at ENGINE's inception found that previous projects typically distributed commercial layers, which require specialized feed and management, and often suffer high mortality rates. After an initial pilot with White Leghorn, a more adaptable commercial breed, ENGINE piloted and scaled up provision of a South African breed developed specifically for smallholders, *koekoek*. Additionally, as previous projects had distributed chickens, only to find that very poor farmers lacked the resources to manage the flocks, ENGINE provided a package of between 12 and 17 vaccinated birds (a mixture of pullets and cockerels), chicken coop materials, feed for three months (until chickens could produce eggs) and a two-day technical training. ENGINE participants were also able to access ongoing technical support from the DAs, who were trained on poultry production. To address challenges around sourcing of healthy birds, ENGINE adopted a private sector development strategy, working with two hatcheries and several outgrower farms to produce chicks for distribution to farmers. There is the potential to scale up and develop this approach to sustain availability of *koekoek* chicks in the future.

### **Recommendation: Strengthen government and private sector animal health services**

ENGINE participants receive animal health services through linkages with GOE Department of Agricultural Extension Development Agents (DAs), who provide technical advice and referrals to district veterinarians. However, the strength of these linkages varies, and already stretched DAs are now providing services for many more animals as a result of ENGINE's livestock distributions.

The GOE's livestock vaccination coverage is also inadequate in some areas. While *woreda*-level managers receive in-service training, there is little accountability for their transfer of knowledge

to front-line workers. Greater capacity-building around both the supervision and support of frontline workers, which could draw on the health systems strengthening work of ENGINE's nutrition component, would increase households' ability to benefit from healthy poultry flocks over the long term. This should be complemented by private sector approaches to animal health services, both through livestock input companies and community-level livestock workers (an approach currently utilized only in pastoral areas, where there are a limited number of degree-holders).

## The Link between Improved Animal Feed and Human Nutrition

*ENGINE used innovative approaches to addressing challenges around animal feed, with the goal of increasing the production of milk and eggs that support human nutrition.*

**A new approach to chicken feed.** A shortage of affordable, quality chicken feed results in high chicken mortality and low egg production. Most households must consequently allow their chickens to freely graze, but this increases livestock waste around the homestead. To address this, ENGINE developed a formula for chicken feed that could be prepared at home with locally available ingredients, including maize, Niger seedcake, wheat middling and limestone. The project worked with the GOE Nutrition and Health Research Institute Laboratory to test samples and ensure the nutritional adequacy of the feed. A survey in Amhara region found that 89 out of 98 interviewed households had prepared homemade poultry feed at least once.<sup>7</sup>

**Feeding for Milk Production.** An ENGINE field staff assessment found that some project-subsidized cows yielded as little as 0.5 litres of milk per day. To address this, ENGINE piloted distribution of Brewery Spent Grain (BSG) or “brewery by product” among 49 households in Gechi Woreda in May, 2014. A survey of 41 households given four and nine months after distribution found that average milk production had increased from 0.86 litres/day to 2.04 litres/day. About half of this milk was used for butter and cheese. Of the remainder, a majority (60%) was consumed by children. Over three-quarters (78%) of households reported that they intended to continue purchasing BSG.<sup>8</sup>

BSG is often used as a supplemental animal feed by dairy farmers in small towns but is rarely used in rural areas. In the pilot distribution area, a group of entrepreneurs with physical challenges had organized a BSG sale point, making the product available locally. BSG’s significant impact on milk production, most of which was consumed, indicates that it is worth exploring scale up of BSG sale networks in rural areas.



### **Recommendation: Integrate poultry production and nutrition-sensitive business planning**

While uptake of improved chicken feed appears to be high, it is challenging for households to continue investing in feed once chickens age and egg production declines (households generally report a reduction from 7-8 eggs/day to 3-4 eggs/day over the course of a year). Drawing on Land O'Lakes International Development's well-developed approaches to “farming as a business”

for smallholders, business planning should be integrated with poultry production training, including budgeting to restock flocks with the income from egg sales. This training should help households plan for nutrition-related investments, including a coop to confine birds and a set-aside of eggs for home consumption.

## Leveraging the Income to Nutrition Pathway

*Households, particularly those with livestock, are earning more income than before and engaging in new financial planning efforts through savings groups. Future programs have the opportunity to leverage the income to nutrition pathway even more fully.*

**Income effect greatest among livestock-owning households.** Most (99.4%) ENGINE participants report both selling and consuming vegetables and animal proteins (particularly eggs and milk), using the income to purchase staple grains, agricultural inputs and kerosene; cover educational costs, improve their homes; and, in some cases, invest in improved hygiene (soap and latrine construction).<sup>9</sup> Income increases are greatest among households who received livestock, with ENGINE contributing approximately 20% of household income among livestock-holding households.<sup>10</sup>

**Adaptation of the VSL model to promote long-term savings.** Village Savings and Loan (VSL) groups have helped participants save and plan to use their income for purchases that will increase household wealth. ENGINE's 466 VSL groups had between 10 and 50 members. Participation is voluntary and self-managed, with members contributing between five and 10 *birr* per month. To date, many ENGINE participants have been heavily invested in saving with many VSLs unable to lend until they registered with the government. Rather than dividing collections at the end of yearly cycles, which is typical of VSL approaches, ENGINE groups are interested in accumulating larger amounts of capital that can be combined with loans to invest in individual or group income-generating activities (IGAs). Most participants report saving to purchase more livestock (usually cows), while some are interested in group IGAs such as small grain mills. In addition, VSL groups – many of which are comprised of HIV-affected women – provide a platform for social support, community cohesion and discussion of livelihoods activities. Members frequently discuss challenges related to their vegetable gardens and livestock, and DAs and HEWs are able to reach the members collectively during the meetings. It is anticipated that the VSLs will help to sustain group cohesion after ENGINE close-out by providing a tangible reason for group members to meet.

### **Recommendation: Increase market access**

Most households are selling items to neighbors (particularly in the case of eggs and milk) or at weekly markets in nearby towns. Future projects, particularly those that may include a greater diversity of households (see final section of this

report), may invest in market access interventions such as a development of village-level vegetable aggregators, formation of women-managed cooperatives and access to market infrastructure and transport mechanisms, such as donkeys.

The secretary of the 60-person **Wolissa Village Savings and Loan** is its only male member, as he is the only one with basic literacy skills.

The group has already saved 18,000 *birr* (US \$759) and will begin making loans by the end of August 2015, now that they have obtained legal government status.

The group's bylaws state that each woman must develop a proposal to get a loan. Members will vote based on profit potential.



## ENGINE SUCCESS STORY

## ENGINE Shines a Light



**"ENGINE changed my mindset...I now feel like I should have people working for me, not the other way around!"**

**— Adegdigu Kassa**

It broke **Adegdigu Kassa's** heart when she had to pull her children out of class years back to help her with her arduous work as a daily laborer, but she simply couldn't afford to pay for the clothes and books they'd need to attend school.

There was rarely enough to eat. Nearly every meal would be a simple meal of the sticky Ethiopian bread known as injera, plus a dollop of shiro wat – a paste made from ground beans; animal protein and vegetables were a luxury she simply couldn't fathom. "My children's health wasn't ideal, and I myself struggled to do the hard tasks required of me as a laborer. I was constantly exhausted and had no energy."

Everything changed when she was selected to be a client of the **USAID-funded ENGINE program**. "ENGINE was like a light – it showed me the way to have a better life for myself," Adegdigu explained with pride. With training, she established a permagarden – a small-scale, high-yield organic family garden – and began growing crops including Swiss chard, cabbage, kale, potatoes and carrots. She also learned to compost, address water management, and make fertilizer by mixing eggshells with charcoal, ash and dry compost.

Two months after getting her first seeds, she harvested some Swiss chard and kale. After ensuring the family had enough to eat, she sold the excess at the market, and immediately reenrolled her children back in school.

In the second year of the program, ENGINE provided her with 3 female goats and a ram. She learned how to care for them at one of the Ethiopian government's Farmer Training Centers, which partnered with ENGINE to demonstrate improved farming techniques. "Drinking goat milk isn't common here, but I took the lead on being the first person in

my group to begin drinking it and feeding it to my children."

She not only continued to diversify the family diet, but also started turning farming into a viable business. When her carrots matured, she sold the excess for 1,300 *birr* (US \$62), and used the proceeds to buy some grain and a donkey that would help her with transporting her crops to market.

She continued to expand her garden with potatoes and other crops, and began buying her own seed. At the next harvest, thanks to her new knowledge about crop seasonality and selling when prices were high, she was able to earn a whopping 10,000 *birr* (\$478) from selling her carrots. With that money in hand, and thanks to a loan provided by her Village Savings and Loan – community banking groups that Land O'Lakes established throughout ENGINE project areas – she was able to finally move out of the family's rented shack and construct her own home.

Meanwhile, her new goats began reproducing. Although she kept her original goat stock, she sold 5 kids to provide the 50 percent cost-share that ENGINE required so that she could upgrade to having a cow.

Today, Adegdigu is no longer a domestic laborer, with her farming efforts providing enough food to feed her family nutritious meals regularly and to continue improving her life. "ENGINE forced me to change my mindset, because I always felt that farming was for other people, not for me," she explained. "But with a beautiful farm like this, I now feel like I should have people working for me, not the other way around!"

She had another baby after becoming an ENGINE client, and she says the extra nutrition has also done wonders for her young baby, noting that she is much healthier than her other children ever were.

## *Recommendation: Engage households in nutrition-sensitive budgeting*

ENGINE was designed long before the well-articulated agricultural-nutrition pathways. Consequently, the current program's emphasis on nutrition has been focused on consuming what is produced, rather than on educating families on the ways that improved income and purchasing choices can also support nutrition. Future program design for a program like ENGINE should leverage the knowledge from this pathways approach to ensure a robust approach to nutrition training.

For example, staple grains are the primary food purchase for most households and there is the potential to re-direct a portion of this income towards purchase of more nutritious foods, particularly for households who are unable to harvest vegetables for much of the year. DAs and HEWs have focused their nutrition counseling and education on consumption of home-produced vegetables and livestock production; in year five, ENGINE will pilot education on household budgeting and the use of income to support nutrition, an approach that may be scaled up in future initiatives.

## *Recommendation: Increase access to financial services (loans)*

While serving the saving function well, most VSL groups have yet to access loans from formal microfinance institutions (like private banks) and Rural Savings and Credit Associations, which are controlled by the government. As of March 2015, 50% of groups had obtained the requisite legal status and linkages to a formal savings group, which they needed to access formal financial services.<sup>11</sup> As a result, only two groups have been able to invest in income generating activities, for toilet

slab construction and cotton weaving, respectively. Future projects may leverage the VSL model to enable groups and individual members to access formal lending mechanisms, utilize Land O'Lakes' *Economic Strengthening Toolkit* developed through the USAID-funded Ethiopia Dairy Development Program to provide structured guidance around planning IGAs, and integrate nutrition-sensitive household budgeting to promote purchase of nutritious food and hygiene items.

**Gobane Gure,**  
Zonal Health  
Coordinator for  
a town called  
Asela, displays  
some of the  
educational  
materials  
ENGINE uses to  
train extension  
agents and  
community  
members  
on nutrition,  
sanitation and the  
safe preparation  
of vegetables and  
animal proteins.





**ENGINE** has helped foster numerous linkages and galvanized collaboration among a wide swath of Ethiopian government stakeholders to address blended approaches to supporting community members on agriculture and nutrition. This includes local development agents, health and ag extension workers, local level and district-level government officials.

## Leveraging/Strengthening the Ag-Nutrition Workforce

*ENGINE participants are both receiving support in production, through Development Agents, and in nutrition education, through Health Workers. This is increasing their access, availability, utilization and stability of nutritious foods. There are opportunities to further strengthen integration of production and nutrition support to have a greater impact on nutrition outcomes.*

**Improved engagement with front-line government workers.** Participants nearly universally report that they had very limited contact with the DAs and HEWs prior to ENGINE, generally seeing them only at weekly prayers. Now, participants report regular interaction with both the DAs and HEWs, who have been trained through ENGINE's nutrition component. This includes household visits ranging from weekly to monthly, and monthly community-level meetings with ENGINE participants. The variable frequency of such visits appears to be related to the location of families' homes, with those living near village centers and major paths receiving more visits, although they may be briefer and less structured.

### **Recommendation: Greater integration of nutrition and agriculture communications**

All livelihoods participants had a two-day orientation when they joined the project, covering a range of issues related to ENGINE's goals and components, as well as information about nutrition and production. DAs were also trained on nutrition-sensitive agriculture at the outset of the program and most have a strong conceptual understanding.

However, subsequent production-focused trainings varied in the degree to which they integrated

nutrition, with some DAs reporting that training on chicken production included very limited discussion around the nutritional benefits of eggs. While egg consumption was emphasized by the HEWs, the impact of this effort could be reinforced by similar communications by DAs. To address this, ENGINE is piloting materials that integrate content on production (e.g. eggs, milk) and an emphasis on nutrition using the "star food" concept; these may be scaled up in future projects.

## **Recommendation: Address Women's Nutrition**

Additionally, household reports on changes to their diet heavily emphasize child feeding practices. Future projects may incorporate better promotion of women's nutrition, potentially expanding HEW training in child growth monitoring and promotion to include screening for malnutrition among women. Large household size and limited birth

control also means that even with improved access to nutritious foods, there are still many mouths to feed. Ensuring mothers – and not just their children – are regularly eating nutritious foods will help reinforce the project's ultimate goal of improving the nutritional status of both children and women of childbearing age.

## **Recommendation: Integrate In-Service Training and Recognize Strong Performance**

DAs face high turnover, and are regularly transferred by the government. The lack of refresher trainings is a gap in the program, as newer DAs supporting ENGINE households have received little or no training from the project. ENGINE has made significant progress in integrating nutrition-sensitive agriculture into pre-service training, but it will be many years before a majority of frontline workers have benefitted from this. Future programs should thus increase in-service training, building on the work JHPIEGO has implemented under ENGINE; this will require engagement with the government to build an enabling environment, as there are currently tight restrictions around in-service training of front-line workers.

Additionally, ENGINE staff have observed variability in DA performance; the degree to which GOE staff at the *woreda* level and below are eager to engage in nutrition-sensitive agriculture should be considered in selecting implementation areas for future programming. Such initiatives could also seek non-monetary ways to support strong performance, such as co-awarding "Certificates of Achievement" or including support for vegetable production in staff performance evaluation criteria (linking to the GOE 2016-2020 Agricultural Development Strategy, which includes promoting production of three vegetables: potatoes, onions and tomatoes).



Land O'Lakes' country manager for ENGINE, **Amare Feleke** (at left) reviews progress reports with local government officials at a Farmer Training Center in the town of Asela

**Etagegnehu Mengistu**, a former daily laborer, was previously among the most vulnerable households in her community, with insufficient nutritious food to feed her family. By growing nutritious crops and raising sheep provided by ENGINE, she was able to upgrade to cattle and purchase land.

She says some of the most helpful training she received through ENGINE was on how to prepare safe, nutritious food for her children. She now regularly adds iodized salt, oil and vegetables to her children's porridge, built a pit latrine and ceased open defecation, and regularly practices handwashing.

Now that her Village Savings and Loan has been linked to the microfinance organization Oromia Savings and Credit, she's looking to develop a proposal for a loan that will enable her to start her own business.



## Going to Scale with Nutrition-Sensitive Livelihoods

*ENGINE approaches are being practiced by non-project participants, indicating an increase in benefit and high level of interest; future projects may consider formal engagement beyond the most vulnerable households.*

ENGINE faced challenges around targeting in year one, including households that were economically vulnerable, but which did not comprise pregnant women, those who were likely to become pregnant, or children under two. This was resolved by year two, indicating an evolving understanding of nutrition-sensitivity. However, households who did not meet the targeting criteria for ENGINE's livelihoods component also face challenges in accessing diverse and nutritious foods, as evidenced by Ethiopia's persistently high rates of stunting. Households living near participants in the livelihoods component adopted project-promoted practices, including vegetable cultivation (particularly carrot, cabbage, green pepper and beets) and rearing of improved chicken varieties with fertilized eggs purchased from ENGINE participants. They often learned about ENGINE-promoted practices at informal coffee gatherings as well as at ENGINE-supported demonstrations at GOE Farmer Training Centers. This indicates that many neighboring households would like to improve their nutritional statuses through improved production practices – even without free or subsidized inputs – and that demand for technical trainings and support would be high.

Households who do receive direct input assistance in some areas would also benefit from additional training. For example, some ENGINE households have used their own resources to invest in chickens, but did not receive the training provided to those who were given chickens (though they do receive support from the DAs). Others may be interested in purchasing assets, such as chickens, in the future, and training would both motivate and help them plan for this investment. A reduced investment in inputs per household would enable the project to invest more in technical support, and bolster the limited number of ENGINE livelihoods staff. Additionally, including a wider swath of households would build broader community cohesion and encourage social bonds across both extremely vulnerable and somewhat better off households. As these relationships develop, households across socio-economic stratum may become more effective models and resources for one another.



## Endnotes

- <sup>1</sup> *Understanding and Applying Primary Pathways and Principles*, USAID/SPRING, March 2014.
- <sup>2</sup> September 2014, External mid-term performance evaluation report.
- <sup>3</sup> Routine monitoring report, October 2014.
- <sup>4</sup> Alemayehu Seyoum Taffesse, Paul Dorosh, and Sinafikeh Asrat. *Crop Production in Ethiopia: Regional Patterns and Trends*. IFPRI, Research Note 11, 2012.
- <sup>5</sup> *Livelihoods Effectiveness Study*, April 2015 and Land O'Lakes staff field observations, August 2015.
- <sup>6</sup> *Project Target Household Chicken Management Practice, their Egg Consumption and Income Benefits* (internal project report), July 2015.
- <sup>7</sup> July 20, 2015 Poultry Assessment
- <sup>8</sup> August, 2015 Assessment on milk yield of ENGINE distributed cow supplemented with feed of dried brewery byproduct.
- <sup>9</sup> *Livelihoods Effectiveness Study*, April 2015 and Land O'Lakes client interviews August 2015.
- <sup>10</sup> *Ibid.*
- <sup>11</sup> *Report on Assessment of Savings Groups*, Land O'Lakes, March 2015.



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