Between 2013 and 2018, the SNV-EDGET project supported around 65,000 smallholder farmer households in Ethiopia to upgrade their dairy production, processing and marketing, with the overall goal of doubling farmers’ income. This Practice Brief explains how the project designed and implemented a cost-effective and participatory extension approach involving a network of farmers’ groups, in close collaboration with 1,500 extension staff employed by the Ethiopian government. The brief explores some of the key challenges as well as opportunities created in implementing this complex intervention. It concludes with lessons and reflections on how to sustain this approach against the broader context of the dairy value chain in Ethiopia.

Introducing EDGET’s Extension Approach

More than 80% of Ethiopia’s population depends on the agricultural sector for their livelihood. The government has invested heavily in developing an extension system that can provide farmers with the right information, knowledge and skills to cope with a changing environmental and economic context. A specific objective is to take advantage of market opportunities to increase the production and marketing of dairy products in a country where demand in many urban and peri-urban areas far outstrips supply.

Also convinced that providing farmers with the right knowledge and support is key to achieving the overall project goal of doubling the income of 65,000 smallholder dairy households, SNV-EDGET set out to enhance extension services to these farmers. The project engaged 51 Dairy Extension Promoters (DEPs) at the woreda (district) level to work alongside public Development Agents (DAs) at the kebele (village) level. In addition to the DAs, the Livestock Department also seconded technical experts at the woreda and zonal level to the project. Following a specially designed training programme, extension staff were tasked with following up the selected farmers on an individual basis to help boost their dairy management skills. The project aimed to work with around 600 to 2,500 dairy households in each of the 51 project woredas.

After one year of field experience, however, it became clear that it would be hard to roll out the programme as planned. With just one DEP assigned to a woreda and one or two DAs responsible for a kebele, extension staff were severely overstretched. Moreover, the existing extension system was focused on improving crop productivity and natural resource management and was not equipped to deliver the specialised services required for intensive dairy production.

What did EDGET do?

SNV-EDGET decided to adapt the extension approach in light of these constraints. The new extension strategy was based on a “cascade” methodology and focused on quickly upgrading the skills of extension staff as well as a core group of lead farmers, who would then train other farmers. In addition to the focus on peer-to-peer learning, the project aimed to introduce other innovations, such as a continuous schedule of training and farmer support activities throughout the year, and specially designed training materials suitable for smallholder dairy farmers.

Starting from the second half of 2015, the SNV-EDGET team, in close collaboration with government partners at all levels (see Figure 1 on page 4) further elaborated and implemented the new extension approach. The following are some of the steps that EDGET followed to develop the extension system.
Establishing Dairy Farmer Extension Groups - the hub of the farmer-led extension model

To qualify for EDGET support, farmers had to meet some basic criteria, including owning a healthy cow or heifer (preferably crossbreed). In order to facilitate training, extension services and peer learning, dairy farmers were organised into 2600 village-based Dairy Farmer Extension Groups (DFEGs). A DFEG consisted of about 25 dairy farmers in a locality.

Each group elected five leaders, who were selected on the basis of their success in dairy farming, and the initiative they had shown in continuing to improve and innovate their practice. Lead farmers also had to be willing to share their knowledge and experience with other farmers in their groups. A lead farmer was responsible for following up approximately five members of the group.

Lead farmers served as the main link with the extension agents. Following initial training, the group leaders helped to facilitate monthly DFEG meetings and farmer field days to share some of the good practices that they had learnt. During these meetings, extension agents (both DAs as well as DEPs) provided additional coaching to address challenges that had been identified by farmers and highlighted by their leaders.

Developing the extension packages

During an initial analysis of the challenges faced by smallholder dairy farmers the EDGET project had identified a number of critical constraints such as a lack of quality animal feed, poor management of calves and cows, and low quality housing. The aim, therefore, was to develop a full extension package specially designed to address these gaps as well as other needs of smallholder farmers. Another objective was to provide support to farmers throughout the year, based on an annual plan of activities at the woreda and kebele levels developed by the Livestock Department.

An extension package consisted of:

1. Locally appropriate information (suitable for the different agro-ecological zones in Ethiopia) about innovative dairy farming technology and practices;
2. Extension materials that consist of training materials (booklets and posters) for farmers and technical manuals and guidelines for extension agents. The manuals included more detailed instructions, technical information and guidelines on how to convey extension messages to farmers;

In order to address the identified problems, the project first developed and distributed three farmer extension materials in 2016, focusing on forage development, calf management, and hygienic milk production.

This was followed by five farmers’ extension booklets produced in 2017-2018 that focused on the following topics: young stock management; dairy cow management; dairy housing and manure management; forage development and management; and dairy business management.

The EDGET Project

Enhancing Dairy Sector Growth in Ethiopia (EDGET) is a five-year dairy development project implemented in 51 woredas (districts) in the three regional states of Oromia, Amhara, and the Southern Nations, Nationalities and Peoples’ Region (SNNPR). The overall goal of the project is to contribute to enhance the livelihood of 65,000 smallholder farmer households through improved dairy production and marketing. The specific goals of the project are to: (i) to double the income of smallholder households from dairy production, and (ii) improve the nutritional status of children, particularly in the first 1,000 days of their lives, through consumption of milk products.

EDGET also seeks to complement the significant investments made by the Government of Ethiopia to promote the contribution of the dairy sector to the country’s economic development.


For more information, please visit the project website at: www.snv.org/project/enhancing-dairy-sector-growth-ethiopia
In close collaboration with regional Livestock Experts, researchers and the Dairy Training Centre in The Netherlands, SNV-EDGET also developed a set of nine manuals and guidelines for extension workers covering the following topics: dairy farm management; breed improvement; dairy feed and nutrition; health management; housing and manure management; farm economics; forage production; and milk hygiene and quality; and young stock management.

Following the development of each extension package, government and EDGET experts led training of trainers (ToT) sessions at the regional level. Through a cascade system, the trainers then trained extension agents at zonal and woreda and kebele level. A total of 1,500 extension workers that included kebele-level DAs, woreda and zonal livestock experts, and EDGET staff participated in the trainings. In addition to delivering the extension packages, EDGET organised field days at woreda and regional level where farmers could meet and share their experiences. On average field days were organised once a year at regional level and quarterly at woreda level.

Synergies with the public extension system
In order to enhance the efficiency of this extension structure and ensure its long-term sustainability, SNV-EDGET worked closely with the Ministry of Livestock offices at various levels to ensure that the monthly DFEG meetings and the overall implementation of the extension work and support were integrated in the Livestock Agencies’ work planning (see Figure 1). The 51 EDGET DEPs were hosted by livestock offices at the woreda and zonal level. Regular monitoring and evaluation sessions were planned and implemented jointly with the partner government body to ensure continuous learning and adaptation of the extension system.

What did we achieve?

Improvements to the public extension system
The main innovation introduced by the project was to provide intensive training and support to extension staff as well as a core group of lead farmers, who would then pass on their skills and knowledge to other farmers. This blended approach was designed to support farmer-to-farmer learning, while also building the capacities of DAs and DEPs to provide effective extension support. To evaluate the contribution of the ToT approach in facilitating this change, the project commissioned a preliminary survey in early 2016. The study revealed that the training approach had made a significant contribution to upgrading the technical knowledge and advisory skills of extension agents and helped them to grow in their profession.
The majority of respondents (98.1%) rated the training as “good” or “very good” for its contribution to their technical knowledge, while 95% of respondents said it had improved their facilitation, coaching and advisory skills.

The survey also revealed the enhanced capacities of public extension staff coupled with the support provided by the project had led to improved extension services, as shown by indicators such as the higher frequency of visits to DFEGs and increase in the number of farmers reached.

With regard to professional development, more than 95% of respondents described the effect of the training on their professional career development as positive, more than half ranking the training as “excellent,” while the rest said it was “very good” or “good.” The extension agents also reported that as a result of the training, most DAs had passed their professional competency tests, enabling them to acquire the Certificate of Competence, a government recognised qualification.

The qualitative data collected from selected key informants confirmed the findings of the quantitative survey. Most informants endorsed the relevance of the trainings and noted that it had not only enhanced the skills of extension agents, but had also strengthened their overall performance, including their contribution to meeting government targets. Another important outcome highlighted in the survey was the role of the ToT sessions in facilitating exchanges among extension agents from different woredas, which had rarely happened before.

**Strengthening farmer-to-farmer exchange and learning**

One of the innovations introduced by EDGET was to combine theoretical training by extension agents with practical training by lead farmers. As discussed in other Practice Briefs in this series, farmers’ dairy management skills have greatly improved as a result. Among other techniques, farmers have acquired skills in urea treatment, silage making and effective microorganisms (EM) treatment of fodder and crop residues to improve the palatability and nutritional content. Moreover, the peer learning process has helped to narrow the gap between the lead and follower farmers in terms of attitudes, practice and income from dairy. For example, EDGET’s introduction of supplementary calf feed created demand from other farmers not supported by the project (see Practice Brief 3 in this series). The final EDGET evaluation also found some evidence of improvements in other dairy practices, such as hygienic milk production and handling.

While peer-to-peer learning was an improvement to traditional top-down extension approaches, there was also need to continue to evolve the extension system as a whole by incorporating farmers’ perspectives. EDGET therefore introduced peer feedback during the extension group meetings. An interesting illustration of this was feedback provided by one group when asked to pick their priority topics for training. Extension staff expected that farmers would request training on constructing improved housing for their cattle or how to use supplementary feed, but the top request was for the project supply farmers with Mazzicans and training on milk handling.

### Table 1: Achievement of EDGET targets

<table>
<thead>
<tr>
<th>Expected output</th>
<th>Indicator</th>
<th>End-of-project targets</th>
<th>Achieved targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy farmer groups promoting milk production and marketing organised and strengthened</td>
<td>Number of dairy farmer groups promoting milk production and marketing organized and strengthened</td>
<td>2,600 (2600)</td>
<td>&gt;2,600 / 100%</td>
</tr>
<tr>
<td>Number of dairy extension service providers who received ToT Training on different dairy training packages</td>
<td>490 (490)</td>
<td>1,476 / 301%</td>
<td></td>
</tr>
<tr>
<td>Number of dairy farmers who received training and extension support on dairy development</td>
<td>65,000 (65,000)</td>
<td>56,107 / 86%</td>
<td></td>
</tr>
</tbody>
</table>

(Adapted from the EDGET end-of-project evaluation, December 2017)
Notwithstanding these developments, there is still a long way to go to realise the full potential of the peer learning approach. As discussed in Practice Brief 5, the situation of female farmers, who carry out most of the day-to-day dairy management tasks, was not explicitly addressed at the start of the project. The Brief discusses steps that were subsequently taken to address this gender gap as part of EDGET’s extension support.

The following excerpts are some findings contained in the EDGET end-of-project evaluation, December 2017.

- Dairy Farmer Extension Groups provide a viable mechanism for DAs to reach a larger number of farmers with improved knowledge. 68% of intervention farmers reported being a member of a DFEG. However, their relevance depends on the demand for new information by members, and the capacity and motivation of leaders to play their envisioned roles. Overall, the DFEG model appears to have worked well.

- A total of 34 different practices related to animal health, hygienic milking practices, forage production, housing and manure management, calf management and feeding were assessed. Statistically significant differences were found for a total of 16 specific practices, i.e. where a higher proportion of intervention than comparison group farmers were found to have reported adoption of the practices.

- 47% of intervention group farmers received advice and follow-up support as compared to 6% of comparison group farmers.

- The project appears to have led to improved coverage in the provision of dairy extension/advisory services. 68% of intervention farmers participated in at least one dairy-related training or exposure visit activity, vs. 11% of comparison farmers (female- and male-headed households). 47% of intervention farmers received advice and follow-up support compared to 6% of comparison (both female- and male-headed households).

- Overall, the capacity development of public extension providers was found to be highly valuable and relevant. Recipients of the training, including DAs (Development Agents) and WLOs (Woreda Livestock Officers), frequently reported gains in knowledge related to the overall dairy development approach and on specific technical topics. The WLOs appreciated the advantages of the project extension approach.

Feedback from lead farmers and members of Adane Mekonnen DFEG, Amarrie Yewubesh kebele, Machekel woreda, Amhara region

How you share knowledge within the group?
We discuss what actions group members have implemented over the past month and the DAs identify who are the best performing farmers in a particular area. Sometime we visit the homes of the best performing farmers to learn from their experience. For example, our leader, Mr. Adane provided around 3 kg of Rhodes grass seed to six members for free.

Have group members adopted the new practices introduced by the project?
Yes. The majority of our members have planted improved forage in their backyards and built better housing for their cows. Many are also feeding their cows and calves with improved forage and concentrate. We have seen many of our members change from growing crops on part of their farm to planting forage.

Have members of the group increased their income from dairy farming?
Yes. To give you an example, one of our members, Ayalneh Mekonnen, supplies 18 litres of milk a day to Enbuly cooperative from his two cows and he gets 5,000 birr a month (about US$200). Another member, Mr. Abebaw supplies 10 litres per day and gets 2,850 birr per month. Some of our members are earning extra money from selling forage seeds such as Rhodes grass and oat. We also sell forage splits like densho and setraria to individual farmers, government offices and other projects.

Have other farmers who are not members of your group also adopted the new practices?
Six dairy farmers who are not supported by EDGET have learnt the new techniques on forage development from us. Because of this some are also supplying milk to the cooperative and earning more money from dairy farming.

EDGET staff interview members of the DFEG
Lessons learnt

Despite being implemented in the final two years of the project, EDGET’s extension approach is already showing the potential to improve the skills of public extension agents and the delivery of extension services as a whole. To create the basis for a sustainable and demand-driven service in the future, however, farmers need to be convinced that there is added value in investing in improved skills. For this to happen, farmers will need to see a clear link between the new dairy management skills gained and a rise in their income. The following are some early lessons from implementing the new extension strategy that offer some clues on how to make this transition and turn smallholder farmers into clients, rather than recipients, of extension services.

1. Farmers do learn better from practice and the experiences of fellow farmers. As highlighted in the interviews with extension staff (see box on page 6), farmers showed the greatest appreciation for practical trainings and follow up coaching support at farm level, as they could apply this directly to their own situation. Organising farmers into common interest groups is a useful experience to facilitate peer-to-peer learning and disseminate technologies and practices to many households in a relatively shorter period of time. Yet without a focused capacity building support to both the public extension system and the households’ the results will be limited.

2. Capacity building for extension agents needs to go beyond technical training: In general Ethiopian extension agents lack appropriate extension materials and adequate transport to visit farmers. Public extension agents assigned to the EDGET project also have to cope with most of these.

During internal monitoring exercises, EDGET asked government and EDGET extension staff to reflect on their experiences with the EDGET extension service.

When asked what, in their view, made the EDGET approach successful, interviewees highlighted the importance of bringing together members with a common interest in the Dairy Farmer Extension Groups (DFEGs), as it helped to focus the discussions. One extension worker valued the short time taken for meetings and the involvement of all members in selecting the date and time, which improved attendance. The combination of practical training and joint field visits was also highlighted as a good approach.

Under the EDGET system there is more support for farmers since DFEG meetings are often led by EDGET specialists or government staff. In the public extension system groups with 10 to 25 members are led by just one farmer.

Although I have been working as a livestock expert for more than 20 years the training of SNV-EDGET on supplementary calf feeding revealed to me that the critical source of milk lies not in the cow but in the calf (or future cow). Thanks to SNV-EDGET, I learnt that without the proper management of the calf it is difficult to get good yield when the calf becomes a cow.”

I now have to prepare well before going to visit groups. On the day before the monthly evaluation meetings I do my homework because farmers will ask me questions if I have not done what I promised.

In my area, if a woreda expert is asked to identify a model dairy farming area, he (she) will definitely pick one of the kebeles supported by EDGET. Also, if you ask a DA to show you a lead dairy farmer they will definitely take you to SNV target household.

On disadvantages of the EDGET approach, several extension staff highlighted the need for more regular training, and some mentioned that the delays experienced in delivering inputs, such as forage seeds and planting material, had affected the number of farmers reached. One expert noted the need to better align trainings “at an appropriate farm calendar.”

Asked whether they would continue providing extension services in the same way even after the project has come to an end, most extension staff were positive.

Yes of course! The project cannot substitute or fully support the whole government activities but it can support us by intervening in some challenging areas as development partners. EDGET left us with some important skills, as a result we will continue in such a way that this extension approach becomes our pillar.

However, some noted some practical difficulties in simply “transferring” the EDGET approach to the existing government structure.

Lead farmers cannot fully take over everything that extension staff do to support farmers. The input of extension workers (DEPs and DAs) is needed to organise as well as to bring new ideas and innovation.
constraints, but there are also some significant differences. The EDGET project provided extension agents with a lot of good quality extension materials and adequate in-service training and coaching. However, much less attention was paid to training extension agents on communication skills. Towards the close of the first phase, therefore, EDGET began to place greater emphasis on communication and didactic skills, and trained extension workers to roll out a training manual developed by SNV staff on the topic ‘Dairy farmers extension group dynamics.’ The new guidelines aimed to balance “teaching” and broadcasting of extension messages with “listening to farmers.”

3. Creating linkages in the wider dairy value chain is key to sustaining results: The rationale for EDGET’s market-centred extension approach is that once farmers have learnt and adopted improved practices, they will increase their income and be able to purchase inputs and services from private providers. EDGET’s aim was to provide free inputs to farmers on a one-off basis, following which the project expected that farmers would continue to buy these supplies at market rates. However, supply side problems – including scarcity and late delivery of crucial inputs such as high quality forage seeds and cuttings, calf feed and artificial insemination services - hampered the project from achieving this goal (see other practice briefs in this series focusing on lessons learnt from EDGET’s support to dairy cooperatives, agro-input dealers and dissemination of Milk Transportation System (MTS) technologies. It is therefore crucial to continue to bring together the key stakeholders in the agricultural sector in order to send the right signals to the market.

4. There is need for further investments to mainstream the EDGET extension approach: SNV-EDGET has followed a structured approach aimed at building the capacities of local partner government institutions to cope with the challenges they face in providing equitable and sustainable extension services to smallholder dairy farmers. As highlighted in the experiences shared in this brief, as well as the EDGET final evaluation, this approach has contributed to greater ownership by extension staff. In some districts, the extension approach has also been replicated within the overall livestock sector, which holds promise for further improvements to the public extension system. However, much more needs to be done to foster genuine dialogue and ensure that extension services remain demand driven and focused on farmers’ needs. The government has already made significant investments in an extension infrastructure that, if sufficiently capitalised and maintained, has huge potential to serve the needs of smallholders and sustain the results gained through the EDGET project. Moreover, as noted in some of the interviews with farmers’ groups and extension staff, there is need for additional training modules on core topics in dairy management. This will require further investments to deliver and continually adapt training and follow up coaching for extension workers and dairy farmers.
Conclusions
A comparison between the EDGET approach and the common constraints of the extension services in Ethiopia gives reason to believe that building on the EDGET approach will result in a more effective extension system.

Some of the reasons for this include: the selection of beneficiaries in consultation with community representatives; more interaction between farmers and extension agents than is the case in traditional extension programmes; and better equipped and trained extension agents. EDGET has also introduced measures to address bottlenecks in the supply chain and introduce smart ways to subsidise farmers. This link between extension and the broader market is critical in developing a sustainable dairy value chain.

So what is needed to scale up and further institutionalise the EDGET approach? We can identify several entry points to build on the achievements highlighted in this Brief.

Farmer-level entry points
One of the critical features of the EDGET extension model was the focus on working directly with farmers on their farms to identify and promote effective dairy management skills and practices. As further highlighted in the feedback from extension staff and DFEGs, careful targeting was an important success factor as it ensured that motivated farmers with shared interests were able to engage in meaningful exchanges.

Based on the experience of the forage development intervention (see Practice Brief 2 in this series), which was introduced at the beginning of the project, it is important to ensure that, once trained, farmers also have access to the basic inputs that they need.

The crucial question is: will the farmers continue to adopt improved dairy practices if EDGET withdraws? In Amhara there is evidence that groups are continuing to meet and discuss their issues on their own, while our experience in SNNPR region suggests that groups that are already motivated will continue to meet regularly, but other groups will need additional support. For most areas, the expectation is that peer learning alone is not sufficient to sustain interest. Some external facilitation for DFEGs will be needed, especially with regard to introducing new technical skills and innovations in dairy management.

System-level entry points
As highlighted in interviews with DAs and policy makers (see box on page 6), there is strong commitment to continue to facilitate the peer-to-peer learning approach. In Amhara and SNNPR regions especially, efforts are underway to explore ways in which EDGET’s experience can be used to inform the public extension strategy. An example of this is the establishment of joint planning sessions between EDGET and the regional governments and technical bureaus in the two regions. But a major bottleneck remains, namely the limited resources available for the public extension system. Given the importance of continued support for farmers, not only with knowledge and skills but also in establishing firm links with other actors in the dairy value chain (see Practice Briefs 6 and 7 in this series), there is need to explore a range of options to ensure the public system has sufficient means to sustain the established infrastructure. This infrastructure includes a network of trained DAs, hundreds of DFEGs, milk collection centres and dairy processing units, and agro-input dealers.

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- Supplementary calf feeding
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