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BRIDGE STORYBOOK

Personal testimonies from practitioners in the field

Building Rural Income through inclusive Dairy business Growth in Ethiopia

Kingdom of the Netherlands

BRIDGE is financed by the Embassy of the Kingdom of the Netherlands in Ethiopia

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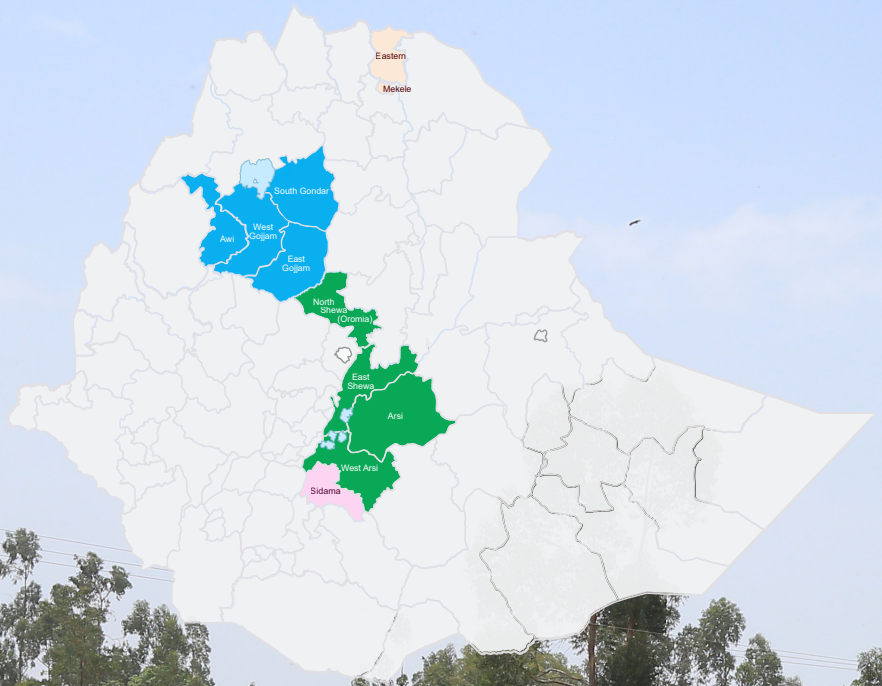
BRIDGE
INTERVENTION AREAS



* The delineation of international and other boundaries on this map must not be considered authoritative

Content

Acronyms

AI	Artificial Insemination
BRIDGE	Building Rural Income through inclusive Dairy business Growth in Ethiopia
BSG	Brewer's Spent Grain
DairyBISS	Dairy Business Information Service & Support
DFEG	Dairy Farmers Extension Group
DFIG	Dairy Farmers Innovation Group
EDGET	Enhancing Dairy Sector Growth in Ethiopia
EiE	Education in Emergencies
EM	Effective Microorganisms
ETB	Ethiopian Birr
IDP	Internally Displaced Person
GO	Governmental Organisation
LCA	Lactation Cycle Approach
MCC	Milk Collection Centre
MCP	Milk Collection Point
NGO	Non-Governmental Organisation
PLC	Public limited company
R&D	Research and Development
Rumen8	A feed rationing app (software) for dairy farmers
SMP	School Milk Program
SNV	Netherlands Development Organisation
UN	United Nations
WHO	World Health Organisation
WUR	Wageningen University & Research

Farmers getting paid after delivering milk | Photo: Tewodros Beshah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Foreword and acknowledgements

A farmer milking her cows | Photo: BRIDGE staff

This storybook aims to summarise the activities, lessons learnt as well as results the BRIDGE project (2018-2023) has been able to achieve. A diverse collection of knowledge products have been developed over the past five years, finding a way to share these products with a wider audience led to the idea of creating this storybook. In April 2023, a writing workshop was hosted by the communication services team of WUR. During this workshop, the BRIDGE action research team focused on rewriting academic content to a more popular format, focusing on streamlining the messages and writing captivating stories that inform and entertain the audience.

The stories created during this writing workshop served as a template for the creation of the storybook. After the workshop, BRIDGE-SNV staff were asked to visit practitioners in the field to listen to their testimonies. They collected personal stories on the outcomes targeted by BRIDGE, which were then written down and revised to align with the overall storybook format, always making sure the authenticity of the storyteller remained intact. This final product is the result of the collaborative efforts of the storytellers, the BRIDGE team, designers, photographers and the editorial team.

The BRIDGE project stands as a testament to the transformative power of collective action. Over five years, this initiative has demonstrably improved the lives of 82,000 dairy farming households in Ethiopia. This success story is not merely about increased milk production or market access; it's about empowered individuals and strengthened communities. This is a story of hope, resilience, and the transformative power of collaboration.

This captivating collection of personal narratives delves into the heart of the BRIDGE project. Here, you'll hear directly from the people who make up the backbone of Ethiopia's dairy sector - the practitioners in the field. Their stories are a powerful reminder that development is, ultimately, about people. This storybook marks not just the culmination of a successful project, but the foundation for the next exciting phase (BRIDGE+). We are confident that, by learning from the past, we can continue to empower dairy farmers and other diary practitioners and continue to develop the Ethiopian dairy sector.

Special thanks goes to the SNV team and researchers from Wageningen University & Research (WUR) for their collaborative efforts in the BRIDGE project and contributions to writing and editing this storybook.

The SNV team included: Abejehu Kebede, Abere Alebachew, Abiyot Besemage, Adugna Jote, Abreham Matheos, Adane Kitaba, Assefa Mogisso, Agegenehu Asefa, Askal Eyassu, Addisu Abera, Asnake Getahun, Aster Haile Aberha, Assefa Kebede, Bayissa Tesfaye, Bekele Abie, Belay Tsegaw, Belay Zeleke, Bizuayehu Alemneh, Binyam Lakew, Biratu Gesifata, Esmael Ahmed, Ephrem Girma, Fasika Ayalew, Hayimanot Addis, Isayas Abreha W/Yohannes, Ketsela Assefa, Lisan Bijdevaate, Marinus Karel van Klinken, Mekdes Asfaw, Melaku Debela, Hailu Demssie, Melkamu Abdissa, Misrak Bora Jorro, Muluken Teshome, Neima Guluma, Nigusse Semere Demeke, Sileshi Marga, Tadele Kifle Biru, Tadesse Getu, Tamiru Sahile, Tefera Lemi, Teklekiros Gidey Tareke, Petros Oyda, Tegene Tadesse, Teklu Hameso, Terefe Taye, Teshome Ayele, Tewolde Gebru Gebremedhine, Tibebe Chekol, Yenenew Bezabih, Zelalem Atnaf, Zelalem Yilma and Yared Abate.

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We recognise that development is a collaborative effort. We are grateful to everyone who played a part, big or small, in the BRIDGE project's journey. Thank you for believing in the power of transformation.

Enjoy the read!

Introduction: the BRIDGE project

Farmers exchange/field visit of forage farm, Lemu bilbilo District , Oromia Region | Photo: BRIDGE Staff

The BRIDGE project was initiated in 2018, based on the lessons from EDGET (SNV) and DairyBISS (WUR) dairy projects. The project was implemented from September 2018-October 2023 by a consortium of SNV Ethiopia and Wageningen University & Research and fully funded by the Embassy of Kingdom of the Netherlands in Ethiopia.

Milk collection - Muketuri Dairy Cooperative, Oromia region | Photo: Sharp Videography

The project aimed to contribute to improved well-being for targeted dairy farmers and improved dairy sector performance in Ethiopia. The first goal, improved wellbeing for dairy farmers, refers to direct impact created at farm level, interpreted as increased productivity and income, incentivised by a better functioning market (both for inputs and outputs). The second goal, improved dairy sector performance, refers to contributing to systemic changes in the dairy sector of Ethiopia by focusing on improving on the functioning and efficiency of the dairy value chain.

The approaches used in the project matured over the different implementation periods to ensure the project aims were realized, particularly with respect to the shift from a farmer focus to a broader sector orientation and the increased attention for markets (both in- and output markets). Nevertheless, within these broad approaches, project strategies continued to evolve in response to lessons learnt on what worked and what required to be improved, also taking into account changes in the context (either market or policies). This adaptive management approach played a pivotal role in incorporating our learnings into the project approaches and strategies. It helped in creating tangible results that had a clear impact on the livelihoods of dairy farmers but also contributed to the broader sector transformation.

The BRIDGE project interventions have created substantial impact on the targeted dairy farming households. According to reliable data during the period from the beginning 2021 to early 2023, from the 82,000 farming households reached by the project, 70,095 farmers increased their income from dairy. The increase in income is mainly due to increased access to output markets for dairy farmers, which was one of the project interventions. The initial increase in milk productivity (only 20% for farmers reached by the project), had a smaller impact on the farmers' income. Due to the poor results in increasing productivity, the

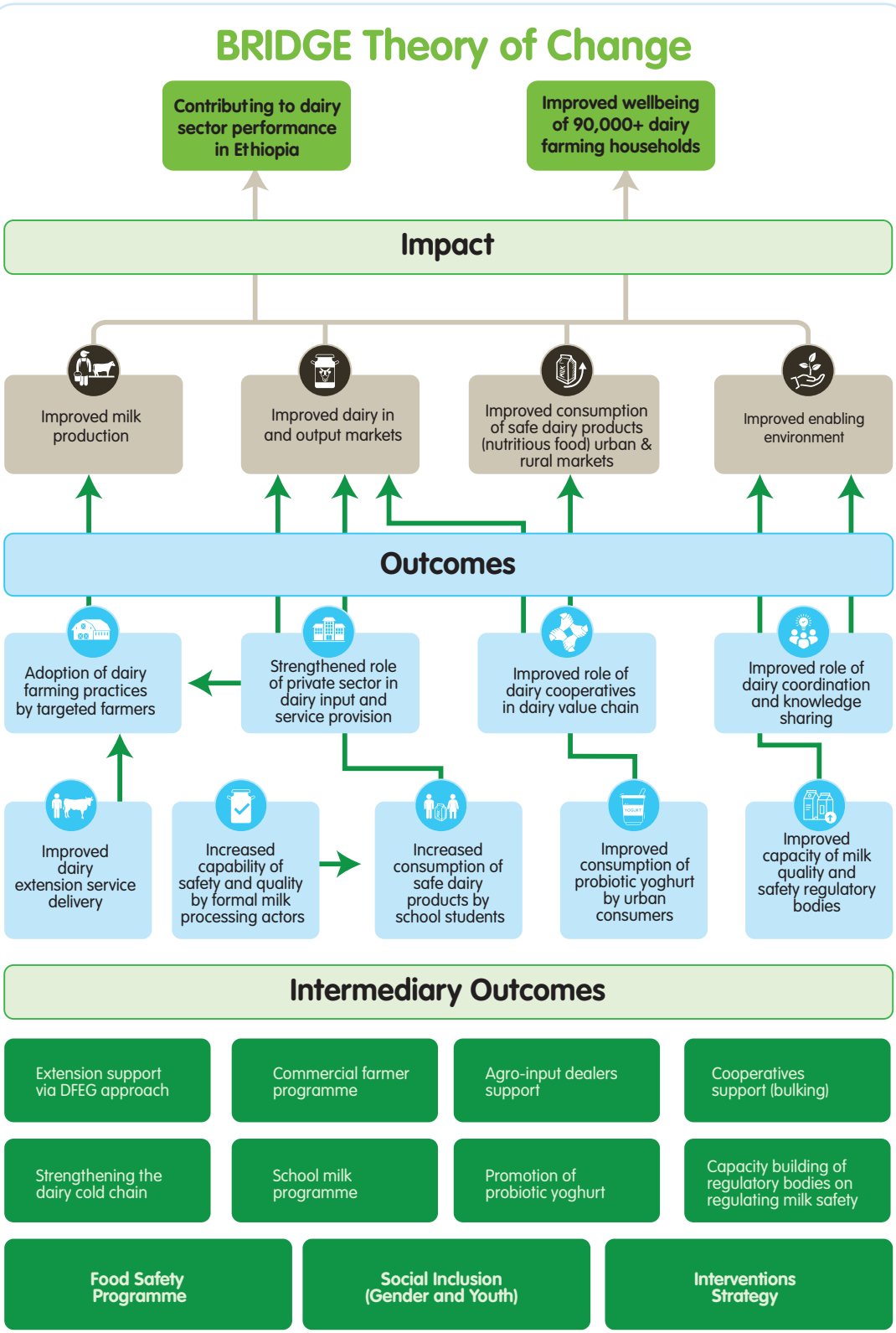


Figure 1: BRIDGE theory of change

project changed its approach from a general (broadcasting) extension approach to a more targeted and integrated extension methodology (termed the Lactation Cycle Approach). Around 3,000 farmers targeted with this approach increased their productivity with 38% (from 10.18 - 14 litres/cow/day).

At sector level, there are encouraging signs that the dairy sector in Ethiopia is going through a transformative process. The final evaluation report of the project noticed a pattern of 'take off'. The project contributed to an increased professionalisation in the dairy sector, with many dairy practices being adopted by an increasing number of farmers. The project was able to establish a rural network of input distributors (agro-input dealers), increasing outreach (118,000 farmers were served by agro-input dealers) and service provision. The distributors doubled their portfolio, supplementing conventional products with service provision like AI and chopping services. In addition, a variety of markets were strengthened (or even established), such as for forage seed and choppers (for green feed and silage).

The most significant impact has been created in the output market by linking farmers to the formal market. The average volume of milk collected by the supported dairy cooperatives significantly increased from less than 40,000 litres per day to over 173,000 litres per day. This increased the market share for cooperatives from 5% to more than 50%, for milk delivered to processors. Cooperative membership also increased significantly connecting 25,000 farmers to the formal market.

A food safety component was not included in the original project proposal, but the project benefitted from a window of opportunity, with the government introducing a regulatory framework for the dairy sector. BRIDGE actively supported the introduction of regulations of food safety, initially focusing on the supply to dairy processors, and as a result adulteration practices (that had blemished the image of the sector) drastically reduced. While food safety regulations are not yet systematically applied, the project can at least claim to have reached its objective of getting food safety for the dairy sector on the national agenda. Using probiotic yoghurt, a school milk programme was initiated in the consumption component, thereby demonstrating that a school milk programme at small-scale is feasible.

The project also introduced a commercial dairy farm programme to boost and benefit from a professionalisation drive in the sector. Significant change was achieved. The commercial farmers reached by the project increased productivity (from 11 litres/cow/day to 17 litres/cow/day), due to increased professionalisation. Probably most remarkable, a private sector market was introduced in the country for extension services:

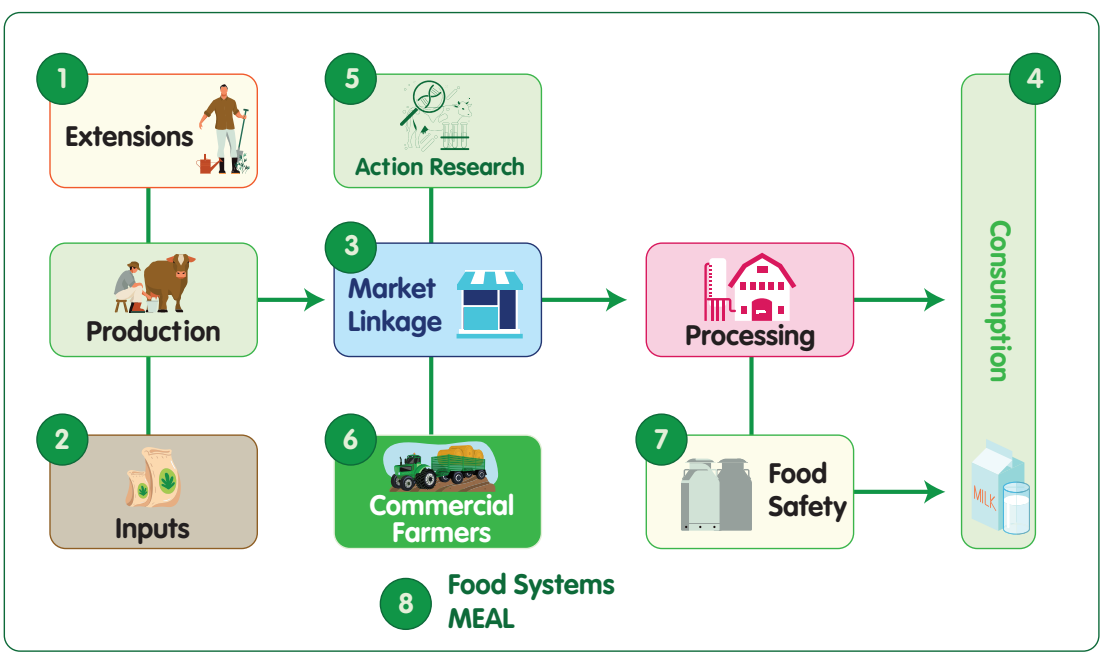


Figure 2: Project Components

Milk collection at a local MCP | Photo: BRIDGE Staff

dairy farm advisers, trained and supported by the project, were marketing their services directly to commercial farmers, who were paying for these services.

Another area where BRIDGE contributed to the sector is in action research on dairy. The project introduced an action research approach, in which not only research topics were identified by practitioners, but research was also closely integrated in project implementation (not just on-farm trials, but linking these directly to extension). Due to the close integration, the actual research output is difficult to quantify, though it played a crucial role in for example the introduction of the Lactation Cycle Approach and silage practices. The institutionalisation agenda was further advanced through the partnering with Ethiopian universities and research institutes, and their formal incorporation in research trajectories.

Overall, the project's interventions have had predominantly positive effects on sector development and transformation. In the creation of results, partner organisations have played an important role. Not just in the direct implementation of activities, but probably even more so in their contribution to embedding impact and changes within the wider sector.

This storybook

This storybook presents some of the achievements of the first BRIDGE project phase to share with a wider audience. The stories portray the lessons learnt, and results achieved over the past five years.

As BRIDGE+ gears up for the next phase, the reflection in the stories serves two purposes: to use past experiences as a foundation for future success and to acknowledge the accomplishments of the past five years.

The storybook targets practitioners and key actors within the dairy chain, aiming to showcase results and inspire continued collaboration for BRIDGE+. The content draws upon the diverse knowledge products developed throughout the BRIDGE project. Each chapter is structured based on the project outcome results.

Outcome 1:

Improved milk production

A young farmer milking a cow| Photo: Sharp Videography

When the BRIDGE project kicked off, many farmers were very reluctant to allocate more land for forage development. This was mainly due to land shortages, lack of inputs and lack of awareness (regarding the benefits of forage-feeding). However, practices such as smart rotation, species selection and smart crop combinations (for example mixing grass and legumes) have shown first-rate results for land use, soil regeneration, biodiversity and productivity. Thus, a smart approach where there is no food-feed competition, but rather food-feed symbiosis, would be ideal.

Tesfaye Haile, Farmer Oromia region | Photo: Sharp Videography

Increasing productivity through improved forage and feeding management

Antigegn Tirusew, a farmer from west Amhara, embodies the spirit of change sweeping through Ethiopia's dairy sector. "By the time I decided to allocate my land for forage development, I had already bought maize seed", he recounts. "However, I forwent the maize seed and planted various forages in the land that was originally allocated for maize production".

Antigegn's decision was met with initial skepticism. "My neighbours complained that producing 'grass' was equivalent to exposing my family to starvation", he says. But Antigegn wouldn't give up. He had a clear goal in mind: to turn milk production into a profitable business.

Antigegn's story is a beacon of success. Not only did his land allocation decision improve his own dairy operation, but it also challenges negative perceptions about forage development. However, as Antigegn himself acknowledged: "If we want to see more land being allocated for forage development, the negative convictions about land allocation will need to be tackled first".

A shift in attitude

Today, farmers are allocating more land for forage production, which is great news. Different factors have enabled the shift in attitude towards allocating more land, for example provision of seeds through smart subsidy, use of different knowledge sharing mechanisms like field days, study tours and demonstrations, and growth of the milk market. Another contributing factor to this change in mindset is that more and more farmers are getting involved in split/seed sharing. (Now that's what we call teamwork!)

Benefits of improved forages

- Increased resilience and sustainability of the systems,
- Increased land use efficiency (the ability to achieve maximum economic gain under a given amount of land input),
- Increased year-round animal productivity.

My neighbours complained that producing 'grass' was equivalent to exposing my family to starvation.

Antigegn Tirusew, a farmer from west Amhara

In addition, action research in different regions in Ethiopia has shown that it is possible to increase biomass production by at least ten times, as well as improving the quality of the forages and soil health. Furthermore, a well-balanced combination of different grass species and legumes combined with climate smart technology can greatly improve the farmers' resilience and nutrient supply to the animals. (Not to mention the benefits for the biodiversity and soil regeneration.)

What's for dinner?

The forage species used in the BRIDGE project are grasses (desho, napier, panicum maximum and rhodes), legumes (alfalfa, lablab, desmodium, stylosanthes, cowpea), and recently released oat varieties and vetch. Because of lactation, dairy cows have high nutrition requirements, which is why it is important to provide them with well-balanced, high-quality forage.

More milk, lower costs

Ethiopian dairy farmers are witnessing a surge in milk production and quality thanks to better feeds. Kasu, dairy farmer from Malga, Sidama Region: "In 2021/2022, I planted oat-vetch on 5,000 m^2 of land. In addition to preparing 2,000 kilograms of silage, I harvested green herbage from a 3,500 m^2 area, which I used to feed my dairy cows. I obtained an additional four litres of milk per cow per day by feeding them oat-vetch green herbage."

Mr. Kasu's story isn't the only success story. Across the board, farmers who switched their cows to oat-vetch herbage saw an increase of two to four litres of milk per cow per day, particularly in early to mid-lactation. Dairy farmer Mr. Gudeta from Degem, Oromia, echoes this sentiment: "I used to feed my cows concentrate, hay, and oat green herbage. But after learning about the benefits of oat-vetch mixtures and the rising cost of concentrates, I decided to plant them myself. Before the switch, I had to provide six kilograms of concentrate per cow daily, but with the improved forage, I only need three kilograms, significantly reducing my production costs." The positive effects extend beyond just quantity. The cows' new diet also improved the milk quality (feed is a major factor influencing milk composition, especially the fat and protein content).

Farmer Antigegn explains: "When I fed my cows untreated crop residues, the milk quality suffered and was sometimes rejected by buyers. Now, thanks to the improved forages, the milk quality is much better."

Asme Guade, a farmer harvesting forage
Photo: Sharp Videography

Silage: bridging the feed gap for the dry season

If cows were to speak, they would ask for silage during the dry season

Momammed Abdle, farmer from Goba Lencha

Silage preparation, Oromia region | Photo: BRIDGE staff

Why silage? And what is it exactly?

Silage is the term used for the product formed when any green plant material (for example green forages, grasses and legumes) is put in a place where it can ferment in the absence of air. The material is preserved more or less in its original condition, with minimal deterioration and minimum loss of nutrients. Consequently, the succulent, green roughage can be supplied to cattle in the dry season, or in any time of scarcity. This not only prevents milk production from dropping, but also allows farmers to reduce the costs of feeding during the dry season. Farmers in Ethiopia are critically challenged by the shortage of feed and the rising costs of milk production, particularly during the dry season. In addition, most of them are not acquainted with silage as a feed preservation technique. Which is unfortunate, given that preservation techniques like silage can help to preserve surplus forage and provide high-quality nutritious ruminant feed during the lean period.

Silage has many other benefits as well:

- It can be prepared from different forages (for example cereals, grasses, maize, sorghum, and a combination of different legumes),
- It is a climate-smart and cost-efficient solution for feed shortages during the dry season (it reduces the costs of the expensive concentrate feed fed to the cows, which leads to lower production costs),
- Silage feed can have a positive effect on the milk yield of the cows.

Promoting silage making

Although silage technology has been applied worldwide for a long time, many farmers in Ethiopia do not have access to important information on the characteristics and feeding value of different silages. Hence, BRIDGE set up trials to introduce a number of smallholder dairy farmers to the silage technique.

Farmer stories: positive results (and porridge-like poo)

Although some farmers were sceptical at the beginning of the trials, the benefits of silage feeding soon became clear. To illustrate, all the farmers in different regions reported an increase in milk production and a decrease in feed costs following silage based feeding. A farmer from north-west Oromia stated that the milk yield of his cow increased by 6 litres and levelled off when he fed her silage-based ration. An additional benefit was that his production costs dropped significantly: "Previously, I fed soybean cake-based rations, which is very expensive. I started feeding oat-vetch silage instead, which resulted in decreased feeding costs".

Lower feed costs is equal to more income for the farmers, which is very positive news! But, more importantly, the farmers were happy with the better condition of their animals as a result of the silage-based feeding. The farmers reported that their animals were in good physical

shape, their skin looked healthy and shiny, and their manure had a good porridge-like consistency. (It might sound a bit gross, but it is actually a very good health indicator for dairy cows.)

Attractive smell

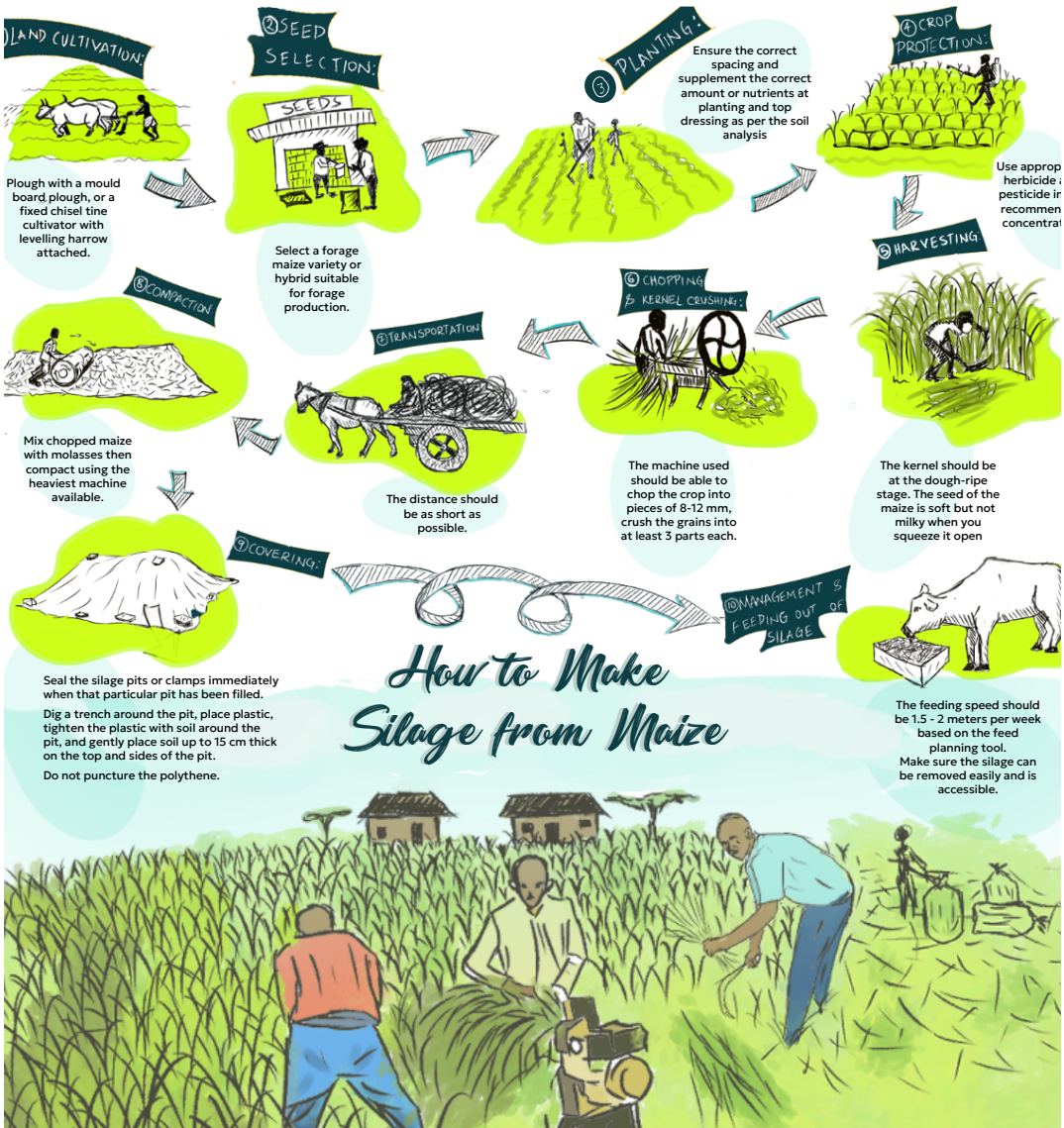
An additional – yet unexpected – effect of silage was the 'attractive' smell of the preserved material. One of the female farmers who took part in the trial said that the smell of the silage attracted a hyena that tore open one of the silage bags to see if there was something edible inside. (Apparently, not only the cows found the silage appetizing.)

Future perspectives

So what's next for the farmers? And what is the best approach to promote silage making? Given the positive results of the trials, promotion of silage making and silage-based feeding should definitely be high on the agenda. It has proven to be the best alternative for Ethiopian dairy farmers who want to continue producing milk during the dry season, but at a lower cost. An important additional benefit is the improved physical condition of the animals as a result of silage-based feeding.

One of the challenges that needs to be addressed is the price of molasses. Molasses is an industrial by-product that the farmers need for fermentation, and if the price of molasses becomes too high, this could have a negative impact on the farmers' incentive to pick up silage making. However, the good news for farmers is that they can also use locally available home-made brewery and distillery by-products (for example brint) for fermentation.

These products are cheaper and more easily available than molasses. Also, access to choppers, for example via smart subsidy, and training are necessary factors to consider.



From beer to milk

BSG silage ready for feeding, Shashemene, Oromia | Photo: BRIDGE staff

Thanks to the dual-purpose silage, I can kill two birds with one stone: my cows are making good use of the BSG, they are giving me more milk with a good fat content, and the new feed has decreased the costs of production.
Etenesh, farmer from Dato Kebele, Hawassa

It's safe to say that serving beer to your cows probably won't do them – or the quality of their milk – any good. However, while they definitely should not be consuming beer, they actually perform very well if you feed them silage that is made with the residue left over from the beer brewing process. In Ethiopia, there are about twelve breweries producing between 200,000-350,000 tons of Brewer's Spent Grain (BSG) residual. Although it is sometimes referred to as 'food waste' by-product, there is in fact a huge potential for BSG as a feed ingredient for dairy cows. The nutritional content of BSG makes it an interesting feed ingredient, especially due to its protein content (on average 25 % of the dry matter content). The BSG produced in Ethiopia could feed 60,000-80,000 cows per year, with 10 kg per day, throughout all seasons.

Implementation barriers

However, despite the benefits of BSG, there are many obstacles for implementation. For example, BSG can deteriorate rapidly due to its high moisture and nutrient content. Transporting wet BSG over large distances is also expensive because of its low weight per unit of volume (low bulk density). Therefore, wet (brewery) feeds tent to be utilised locally. Other obstacles include limited or unsuitable farm storage, lack of knowledge about the benefits of BSG and limited knowledge on how to properly formulate feeds. To prolong the shelf life of the BSG, farmers commonly drain the liquid by turning the product upside down. Another approach is to add salt to the product.

The difficulties for good conservation and heating up of the product during storage are major concerns of farmers. Crop residues such as straw, stover (the leaves and stalks of field crops) and hay are the common feeds for dairy cattle in Ethiopia. This is mostly due to their abundance. However, these crop residues are dry and are therefore less attractive for cows to eat. Also, the crop residues are often of lower quality and have low digestibility. This limits the feed and nutrient intake and, consequently, reduces the milk productivity of the animals.

To solve these issues, action research was undertaken in Hawassa and Shashemane districts with farmers and BRIDGE partners. The plan was to make silage from BSG and crop residues and investigate the effect on lactating cows' performance. Here, silage can be seen as a dual purpose technology, which is why it is promoted and scaled both within and outside of BRIDGE where BSG is an important source of dairy feed.

60,000-80,000

The number of cows that could be fed with BSG-based feed per year (when fed 10 kg feed per day).

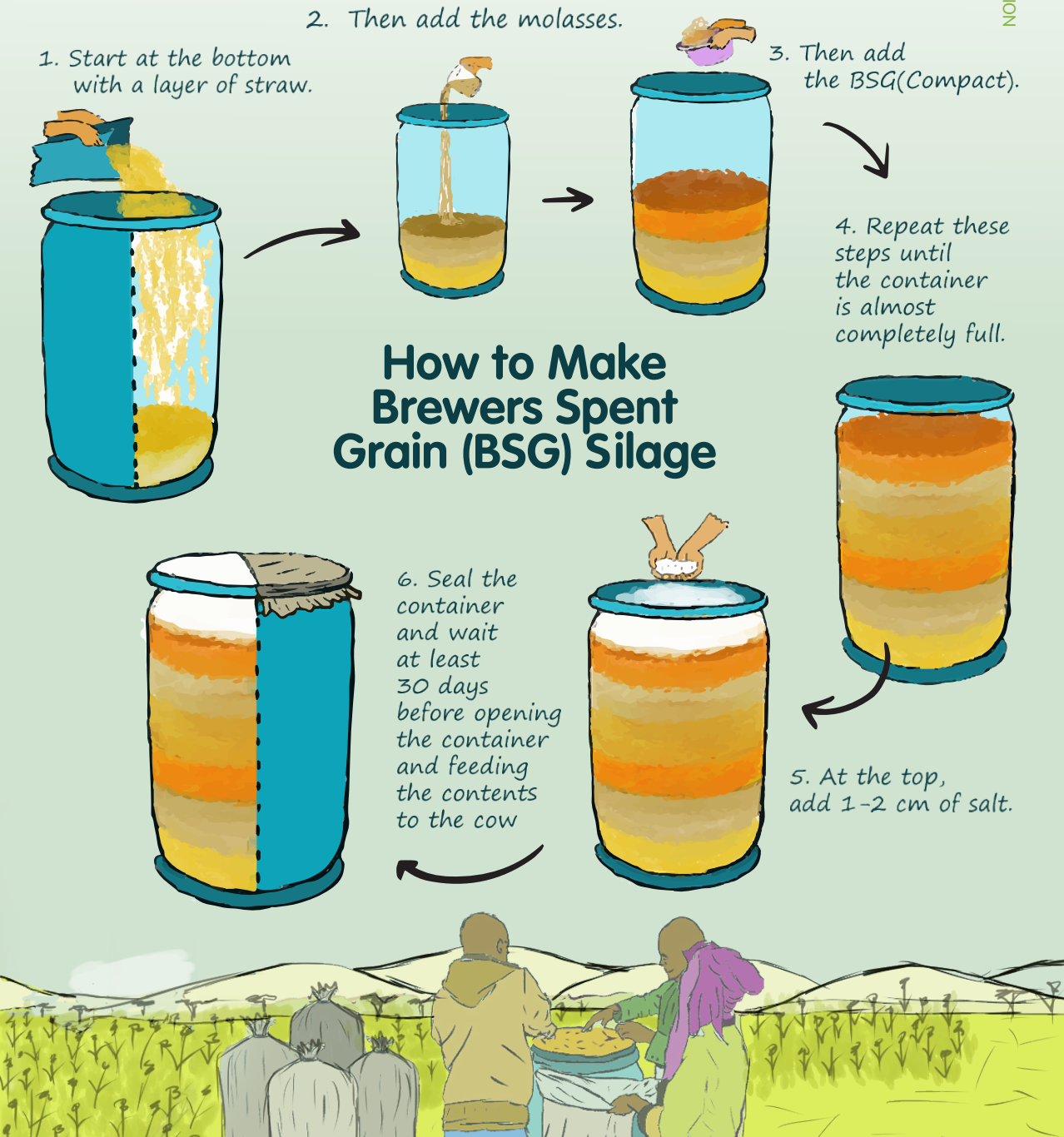
Seeing is believing

At the beginning of the trial, farmers and extension staff were skeptical about ensiling BSG with crop residues. However, they were also curious to see what would happen to the ensiled feed. The initial plan was to open the silages after 28 days of ensiling, but due to unrest in the study area, additional time was added to the preservation process. This additional time – about 25 days – had a positive impact on the quality of the silage. (An unexpected yet very welcome outcome.)

Ensiling allows more crop residues to be used, for example teff and wheat straws. The teff and wheat straws are softened, which makes them tastier for the cows. While the farmers observed the improvements firsthand, laboratory results also confirmed the improvements in the nutritional quality of the straw. After ensiling, the crude protein content of the straw increased significantly.

Benefits of Brewers Spent Grain (BSG): increase in milk yield, improved milk quality, and lower feed costs

After feeding the silage feed, the farmers that took part in the trial were very happy with the increase in milk yield. Their cows gave between two and four litres more milk every day. Also, the fat content increased from 3.8% to 4.7%, and the overall feed costs were lower than before. (That's a win-win-win situation!) The silage of crop residues and BSG could make a huge difference for the farmers' income and the milk quality. Now that's a result we can all raise our glasses to!



Access to improved forage and better feeding management skills enables farmers to enhance their dairy cows' productivity

Mulualem Admasie, farmer Amhara region | Photograph: Sharp Videography

Mamo Mekonin, dairy farmer of Shirka Woreda Lemu Tijo Kebele, started his business in 2003. But business wasn't exactly what you might call 'booming'; his dairy cows only produced two litres of milk per day, lasting only for a five-month milking period. Because he wasn't making enough money as a dairy farmer, the majority of Mamo's income came from the production of wheat, barley, and teff crops.

There were several bottlenecks and barriers that prevented Mamo from increasing his milk production, such as a lack of access to improved dairy cows, a lack of knowledge about how to obtain, create and develop improved forage, and a lack of understanding on how to improve the nutritional value of his straw.

As time passed, Mamo became more and more frustrated about these restraints, and he eventually made the decision to speak with the Woreda Livestock Office in order to resolve these difficulties. In 2015 he was invited by the Woreda Livestock Office to go to the Gobe Dairy Ranch where he was able to purchase two superior Jersey dairy cows. This solved Mamo's problem regarding the access to improved dairy cows, but because he continued to feed his cows according to the traditional feeding habits, his cows' milk production didn't change much. But that changed when he became a beneficiary of the BRIDGE project. The project gave Mamo access to trainings on how to grow various forages, as well as methods for handling straws and crop leftovers. By creating silage, improving housing management, and treating his straw with EM and molasses, he was able to enhance his dairy cows' productivity.

His family also reaps the rewards of the improvements: "My family now consumes two to three litres of milk per day, and I make ETB 600 per day by selling fresh milk and butter to my neighbour."

In order to provide his cows with access to continually green forage, Mamo plans to increase the number of milking cows and expand his current forage field.

> **Now that my income and knowledge have grown, I feel more secure. My dairy cows are producing five to 15 litres per day, even during the dry season, thanks to access to green feed, treated straw, and silage.**
>
> Mamo Mekonin, dairy farmer of Shirka Woreda Lemu Tijo Kebele

Impact of action research on forage development

Forage action research was piloted in the North Mecha district in 2019. The initiative began with a field day for model farmers, Dairy Farmers Extension Group (DFEG) leaders, and livestock experts from participating Kebeles. Discussions centered on fodder production, agricultural practices, adaptability of forage species, harvesting seasons, and the impact of different forages on milk yield based on animal types.

Convincing farmers to allocate land for forage development was initially challenging. However, by 2020 BRIDGE secured the commitment of 10 model farmers and DFEG leaders in Tekile Dib Kebele. These volunteers agreed to cultivate various forage species on their land in exchange for materials and technical support. Prior to this intervention, Tekile Dib Kebele lacked any experience with improved forage cultivation or milk marketing practices.

The turning point came in October 2020 with another field day held in the Kebele. This event attracted 65 dairy farmers and their families. Witnessing the thriving forage crops firsthand significantly shifted the farmers' perspectives. Whereas previously they were hesitant to dedicate land to forage production, they were now eager to replicate the success of the initial volunteers. The combination of seeing the healthy forages and learning about the increased income potential spurred the farmers to take action.

100 dairy farmers participated in forage development, thereby scaling up the action research results, which initially involved fewer than five farmers, in just two years.

The BRIDGE pilot's impact is undeniable. Since the intervention began, a total of 100 dairy farmers have participated in forage development activities (planting elephant grass, alfalfa, vetch, and oat) by allocating their irrigation land. This resulted in an impressive 19.53 hectares of land covered by improved forage species within the Kebele in just two years.

Forage development field visit, Aman Bunsira Farm, Tiyo, Oromia region | Photo: BRIDGE Staff

Future challenges

The biggest hurdle was securing enough planting materials for all the farmers. This shortage discouraged some from even starting, despite the potential for sharing within the community. Farmers also expressed ongoing concerns about future seed availability and the continuation of government support services (for example AI services and opportunity to purchase new cross heifers) by the government. However, despite these insecurities and challenges, more and more farmers are adopting forage cultivation, which demonstrates that the BRIDGE action research pilot was a success.

Improved fodder development; Antigegn Trusew's story

Antigegn Trusew is a smallholder dairy farmer from Enguti Kebele, North Mecha district, Ethiopia. He has seven children. Before BRIDGE, his livelihood was dependent on crop production; livestock farming was an additional means of income for the family.

Before he redirected his attention to dairy production, Antigegn already started with improved forage development with elephant grass. He tested several different species of improved forage with the intention of increasing the quality and quantity of pasture to eventually improve his cows' milk production.

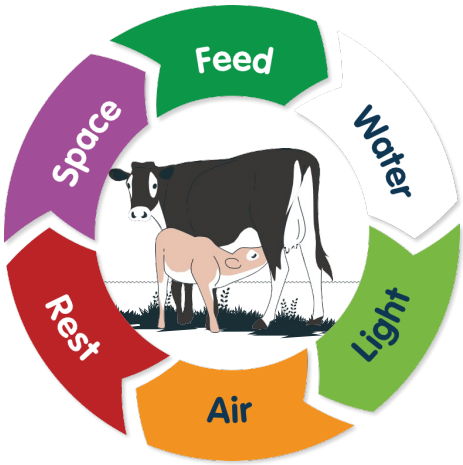
He greatly benefitted from the improved forage action research. Rather than spending thousands of Ethiopian Birr (ETB) on crop residues to feed his dairy cows - which were poor quality and resulted in poor quality milk that was often rejected by the buyer - Antigegn was able to improve his own forage production and use it to feed his cows.

He has made a complete shift in his farm management which has had a positive effect on his dairy production and has improved his family's life:

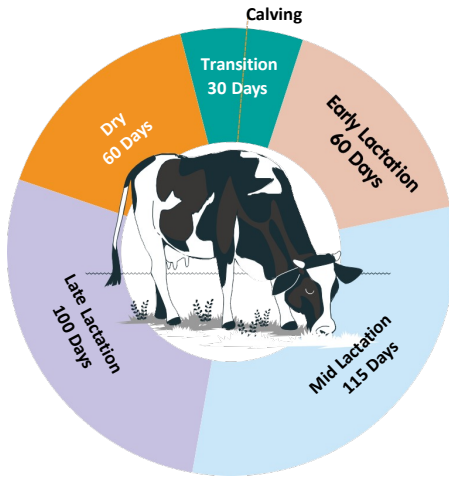
- His milk production increased from three litres per day to almost 40 litres per day,
- The production of improved forage at his farm saves the family time and money, as they no longer have to look for and purchase feed for their cows,
- He sold 60,000 root splits of elephant grass to other dairy farmers in his Kebele and neighbouring Kebeles, which resulted in an additional income of ETB 30,000.

In addition, his forage development field is now one of the demonstration sites that is frequently visited by farmers and experts. His success encouraged 25 additional farmers to be involved in forage development in 2020.

The pillars of milk production: the Lactation Cycle Approach



The six cow freedoms



The stages of the Lactation Cycle

Let's say you are a farmer in Ethiopia. What would you say if we told you that there is a simple way to improve the milk production of your cows? Would you be interested? Yes? Maybe? Well, what if we told you that it won't cost you any extra money, what would you say then? ... Perhaps you would say "I don't believe in fairy tales?" Well, this is not a fairy tale, and while the Lactation Cycle Approach (LCA) is not a magical solution that will make your cows give enough milk to fill one hundred swimming pools, it is a very useful tool that can have an enormous impact on animal performance.

In Ethiopia, dairy cows typically produce milk volumes that are significantly below their genetic potential. A cow needs different management and inputs depending on where she is in the lactation cycle. For example, during the dry period a cow and her udders need to recover before the next lactation. Improper management during this period can have a negative effect on the cow's health and milk production after calving.

Pillars of the LCA

In the Ethiopian context, to be successful in dairy production, several pillars need to be combined. We have listed the pillars below, along with some of the feedback we received from the farmers that applied the pillars.

1. Dry period (60 days)
2. Transition period (from 15 days pre-calving to 15 days post-calving)
3. Peak production (milk product at 50-60 days after calving)
4. Water and feed supply 24 hours per day
5. Cow comfort
6. Feed strategy
7. Forage quality

What is the Lactation Cycle Approach?

Cows during **early lactation** (the first two months after calving) are naturally very efficient at producing milk. This means that any change that affects production will become apparent within a very short time (1-2 days). The LCA is, essentially, a 'cow-based' approach, as the focus is on the cow's individual condition. BRIDGE set up several lactation cycle focused dairy farmer extension groups to help dairy farmers in Ethiopia put the LCA guidelines into practice and increase their cows' milk yield.

Pillars built on a foundation of trust

Animal health and productivity are key to improve livelihoods, businesses and profits. This cannot be attained without first building trust and awareness of both farmers and development agents. Trust and awareness are the keys to opening the doors towards implementing medium and long-term strategies.

> **I just offered water and forage without limit and after three days my cow's milk production increased by 5 litres.**
>
> **Before, I never dried my cows for more than a week. Now my cow has been dry for eight weeks. I have more milk and she looks healthy. After forty days from calving she already showed heat, which has never happened before.**

The following pages contain some success stories from dairy farmers benefitting from the LCA.

Increased access to advisory services: the story of Ato Desta and Terga Moges

A farmer showcasing his cowshed | Photo: BRIDGE Staff

The story of Ato Desta Yohannes and his wife Terga Moges, Wetera-Kechema Kebele of Wondo-Genet Woreda

Ato Desta Yohannes and his wife Terga Moges were part of the LCA pilot program and were very willing to follow the advice of the service providers. Ato started his dairy business as an alternative livelihood for his family almost 15 years ago. He bought a pregnant cow from a neighbouring farmer, but unfortunately she died before giving birth. Nevertheless, with the encouragement of his wife, he decided to buy a new cow, one with a young calf, to have a higher chance of her giving birth again. A sensible strategy, as it turned out, as he now owns seven adult cows and five calves that together produce approximately 100 litres of milk per day.

Ato: "When I was first contacted by the BRIDGE project staff and informed about the LCA pilot, I wasn't eager to join the program. Like many other dairy farmers in the area, I thought I already had enough knowledge and skills in managing my cows. But I came to realize that I was missing vital knowledge and management practices, for example about the need for barn ventilation and the amount of water and green forage a cow requires. I didn't want my cows to feel uncomfortable and live in an environment that restricted them in expressing their full potential. I want my cows to thrive and produce plenty of milk."

Most of the advice provided by the project staff and service providers focused on how the farmers could improve the productivity of their cows by managing them properly during each phase of the lactation cycle. Another important aim was to make sure that the cows feel happy by creating a comfortable living environment that caters to the cows' specific needs. Through careful observation, the farmers learnt how to analyse the cows' body language. This was to make sure that they were able to recognise their cows' needs, and respond accordingly. The service providers also advised farmers on how the amount of feed and water given to the cows can be adjusted, based on the lactation stages, and that their cows' milk yield can be increased by identifying the critical stages at which the cows have the highest genetic potential to produce milk.

I wasn't aware that free movement of air and light inside the barn was so important. Initially, I felt very guilty for keeping my cows inside a closed barn all the time without recognizing the positive effects of fresh air and sufficient light. Now that the barn is open, the cows seem happier, and the milk yield is better.

Terga Moges

Ato: "The service provider usually visits us at least once a week, and we had discussions together in the barn. This was always with the target cow present. This way, we could observe any signs the cow expressed and, in addition, look for factors that could affect the cow's comfort and needed to be corrected. We learnt that it's important to get the cows dry at seven months of pregnancy and that giving sufficient dry time has a positive effect on consequent lactation phases. We also learnt that keeping cows in a closed wall barn has a negative effect on the cows' health because it prevents unpleasant smells from leaving the barn; the smell of the cows' urine and faeces suffocates them and reduces their comfort, which in turn has a negative effect on the cows' productivity and overall well-being. After this particular lesson, I immediately removed portions of the barn wall to make sure the air could circulate freely and more light could come into the barn."

Besides the discussions with the service provider, Ato stated that the audio messages he received on his phone helped him to put into practice the lessons he learnt during the face-to-face discussions. He also shared the messages with fellow non-target dairy farmers and with his wife, who assists him in running the dairy business at home. Terga Moges, Ato's wife, looking affectionately at their newly born female calf, says: "If the advisory service had been limited to the trainings, I would not have been able to access the knowledge and skills I have acquired by listening to the messages on Ato's phone. As I undertake the major proportion of the tasks in managing the cows, my exposure to the improved management practices has enabled us to increase the milk volume to four litres per cow per day. In terms of our income, this means a raise of ETB 40.00 (from ETB 120.00 to ETB 160.00) per cow per day".

Another area of the LCA that caught her attention was the advice to open up the barn. Terga: "I wasn't aware that free movement of air and light inside the barn was so important. Initially, I felt very guilty for keeping my cows inside a closed barn all the time without recognizing the positive effects of fresh air and sufficient light. Now that the barn is open, the cows seem happier, and the milk yield is better."

Overall, Ato and Terga are thankful to the advisors who supported them and improved their understanding of cow management, and so were the other farmers in Ato's dairy farmers innovation group (DFIG). Ato's group was made up of 11 dairy farmers who regularly had discussions – facilitated by their service provider – on LCA management practices like barn ventilation and increasing watering frequencies. Ato states that the group meetings were valuable because they enabled group members to exchange experiences. In addition, the farmers were able to convince other farmers – who were somewhat suspicious about the LCA practices – to adopt the practices as well.

Ato: "I am very pleased with the changes, and I am grateful for the support and the knowledge I have acquired. I will definitely keep up these practices now that I have experienced first-hand that they are effective."

Young farmers making silage | Photo: BRIDGE Staff

How Shurube Alemu's dairy farm became an efficient, productive and profitable business

Shurube Alemu, farmer Bekoji, Arsi Zone, Oromia Region | Photo: BRIDGE staff

Mrs Shurube started dairying in 2008 with seven cows. Dairying is the main source of income for the family, covering all kinds of family costs including the school fees for her seven children. Similar to most farmers in the area, Shurube was implementing the common 'traditional' management practices for dairy cattle, resulting in substandard housing and underfed animals. In addition, there was no strategic feeding and progress recording.

Issa Qumbi, a trained dairy farm service provider based at Bekoji, introduced a dairy extension strategy to Shurube that transformed her dairy farming enterprise into an efficiently, productive and profitable business.

Shurube was targeted and received training on how to implement the LCA approach and received follow-up advice from Issa Qumbi. Issa provided Shurube with advice on better housing, feeding, watering, irrigated forage production, and silage making.

41.7% The daily milk yield of the target cow during the peak lactation stage increased from 12 litres to 17 litres

Thanks to Issa's full support, follow-up, and her dedication to implement the cow management practices, the daily milk yield of the targeted cow during the peak lactation stage increased from 12 litres to 17 litres. This meant an impressive 41.7% increase in daily milk yield during the peak lactation stage.

According to earlier research findings, a one litre increase in daily milk production during the peak stage implies 200 litres more milk over the entire lactation period. A five litre increase can therefore be translated into a 1000 litre increase of the entire lactation milk yield, which in turn can be translated into an additional income of ETB 35,000*.

***at ETB 35/litre of milk in the area on May 13, 2023.**

From driving to milking: Tewachew Biazen's story

In the past, Tewachew Biazen used to earn a living by using a horse-drawn cart to transport people. In June 2018, he spent ETB 10,000 on a crossbred calf intending to increase and diversify his income. But when he learnt of a primary dairy cooperative called 'Adet dairy coop' in his district where he could supply raw milk and get a reliable market price for his produce, he changed his plans and joined the dairy cooperative. Tewachew now has a herd consisting of two cows, a heifer, and a female calf. He is one of 13 dairy farmers in his village who are members of the lactation cycle focused Dairy Farmers Innovation Group.

Tewachew, following the traditions of his region, initially dried off his cow close to calving time and gave only minimal amounts of colostrum* to the calves. This, combined with insufficient management, resulted in limited milk production.

Following the advice from Tilahun Ademe, the village service provider, Tewachew started applying different farm management practices: he dried off his cow at the seventh month of pregnancy, and as soon as she stopped milking, he stopped giving her concentrate feed. Instead, he gave her hay and crop residue. It wasn't until three weeks before the anticipated delivery date that he began feeding his cow concentrate again.

Likewise, he applied a feeding system based on the stage of lactation and productive age of the cow. He fed concentrate twice per day (morning and evening) based on the milk yield of the cow, and provided 24-hour access to quality hay and water(and he made sure that the water through was cleaned daily.) Tewachew also made changes to improve his cows' housing conditions. To provide his dairy herd with air and light, he removed the plastered mud from his barn. He also applied a mixture of sawdust and dung cake as a bedding material to make sure his cows were comfortable.

The effect of all these changes was that milk production increased from 16 to 21 litres per day. Previously, it could take up to eight months after calving for the cow to show heat for insemination, but now she could be inseminated two months after calving. The weaning time of the calf also improved from 180 days to 60 days.

Making smart use of resources

It is very common to hear dairy farmers complain about the high price of feed and the price of milk not reflecting their production costs. Also, it is well known that the largest cost component of milk production is feed. But Tewachew, thanks to the advice he received from his service provider, came up with an intelligent solution which he immediately applied at his farm, which was to make smart use of his own resources. For example, he replaced his eucalyptus trees with improved forage, which provided him with more high-quality forage and resulted in him being less dependent on purchased feed. The total annual cost for his purchased feed sources used to be approximately ETB 131,000 per year, but after converting his crop land his feed costs decreased significantly. And by focusing on dairy farming his income has also increased; his gross milk sales revenue is ETB 27,000 per month, which means that Tewachew no longer has to get out his horse-drawn cart in order to earn a living. He can now focus completely on dairy farming and taking good care of his cows.

My highest daily milk yield provided to Adet dairy cooperative is 22 litres, but my aim is to increase that number to 150 litres from 7 lactating cows
Tewachew Biazen

***Colostrum provides high amounts of nutrients as well as non-nutrient factors that promote the immune system of the calf.**

"The dairy farm is the livelihood of our family": the story of Sanbato Mude

Asmamaw Worku, farmer Amhara region | Photo: Sharp Videography

Sanbato Mude is one of the members of EDGET dairy cooperative found in Wondo Genet Woreda of the Sidama region. Sanbato is a real family man with ten children, two have already graduated, and eight who are still in school in Hawassa. Besides being a family man, he has now become quite a business man as well.

Sanbato started dairy farming ten years ago with one cross breed cow – which he purchased for ETB 12,000 – and several local breeds. The cross bred cow provided, on average, 15 litres of milk per day, whereas the local breed cows only gave three litres per day: "The volume of milk produced by the cross breed was more than threefold the amount produced by the local breed," says Sanbato. However, thanks to the support of the EDGET and BRIDGE projects he was able to scale up his dairy farming activities.

As a member and leader of EDGET dairy cooperative, he received support from the EDGET and BRIDGE projects and was able to take part in various trainings (for example livestock management, cow and calf house construction, forage development, governance and leadership, and marketing). Taking part in the projects also enabled him to exchange experiences with other farmers and take part in visits organised by the EDGET and BRIDGE projects.

The support gave Sanbato the motivation he needed to expand his dairy farm. He currently owns 19 cross breeds (10 milking cows, one heifer, five female calves and three male calves) and produces 130 litres of milk per day. 28 litres are for home consumption – with 10 kids to feed, you need a lot of milk – and the remaining 102 litres are sold to Edget dairy cooperative and to local tea-shops and restaurants: "I prefer to sell some milk to teashops and restaurants because the local market provides a better price than offered by the dairy cooperatives," says Sanbato.

Sanbato spent, on average, ETB 65,000 per month on animal feed for his cows. To minimise the forage costs, he started growing Alfalfa and elephant grass on 1000 m^2 in his own backyard. Via BRIDGE he was able to take part in a training on straw treatment, which enabled him to produce animal feeds at home and save costs. "The dairy farm is the livelihood of our family. I furnished my house, bought a minibus, constructed a barn for my dairy cows, and covered the school fees for my children by the income I earned from selling milk", says Sanbato.

The support provided by the EDGET and BRIDGE projects has made a huge difference to his family's comfort and well-being. In addition, he has big plans to modernize his dairy farm; he requested support in financial linkage, milking technology, and knowledge development through additional training and experience sharing.

"I'm young and eager to learn" : The story of Dagim Siyum, 28-year old dairy farmer and committee member of the dairy cooperative in Adet town

Despite his young age, Dagim Siyum, a very experienced dairy farmer, began his career modestly with only one crossbred cow. When she calved, he would sell the calf and use the milk for personal consumption, as there was no formal dairy market in his Woreda at the time. But everything changed after the start of the EDGET and BRIDGE projects. Fast forward to 2020, when the dairy cooperative in Adet town was up and running and Dagim became one of the cooperative's primary milk suppliers. Every day, Dagim would get on his bicycle – his only means of transportation at the time – and deliver seven litres of milk to the cooperative. It wasn't an ideal situation, but he was determined to contribute to the cooperative, so he biked the 10 kilometres every day, twice a day, to deliver the milk. Thankfully, with support from the project, a MCP (Milk Collection Point) was established in his village, and supplying milk became a lot easier for Dagim. When he joined the cooperative, he was the 139th member. Currently, however, the cooperative has more than 1,100 members and Dagim is one of the coordinators of the MCP in Adet town.

"I want to increase my herd size by purchasing additional cows," says Dagim, who now owns five lactating cows, one pregnant heifer and four calves. Dagim is a great example of how farmers benefitted from the support from the EDGET and BRIDGE projects. He is young and eager to learn; he immediately began to implement the practices and advice about improved forage, using concentrate feed, and making sure his cows have 24-hour access to fresh water. He is also looking for electric (or alternative) power sources to produce green forage via irrigation.

Dagim sees dairy as a key to financial growth: "Compared to other agriculture, dairy offers a significant income boost. This lets me invest in my own business and contribute to the cooperative."

This ambitious goal highlights the significant growth Dagim has achieved since starting with a single cow.

Dagim Siyum, farmer from Adet | Photo: BRIDGE staff

Rumen8: what's on your plate?

Cows need nutritious feed to give milk. It's as easy as that. You can't run on an empty stomach, and since cows have not just one, but four stomachs, they need high-quality feed in order to keep up their strength and stay healthy.

After all, we wouldn't expect our cows to reach their full potential without providing them with proper nutrition, right? So how can we expect our dairy cows to deliver athlete-like performances without making sure they have all the nutritional building blocks that they need? We can't. It's as easy as that. If we want our cows to produce high-quality milk, we need to pay special attention to their nutritional needs. Nutrition matters. (After all, you are what you eat.)

Unfortunately, there is insufficient understanding among Ethiopian dairy farmers about cow nutrition as a driver for profitability and sustainability of the dairy farming system. Many farmers and dairy practitioners do not know how to calculate and formulate feed rations. This makes it very difficult to apply nutrition-based feeding systems. Currently, feed rationing and balancing is undertaken only by a few farmers, who are forced to rely on a handful of experts.

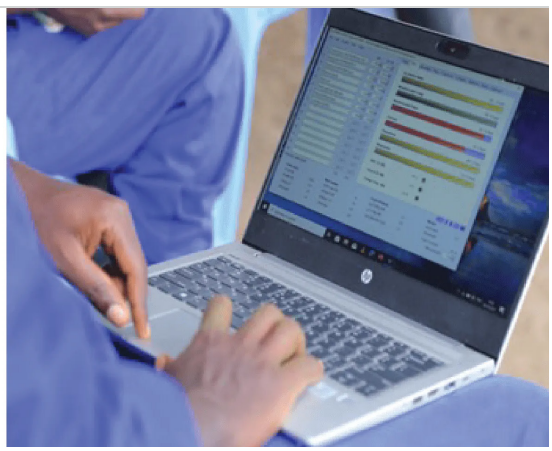
A user-friendly feed rationing app for dairy farmers

In order to make the Ethiopian farmers and dairy practitioners more self-sufficient and stimulate the application of nutrition-based feeding systems, BRIDGE developed the Rumen8 feed rationing application. It is a user-friendly application that makes it easy to apply complex ration formulations by turning it into a simple and automated process. With the app, dairy farmers can develop highly balanced rations for their cows. Also, the app takes many functional conditions of the cow into account, for example breed type, body weight, and the current volume of milk production. All the farmers have to do, is enter the information into the app, and they immediately receive customized feed recommendations. The app can give advice on how farmers can adjust and mix their existing feed resources better, which will sustain their current milk production without adversely affecting the wellbeing of the cow. In addition, the app can also be used to get advice on how feed types can be adjusted in order to milk the cow to her full potential, depending on the stage in the lactation process.

RUMEN8
Easy dairy & beef cattle diets

The app is not just *for* farmers, it's also made possible *by* farmers.

Rumen8



Using Rumen8 in the field | Photo: ProDairy East Africa

Shimels Alamirew, a farmer from Amhara region, North Mecha woreda | Photo: Sharp Videography

More than just a computer tool

Although it might seem that preparing feed advice using Rumen8 is done mostly behind the computer, this certainly is not the case. In fact, the computer-part is only 10% of the job. The most important part? Visiting the farms. During these visits, advisors and farmers can engage in interactive discussions on a variety of feed quality and dairy management issues, which is vital input for the Rumen8 app. The app is not just *for* farmers, it is also made possible *by* farmers. All the measurements on cow condition are necessary input to prepare the feed formulation.

More milk, improved feed efficiency, and higher sales margins

So far, most of the farmers who took part in the Rumen8 trial are positive about the app. They confirmed that the app supports them and helps them with questions about feed and feeding.

Ayalneh Maru, a commercial farmer from Gondar, said that he used the ration formulation from the Rumen8 app with two fresh lactating cows and observed an increment of more than 10 litres of milk per cow per day compared to the previous lactation period. The positive results prompted him to use the app for his other cows as well: "Since I started using the app, the average production of the farm has risen to 21 litres per day, while a year ago it was only seven and a half litres per day."

100 FARMERS

Dairy advisors who were trained and coached to use the Rumen8 application are now giving advice to more than 100 commercial farms and developed feed ration reports for more than 500 cows in the last year

Kassu Shiferaw, a commercial farm advisor in the Oromia region and Sendafa area, confirmed that most of the commercial farms that work with Rumen8 not only achieve an increase in milk yield, but also improve their feed efficiency. For example, Romina dairy farm attained an average milk production of 20.4 litres of milk per cow per day, whereas a year ago this was 12 litres per cow per day. Moreover, the margin - that is, the income from the milk sales minus the feed costs - increased by ETB 500 per cow per day.

Since I started using the app, the average production of the farm has risen to 21 litres per day, while a year ago it was only seven and a half litres per day.
Ayalneh Maru, a commercial farmer from Gondar

Outcome 2:

Improved input and output market

Milk collection by Sebeta Agro Industry from Muketuri Dairy cooperative | Photo: Sharp videography

Improving milk production and productivity is related to the inputs that are used, the technologies that are applied, and the production techniques that are implemented. In Ethiopia there is no effective and efficient input supply system that currently satisfies the demand of dairy farmers in terms of accessibility, quality, quantity, affordability, and timely delivery. BRIDGE supported agro-input dealers to help them play an essential role in establishing a sustainable dairy input supply system in the country. Agro-input dealers received grants, market linkages and capacity building support to provide diversified inputs and services to dairy farmers.

Agro-input dealers: what they do and why their work is important

My collaborations with the BRIDGE project have benefited me in various ways that cannot be summed up in a single word. I now know more about technology and have more knowledge about production techniques in general. I gained more clients, my income has increased, and my market linkage has also improved thanks to the project. All these results really motivated me to improve my outreach shops and develop silage marketing.

Dejene Legesse, farmer and agro-input dealer from Digelu Tijo, Arsi Zone, Oromia Region

The products and services provided by agro-input dealers can help dairy farmers achieve greater milk yields and improve the overall quality of their produce, leading to greater income and food security. The following pages contain some success stories from agro-input dealers from Oromia and Amhara.

Dejene Legesse, farmer and agro-input dealer from Digelu Tijo, Arsi Zone, Oromia Region

Dejene Legesse is a proud father of four, and his family's primary source of income is dairy farming and agricultural input supply. Over the past 15 years, his dairy farming operation has grown from having only one crossbred cow to now owning three heifers, six cows, and four calves as of 2023. Unfortunately, he was struggling to make ends meet as a result of the high costs of milk production, due to a lack of suitable feeding practices.

To cover the costs of the feed and industrial by-products required for his dairy herd, Dejene began supplying agricultural inputs as an agro-input dealer. Because of the support provided by BRIDGE four years ago, Dejene's activities eventually developed. He began supplying diversified inputs (industrial by-products, improved forage seeds, molasses*, effective microrganisms), thereby contributing to the project's input market system development in 2020.

Dejene has taken advantage of the project's opportunities by participating in market linkage, training and cost-sharing. Through the project's market system strategy, his client base grew by 97% (amounting to 4,888 new farmers) and his income increased.

Moreover, in collaboration with BRIDGE and equal cost share with the project, Dejene was able to purchase a feed chopper. He now provides chopper services and generates additional income from the service by reaching out to approximately 1,200 farmers. As a member of the dairy innovation group, through the project lactation curve approach, Dejene was able to produce 1,440 quintals of silage, resulting in a 56% decrease in the cost of production to produce 90 litres of milk per day (from ETB 4,500 to ETB 2,500 per day). Additionally, his connection with the Aleltu Dairy Cooperative, to which he supplies 90 litres of milk per day, has provided him with a higher income.

***Molasses is a by-product of sugar manufacturing that can improve ration palatability, digestibility, and energy content of feed.**

Mengstu Melesse, Extension worker of an Agro Input Dealer promoting dairy inputs to farmers in Adet, Amhara region | Photo: BRIDGE staff

Cultivating success: the story of Misael Admasu, a self-made/BRIDGE-made businessman

Wachale agro input dealer in Oromia | Photo: Sharp Videography

When Misael Admasu started his business 10 years ago, he only sold concentrate feed in his shop, acting as an agent for Alema Koudijis to distribute concentrate feed, and his only customers were local farmers from Adama town. But his business was small, and BRIDGE provided Misael with the tools he needed to grow his business.

Working in collaboration with BRIDGE, Misael received coaching and monitoring on market linkage, technical advice on business improvement, product promotion and diversification, and record keeping. He also received a grant for shop branding. Now, Misael doesn't just sell concentrate feed, but offers a wide range of products. He has even opened up two new shops at Kebele level. This was necessary to keep up with the increasing number of customers and to enable him to increase sales volume and value. And the story doesn't end there; Misael plans to open a third shop.

I feel more comfortable because I now have a sustainable income and higher profits. I have improved my business management skills and obtained useful knowledge about marketing strategies, all thanks to the support from the BRIDGE project. I am delighted that I can now be an example for other input suppliers and farmers.

Misael Admasu

Mekuriaw Teshale: the story of an agro-input visionary

I have provided extension services to 4,800 farmers and breeding services (AI) to 1,065 dairy cows, which makes me very proud.

Mekuriaw Teshale

Mekuriaw Teshale set up shop in 2015, providing inputs and meeting the demand from dairy farmers in the vicinity. But although he was doing quite well for himself, Mekuriaw was not reaching his full potential. Like many agro-input dealers in the Ethiopian dairy sector, his main focus was on retailing dairy products. Services such as artificial insemination (AI), extension- and veterinarian services – which are in critical demand among dairy farmers – weren't at the front of his mind. However, with the help from the BRIDGE project he was able to expand his business and provide these additional services to the dairy farmers.

BRIDGE covered half of the investment costs of the equipment and the costs of the staff needed to expand Mekuriaw's business. In addition, he received coaching on how to provide new services. By expanding his business, Mekuriaw was able to create job opportunities for three individuals. Moreover, 894 dairy farmers benefitted from his AI breeding service and 186 farmers benefitted from the feed chopping service for silage making and maize stover chopping.

Mekuriaw Teshale Input-dealer Shop, Amhara region, Dangla Woreda | Photo: Sharp Videography

How Kedir Alkadir, agro-input dealer from North Mecha, diversified and thrived

Agro-input dealer in North Mecha, Amhara Region
Photo: BRIDGE Staff

Kedir Alkadir started his business in 2017 with an initial capital of ETB 120,000. Up until 2020 – which is when he became involved in the BRIDGE project – he only supplied industrial by-products (for example oil seed cake and wheat bran). Not a very wide product range, one might say. But since the start of his collaboration with BRIDGE, Kedir has added to his assortment. He now provides a diverse selection of agricultural inputs and services, including concentrated dairy feed, calf feed, poultry feed, molasses, EM, feed additives and supplements.

Since 2020 Kedir supplied, on average, 500 quintals of animal feed per month, with a monthly value of ETB 600,000, which is five times the value of his initial business capital. Moreover, his business capital has grown exponentially, from ETB 120,000 in 2017 to ETB 1,400,000 today.

In the future, I want to expand my business and reach rural Kebeles, increase demand through field days and other events, and enhance advisory, transportation and credit services for customers.

Kedir Alkadir

Tsadkane Mariam AI and vet services: a woman's journey in farming innovation

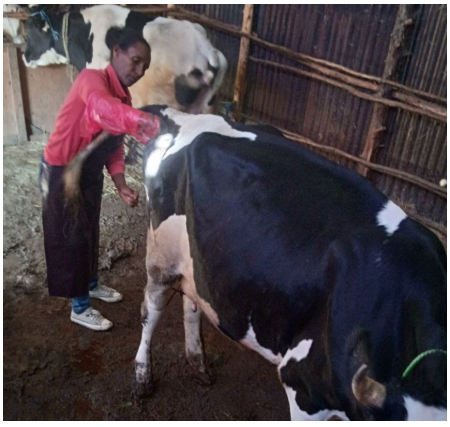
In 2020, Mestawot W/Aregay, a female entrepreneur from Sululta town, established her own AI business called: "Tsadkane Mariam AI and Vet Service". Having a diploma in Animal Health and a certificate in Artificial Insemination (AI), Mestawot began offering AI services with a private-public partnership modality. "In the initial stage of starting my business, I faced major constraints, like limited transportation possibilities and the absence of a liquid nitrogen tank, which had a negative effect on the provision of AI services to farmers in Sululta," Mestawot says.

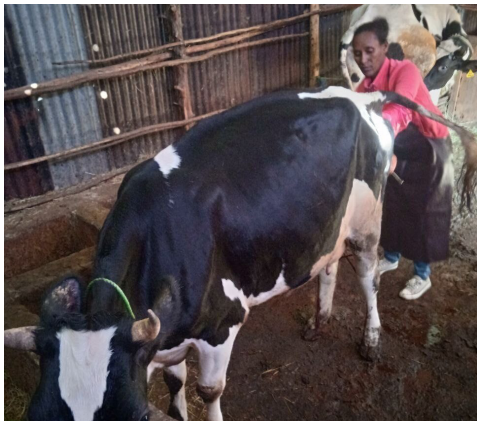
Recognizing the potential for agro-input dealers to engage in private service provision, the BRIDGE project stepped in. Through a combination of technical assistance and financial support, the project enabled Mestawot to expand her services. Mestawot used the BRIDGE project's matching grant program to purchase motorbikes and AI-kits. "These purchases allowed me to extend my services to off-road areas and the town of Chancho," says Mestawot. In addition, the BRIDGE project also connected Mestawot to feed processors and ingredient suppliers. These networking opportunities enabled her to diversify her business. "I can now also offer concentrate feed, effective microorganisms (EM), and molasses to farmers in addition to AI and veterinary services", she explains.

By supporting agro-input dealers to diversify their dairy services, the BRIDGE project not only improved the livelihood of female entrepreneurs like Mestawot, but also positively impacted the dairy farming community in her surroundings.

> **I have successfully opened two branch shops, introduced door-to-door service, and employed an AI technician to further expand my AI services.**
> Mestawot

Before receiving support from the project in 2021, Mestawot had 983 farmer clients and inseminated 520 cows per year, offering only 7 products in her shop. However, after the BRIDGE intervention in 2022, her business experienced exponential growth. She extended her reach to 3,218 farmers, inseminating 1,980 cows per year, and her shop now boasts 10 different products. And there's more: "I have successfully opened two branch shops, introduced door-to-door service, and employed an AI technician to further expand my AI services," says Mestawot.





Mestawot providing AI services at a farmers farm | Photo: BRIDGE staff

Forage seeds for sale

Give a man a fish, and you feed him for a day. Teach a man how to fish, and you feed him for a lifetime. Now you might think, "what do fish and forage seeds have in common?" That's a very viable question. However, in this case, the analogy is very relevant indeed. We will explain. But first, let's talk about why it is important to boost the forage production and utilisation in Ethiopia.

The forage seed market: why is it important?

The demand for dairy products in Ethiopia has been increasing in terms of quantity and diversity, but milk production is still unable to meet the rising demand. The milk consumption per capita (average consumption per person) in Ethiopia is approximately 40 litres, which is well below the World Health Organization (WHO) standard. One way to improve milk production in Ethiopia is by boosting forage production. Forages have a high nutritional value, and if farmers have access to high-quality feed resources, their cows' production will improve. Many studies have been carried out to test and evaluate the adaptability and performance of different forage species in different agro-ecological zones, and many potential grasses, legumes and fodder tree species were released to farmers through extension systems and development programs. Nevertheless, the adoption of forage production and utilisation remains low (less than 2% of the total feed resources). This has to change.

Is free forage seed the solution?

So why not provide free forage seed? Wouldn't that be a more efficient way to encourage forage production? Not exactly. Several research and project evaluations have argued that the free distribution of forage seed jeopardises the adoption of forage production and utilization. This in turn leads to poor market linkages between forage seed suppliers and farmers, since NGOs and GOs tend to act as market actors rather than market enablers. And this is where the fish/forage seed analogy comes in, because the NGOs and GOs should not just give the seeds (the fish), but focus on providing capacity building support to main market actors (teaching them how to fish). This is necessary to strengthen market linkage between forage seed suppliers, agro-input dealers and farmers.

Forage seed smart subsidy model

A developing forage seed market is a sustainable solution for improving adoption and utilisation. This is where the BRIDGE forage seed smart subsidy model comes in. The model was crafted to create a forage seed market system through strengthening market linkage between forage seed suppliers, agro-input dealers and farmers. The model intends to downsize the role of GOs and NGOs as key market actors and shift their role in improving the enabling environment through extension staff, forage seed producers and suppliers, R&D, and alike.

Agro-input dealers, along with the Woreda extension team, also ensure that the farmers have access to forage seed based on their demands and priorities all year round.

Bekele is a farmer in Adea Woreda who has two diary cows. He bought three forage seed varieties using the smart subsidy: "The price of oats forage seed is higher than what I pay in the open market," says Bekele. But he was rewarded by the good performance of the oats on his farm, in terms of yield and nutrient content. He got eight bags of silage with an average of 250 kilograms of silage from one hectare. That's quite a revenue!

How does it work?

At the start, farmers pay 50% of the value of seeds in cash and 50% in vouchers obtained from the project. The forage supplier reclaims these costs by submitting the voucher to the BRIDGE project. The project intends to gradually reduce its subsidy to zero in two to three years' time.

Positive results

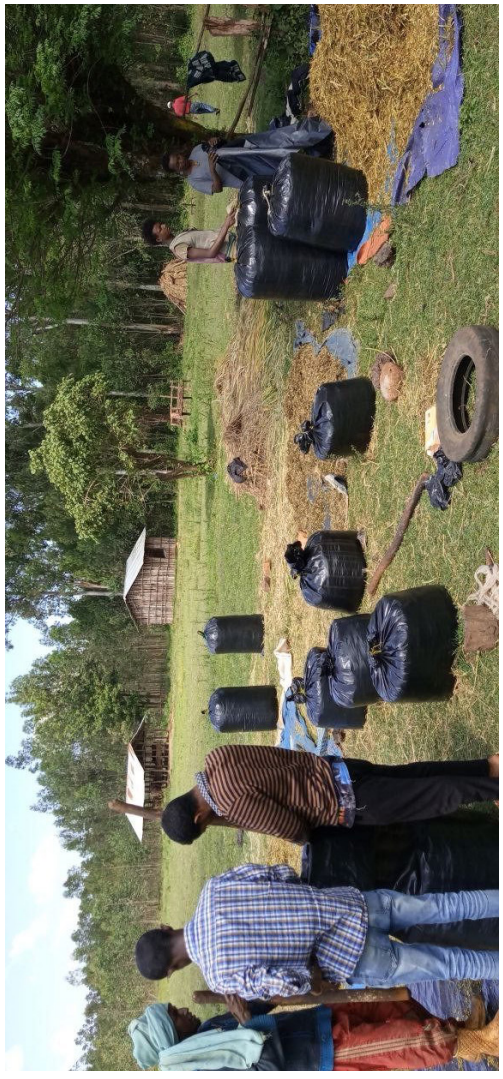
Mengistu Meles, extension provider for an agro-dealer in the Amhara region and Yilmana Densa Woreda, confirmed that the demand of forage seed by farmers increased swiftly. He stated that farmers regularly visit the shop, not just to look for new varieties of forage seed, but also to ask for technical advice. Going back to the fish/forage seed analogy, you could say that the farmers are keen to buy more fishing gear and improve their fishing skills. An additional benefit for Mengistu is that he can introduce the farmers that visit the shop to order dairy related inputs and services. He also confirmed that the working relationship with forage seed suppliers has become a lot stronger, and that the turnover of his business increased more than twofold.

If planting a garden means believing in tomorrow, the forage seed smart subsidy model resembles believing in the Ethiopian dairy sector.

Three key targets of the smart subsidy model:

- To revitalise forage seed markets, which enables forage seed suppliers, agro-input dealers and farmers to coordinate the correct supply and demand among themselves,
- To enhance the practical skills and theoretical knowledge of farmers on forage production,
- To transform the role of development partners (GOs and NGOs) from actors to enablers.

Farmers buying forage seed | Photo: BRIDGE staff



Chop, thrash, grind and crush: how feed choppers contribute to improved utilisation of feed resources

In 2021, BRIDGE conducted an assessment on mechanical feed chopper suppliers active in the Ethiopian market. The assessment revealed that the choppers supplied by Braz Marte international trading were the highest in demand among farmers. Consequently, BRIDGE signed a grant agreement with the company to provide a smart subsidy to kickstart the market for feed choppers.

The feed choppers can be used to cut forage, maize stover, straw, hay, and many other crops into small pieces. The dairy farmers use the chopped up forage and maize stover to feed their animals, sometimes adding effective microorganisms and molasses to increase the palatability, digestibility, and nutritional content. Because high-quality and palatable feed is important for the animals' performance, it is important that the farmers have access to services and technology – like the chopper service – that can help them better utilise the available feed resources.

In order to move the Ethiopian smallholder dairy value chain forward, introduction of modern livestock technologies and appropriate mechanisation is essential. To promote the feed chopper technology, BRIDGE organised demonstration events in different regions to introduce the chopper technology and service model to agro-input dealers and other potential service providers. A total of 113 clients – including agro-input dealers, dairy cooperatives, commercial dairy farms and farmer groups – purchased the chopper technology through the BRIDGE smart subsidy. Of these, 25 clients are providing continuous chopper service to dairy farmers. The chopper service providers reach more than 5,000 dairy farmers in their service provision.

How does the chopper service work?

The farmers pay ETB 150 per hour for the chopper service. In one hour, they can produce up to 400 kilograms of silage. Note: before they had access to the chopper service, the farmers had to chop the feed manually and it would take four labourers a full day to produce approximately 200 kilograms of silage!

More good news (and more milk)

While this chopper technology is still new to the area, there is already a rising demand for the labour-saving and cost-efficient technology among dairy farmers. And there's more good news: thanks to the chopping service, more sustainable employment opportunities have been created by individual service providers who otherwise employ the youth at peak periods in the farming calendar. The chopping service also enables farmers to produce milk all year round, as they can use the chopped up forage to produce silage that they can feed to their cows in the during the dry season.

ETB 150/Hr

The amount farmers pay for the chopper service

Chopper service, Amhara region | Photo: Sharp Videography

Heifer loan: Mulugeta Tsega's story

A women dairy farmer feeding her cows, Sidama region | Photo: Sharp Videography

Funding for dairy herd expansion

Mulugeta Tsega is a dairy farmer from Gumdri Kebele, Dangila, Amhara region. When Mulugeta started his dairy farming business, he only had one crossbred cow, yielding approximately six to seven litres of milk per day. But you can't run a dairy farming business with only one cow, and Mulugeta did not have the financial means to purchase more cows. However, thanks to the heifer loan provided by the BRIDGE project, he was able to purchase four pregnant heifers, thus increasing the size of his herd to five crossbred cows his current herd size is even larger, as the newly purchased heifers all delivered female calves. Currently, Mulugeta has paid off most of the heifer loan and is looking for additional funding opportunities to expand his business.

Lactation Cycle Approach

Apart from receiving the heifer loan, Mulugeta was also one of the farmers targeted by BRIDGE to implement the guidelines of Lactation Cycle Approach (LCA). Before intervention, he was feeding all his cows the same kind and quantity of feed – no concentrate feed – without differentiating between cows based on their age, lactation stage and production. He only provided them with water two times per day, and the cows' barn did not have windows or ventilation to let in fresh air and sunlight.

Mulugeta received training on how to implement the LCA, as well as technical support to help him make the necessary changes. Service providers gave him advice on the six cow freedoms – space, air, rest, water, light and feed – and how these would have a positive effect on his cows' overall health and milk production. He also joined a dairy farm innovation group (DFIG) to exchange experiences with other dairy farmers.

After practicing 24-hour water availability, smart feeding (supply of silage and concentrate feed based on the cows' milk production), providing soft bedding for the cows to improve their comfort, and making modifications to his barn to allow adequate fresh air circulation and let in more sunlight, Mulugeta's milk production increased from seven to 11 litres per cow per day. On farm- level, his milk production is now approximately 44 litres per day. Of those 44 litres, he supplies 40 litres to the Hiwot dairy cooperative, which earns him about ETB 45,000 per month.

> **My milk production has icreased from seven to 11 litres per cow, with my on farm level production coming to a total of 44 litres per day.**
>
> Mulugeta Tsega, a dairy farmer from Gumdri Kebele, Dangila, Amhara region

Transforming the role of dairy cooperatives

Muketuri Dairy Cooperative, Milk Collection | Photo: Sharp Videography

Improving milk market access for dairy farmers is one of the key outcome results of the BRIDGE project. The project helped cooperatives to strengthen their position in the dairy value chain by shifting their market orientation from focusing on the local market retailing whole milk & processed products to a bulking role linked with a broad-based formal market.

CASE STUDY 1

Fitche cooperative: unlocking the potential

Lemu Bilbilo Oromia region Milk collection & transportation | Photo: Bridge Staff

Fiche town dairy cooperative was established in 2001. At the start, the cooperative had 51 male and 11 female members and a capital of ETB 2,954. Before the start of the BRIDGE project, the cooperative had been inactive and had stopped milk collection and marketing for five years. This was due to the bankruptcy of Selale dairy union and lack of a working place, as their centre was demolished by the municipality.

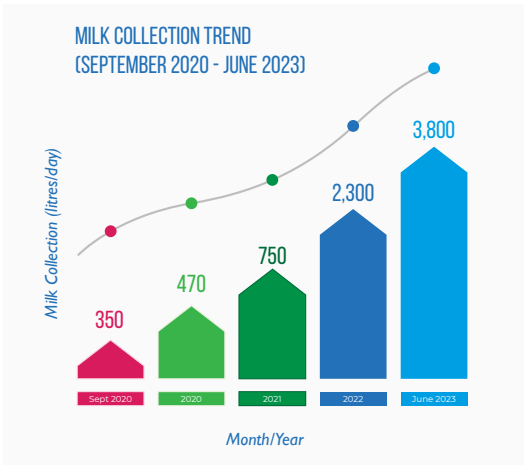
However, things took a turn for the better in 2019, when the market linkage between Holland dairy and Fiche town dairy cooperative was set up with the help of the BRIDGE team. The project brought the Fiche town dairy cooperative management committee, Holland dairy, and the Grar Jarso Woreda cooperative promotion office together to discuss the potential future and objectives of Holland dairy in the field of milk marketing. Following this market linkage facilitation, a contract was signed between Fiche town dairy cooperative and Holland dairy. Also, the Fiche town dairy cooperative signed a contract with Mizan Concentrate feed, which meant that their market linkage wasn't limited to milk supply, but they could now also focus on concentrate feed supply to their members.

In addition to the market linkage facilitation, BRIDGE also supported the Fiche town dairy cooperative in the form of a grant subsidy. This enabled the cooperative to hire a professional manager and accountant to serve their members with professional guidance in order to improve their business performance.

Since 2020, when the cooperative started their milk supply to Holland dairy, their initial milk volume was 350 litres per day. By June 2023 it had reached 3,800 litres per day. Also, the cooperation's membership grew from 133 to 256 members by the end of June 2023. The cooperative now also provides its members with embedded services such as credit-based feed supply. (With success, as this service has resulted in a nice profit for the cooperative). Moreover, the cooperative's provision of concentrate feed has created a foundation of trust between the cooperative and its members; a wonderful result that cannot be expressed in ETB.

Dairy cooperatives potential to grow

Towards the end of the BRIDGE project, Fiche dairy cooperative merged with three other dairy cooperatives which were operative in the town. By joining forces, the combined milk collection and marketing capacity eventually reached 12,500 litres per day.



The story of Fiche dairy cooperative shows that, if the cooperative management is dedicated and committed and there is support from professionals and from government and non-government bodies, dairy cooperatives can bring great change in their business performance and transform the dairy sector. The presence of reliable and sustainable market linkage is also the most important factor for cooperatives to supply quality milk and get a fair return on their business.

CASE STUDY 2

Joining forces through Kuriftu cooperative to improve the farmers' market position

Milk delivery to a processor by Muketuri Dairy Cooperative, Oromia region | Photo: Sharp Videography

In recent years, the milk production of dairy farmers in Kuriftu Kebele has been increasing, yet farmers were faced with market challenges due to the low price for raw milk, and skyrocketing prices for concentrates. The dairy farmers of Kuriftu Kebele had zero bargaining power when it came to the price they received for their produce. They were at the mercy of the milk traders, who took advantage of the dairy farmers' vulnerable position to maximise their own profits.

> **Through the support of the BRIDGE project, we were able to transform our cooperative capacity and role.**
>
> Ato Adera Agize, chairperson of the Kuriftu dairy cooperative

In 2019, more than 50 dairy farmers in Kuriftu Kebele came together to discuss their common challenge: they wanted a fair price for their produce. Ultimately, they decided that a cooperative business could be the answer to their problems. This would improve their bargaining and market position.

Hence, in December 2019 the Kuriftu dairy cooperative was established. 31 male and 28 female dairy farmers joined forces to improve their market position, and the BRIDGE project was there to help their cause. BRIDGE supported the dairy cooperative by conducting a feasibility study, developing cooperative bylaws, providing coaching and mentoring support on membership growth, providing technical and business training for the management committees, and providing funding for concentrate feed for the members of the cooperation.

Thanks to BRIDGE the raw milk collection and marketing capacity of the cooperative increased from 422 litres to 1,400 litres per day by the end of June 2023, and the price they received for each litre of raw milk increased dramatically, from ETB 17 to ETB 22.50 per litre. By joining forces, the dairy farmers now have more bargaining power. There is a valid contractual agreement, mutual trust and transparent business communication between the members of the cooperation. And the benefits that the cooperation provides for its members are clearly catching farmers' attention: since 2019, the member count of the Kuriftu dairy cooperative has increased from 59 to 144 members by the end of June 2023, and the total capital of the cooperative increased from ETB 8,850 to ETB 300,000.

> **The raw milk market is no longer monopolised by informal traders, and the price problems we faced in the past are now solved. Thanks to the cooperative, and thanks to the support from the BRIDGE project, we have increased market power.**
>
> Ato Adera Agize, chairperson of the Kuriftu dairy cooperative

CASE STUDY 3

Hiwot dairy cooperative: looking beyond the local market

Milk collection, Hiwot Dairy Cooperative
Photo: Sharp Videography

5,000 LITRES

Hiwot's marketing and collection capacity growth by the end of June 2023.

The Hiwot dairy cooperative was established in 2004 and started with 26 members and a capital of ETB 3,400. The cooperative was engaged in milk processing and retailing for the community, but for the past 10 years their milk volume never exceeded 100 litres per day. They were focused on providing milk to their own community, and did not consider venturing out to expand their market destination.

The limited processing capacity of local processors proved to be a major problem. Before BRIDGE got involved, the Hiwot dairy cooperative was working with a local processor (Alemetsehay Yatega PLC) who had a limited processing capacity of only 500 to 800 litres per day.

The BRIDGE project leaders saw that if the dairy cooperative wanted to grow, they needed to work with traders and processors outside their own community. Thus, BRIDGE contacted traders who could transport milk to Addis Ababa and supply local processors there. The first trader was Getu (Arat Mekeraker PLC) who signed an agreement with the cooperative to receive about 3,000 litres per day. The new agreement was an eye-opener for the Hiwot dairy cooperative; they now understood that the growth of their cooperative would be limited if they did not venture out.

Thanks to a new 3,000 litres capacity cooler and a 10,000 litres capacity cold chain truck (awarded to the cooperative by the regional livestock office), Hiwot dairy cooperative improved their market linkage and started to attract big buyers. They currently have market linkage with Sebata Agro industry processing plant. Currently, the cooperative has a sustainable market linkage with this processor in both fasting and non-fasting seasons. The cooperative's collection and marketing capacity has grown to more than 5,000 litres per day by the end of June 2023.

CASE STUDY 4

How grant support enhanced cooperatives capacity to expand outreach and to achieve astonishing business performance: the story of Tebabren Dairy

Tebabren dairy cooperative milk collection centre, North Mecha Woreda, Amhara region | Photo: Sharp Videography

Tebabren Dairy Cooperative was established in 2015. In 2019 – before intervention – the Cooperative had a daily average milk volume of 2,000 litres per day and a membership of 54 members. This all changed after intervention from BRIDGE and the Performance Based Reward Grant (PBRG) the cooperative received in 2021 and 2022.

Impact of the Performance Based Reward Grant (PBRG)

The Tebabren Dairy Cooperative used the PBRG funds to invest in different technologies that allowed them to expand their business. One of the first things the Cooperative did with the funds was purchase three small vehicles for milk transportation. Before, they used rental vehicles to collect milk from rural milk collection points (MCPs), but the number of MCPs they could visit was limited (only 11). However, with the new vehicles they were able to collect milk from 11 additional MCPs – so 22 MCPs in total – and in doing so create market access for more than 800 rural farmers (828 farmers by the end of June 2023). Additionally, the daily average milk volume increased to 13,000 litres per day.

New members and more jobs

The new MCPs and the three vehicles that were purchased also resulted in more employment opportunities. The Cooperative hired three young drivers to transport the milk from MCP to the MCC of the cooperative. Additionally, 10 new technicians were hired to make sure the vehicles and the MCPs remain in pristine condition.

Mindset shift

The members of the Cooperative didn't look at the government to solve their problems but took matters in their own hands. The project support made them realise that they were actually very capable to solve their issues themselves. This increased sense of ownership gave the members the motivation they needed to scale up their dairy farming practices. In turn, this newfound motivation resulted in an increased interest in technologies to increase milk production and improve AI services that would contribute to the health and productivity of their herds. Moreover, the success of the Tebabren Dairy Cooperative and the improved market attracts new farmers to invest in/join the dairy sector.

13,000 litres/day

the daily average milk volume increased to 13,000 litres per day.

Overall results

Milk quality testing at an MCP
Photo: Tewodros Beshah

131 Cooperatives

The BRIDGE project expanded from 63 to 131 cooperatives between 2020 and 2022. In 2020 The project started working with 63 cooperatives with initial milk collection capacity of 32,000 litres per day from 5,900 members

145,000 litres

The collective collection capacity of BRIDGE supported cooperatives reached an average collection capacity per day in 2022

173,200 litres

The volume of milk collected reached 173,200 litres per day by the end of 2023

25,000 farmers

The total amount of farmers connected to the formal market through dairy cooperatives increased from 5,900 to 25,000 farmers.

Outcome 3:

Nutrition and food safety

Happy students drinking yogurt, SMP Sidama Region | Photo: Sharp Videography

It's almost 10 am, the sun is already high in the sky, and the children at Atse Sertse Dingel school in Bahir Dar are queuing outside of the school building. Teachers are handing out sachets of yoghurt. Some children are so eager to get their yoghurt that they use their teeth to tear open the sachet. "They want their yoghurt so badly that they don't want to wait for us to cut open the sachet for them," one of the teacher says. Atse Sertse Dingel is one of the schools taking part in the BRIDGE school milk program pilot study. The study is coming to a close, but it is unlikely that the school will stop offering yoghurt to the students after the pilot phase.

"Where is our yoghurt?" BRIDGE school milk programme

School Milk Program Tigray region | Photo: BRIDGE staff

Why school milk?

Despite some progress, the prevalence of undernutrition among the young children is still high in Ethiopia. This is a major cause of concern, given that food insecurity and malnutrition in early childhood can have detrimental long-term health effects. For example, children can become stunted, which means that they are too short for their age. Stunting is a contributing risk factor to child mortality, and stunted children often fail to reach their physical and cognitive potential.

Dairy products are a rich source of essential micronutrients that are critical for child development. In addition to carbohydrates, protein, and sometimes fat, they provide a wealth of vitamins and minerals, including calcium and vitamin D.

Through the BRIDGE school milk programme (SMP), children have access to dairy products, providing a positive effect on their overall health. It's good that these products are supplied by the schools; not all the children receive a healthy breakfast at home, so they really need the nutrients and energy from the yoghurt to focus and participate at school. The project's target groups were pre-primary and primary school children in both public and private schools in the regions Oromia, Amhara, Sidama, and Tigray.

Parents and teachers convinced by positive results

It might be hard to believe, seeing how popular the yoghurt is with the children, but the initial reactions to the SMP were not very positive. At the start of the pilot study, many parents were unwilling to participate because they believed that their children did not like dairy products and concerns around milk safety issues and allergies. "My daughter's appetite for dairy was very low, and we believed that milk would make her feel sick," says one of the parents. "But this was not the case. In fact, her appetite has improved, she has a lot more energy, and her skin and hair are shining. Her performance at school has also improved."

> **My daughter's appetite for dairy was very low, and we believed that milk would make her feel sick. But this was not the case. In fact, her appetite has improved, she has a lot more energy, and her skin and hair are shining. Her performance at school has also improved.**
>
> A parent with a child in the SMP programme

School Milk Program Tigray region | Photo: BRIDGE staff

another parent reported that her daughter used to be tired all the time, "but now she has a lot more energy."

The teachers were enthusiastic about the effects of the yoghurt as well. All the teachers involved in the pilot study reported that they observed an improvement in the physical activity and appearance of the students. The positive testimonials of participating parents and teachers on the improved health, education performance and physical activity of participating students have triggered a change in attitude towards the consumption of dairy products.

A positive reception

Aynalem works as a Kinder Garten teacher and has 24 students. She initially had reservations about the school milk programme when it launched in April 2022, mainly because she was concerned about how it would be received by the parents. She was worried that the parents wouldn't be able to afford the yoghurt, and that providing the yoghurt to the students would create additional workload for the teachers. However, considering the benefits of the school milk programme for the children, she committed herself to the programme by talking to parents and asking them if they would be interested in joining the programme. By June 2022, 14 students in her class started consuming subsidised yoghurt. For Aynalem, witnessing students' enthusiasm and the programme's success outweigh her earlier concerns. "I can see the nutritional benefits for the students," she says, "and the school milk programme has built a good image for the school. I genuinely believe that the yoghurt has contributed to the improved educational performance of the student."

They call me 'Mr. Milk'

The school milk programme has also enhanced the social status of processors in the communities. One of the suppliers even got a 'fancy' nickname from the students at the school where he delivered the yoghurt. "When they see me, they always yell 'Mr Milk!'," he says with a smile on his face. His own children also attend a school were they have a school milk programme. "As a father, I am proud to supply the children with yoghurt," he says. "Like a gardener that waters seedlings, I give them what they need to grow strong."

"Bring back our yoghurt"

The children's enthusiasm for the yoghurt caused the school administrators and processors to start developing an interest in the school milk programme. School administrators stated that they felt 'pressured' by the children

to continue the programme. One of the administrators mentioned that the students would come up to him and ask him for yoghurt, even on the fasting days when the school didn't hand out yoghurt. However, continuing with the SMP was also in the interest of the schools. Not just because well-nourished students perform better (the yoghurt provided them with the energy they needed to focus and the nutrients to keep them healthy, which meant that the number of absentees went down), but also because the SMP led to an increase in enrolments of new students.

Probiotic yoghurt consumption: for a healthier future

Hawassa School Milk Program | Photo: Sharp Videography

Funding for dairy herd expansion

Although there are many health benefits related to the consumption of probiotic yoghurt, acceptance of probiotic yoghurt in Ethiopia is still low. In order to gain more insight into the role of probiotic yoghurt in urban consumers' diets, BRIDGE conducted a rapid consumer insight study. Additional aims of the study were to identify the attributes which give probiotic yoghurt an advantage over conventional yoghurt and understand how consumers form their intentions to purchase probiotic yoghurt.

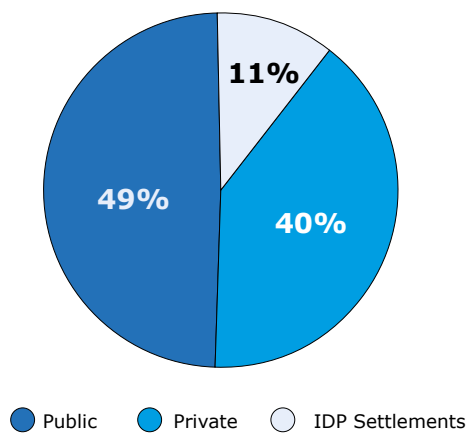
Results of the consumer study

First, some facts about the participants. The group of participants consisted of 98 men and women between 20 and 40 years old. Most of them did not have any diagnosed gastrointestinal problems, but they did report some digestive discomfort as a result of consuming dairy products, such as conventional yoghurt. More than one third of the participants mentioned the health benefits as the main reason why they preferred probiotic yoghurt over the conventional yoghurt. One of the participants who suffered from lactose intolerance had been advised by his physician not to consume any type of dairy foods. However, after hearing positive stories form other people who also suffered from gastrointestinal problems but felt fine after consuming the probiotic yoghurt, he decided to try it anyway. He stated that the yoghurt tasted creamier than the conventional yoghurt he used to eat before his diagnosis – which was a nice bonus – and that he did not experience any negative symptoms (such as diarrhoea, bloating or constipation) after consuming the probiotic yoghurt.

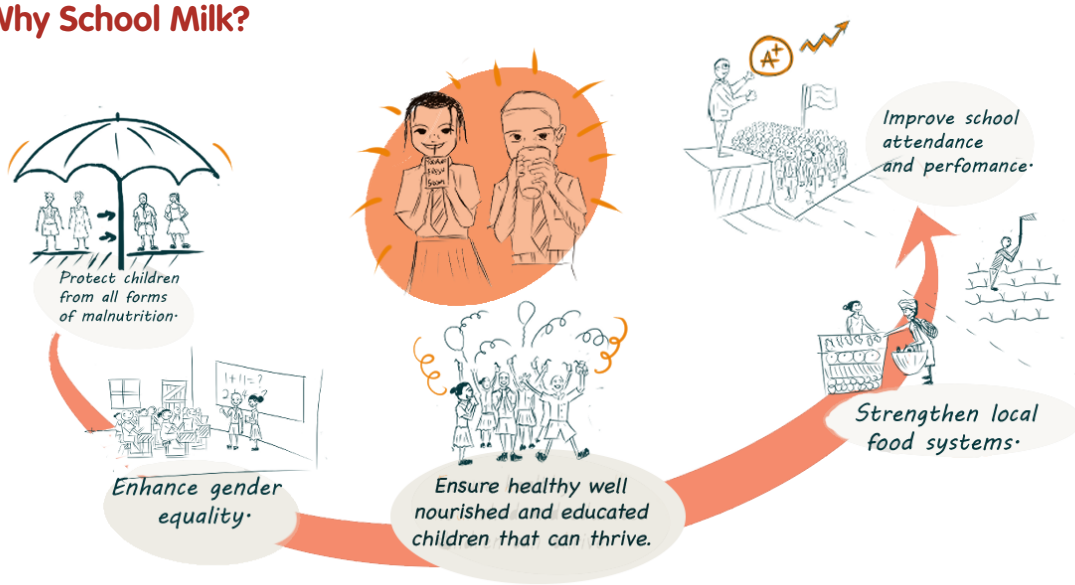
Benefits of probiotic yoghurt

- Regulates the digestive system and can help prevent and treat diarrhoea
- Reduces constipation and bloating
- It may help improve mental health by lowering stress and anxiety
- Enhances the absorption of vitamins and minerals
- Contains varying amounts of vitamins, B6 and B12, riboflavin, potassium and magnesium
- May reduce the severity of certain allergies and eczema
- Is a rich source of protein

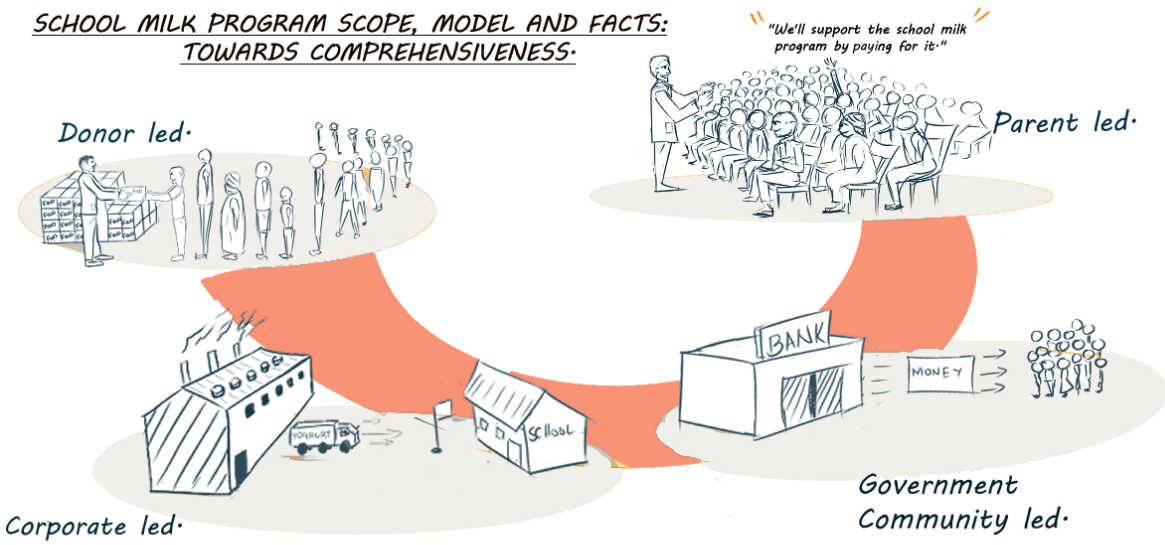
Schools enrolled in the school milk programme (before July 2023 closure)



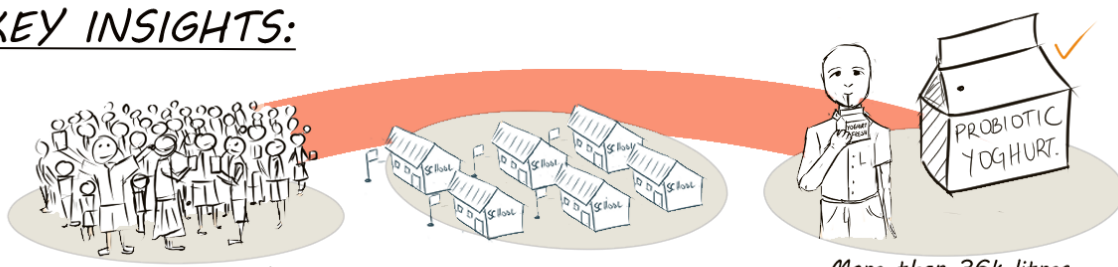
Why School Milk?



SCHOOL MILK PROGRAM SCOPE, MODEL AND FACTS: TOWARDS COMPREHENSIVENESS.



KEY INSIGHTS:



Hawassa School Milk Programme | Photo: Sharp Videography

Not your typical 'fast food'

Apart from the health benefits, taste and availability were important motivators for people to buy the probiotic yoghurt. When it comes to food, naturally, taste is important. If you like what is on your plate, you tend to eat more. Also, food products that are easily accessible or quick and easy to prepare tend to be very popular. (Just think of the vast amounts of French fries, hamburgers and other fast food items that are sold all around the world every day.) Thus, in order to boost the consumption of probiotic yoghurt, it is important that consumers have easy access to the product (for example via milk shops and supermarkets). One of the participants of the consumer study stated that he preferred the probiotic to the conventional yoghurt, not only because he preferred the taste (less sour and creamier), but also because it was quick and easy to eat during his lunch break and after work. One of his co-workers added: "I hardly ever cook at home, which is tiresome after work. Rather, I just take yoghurt, mix it with pepper and spices, and eat it with bread or injera* for my dinner."

Prospects

Overall, the people that took part in the study were enthusiastic about the probiotic yoghurt. However, to advocate the health and nutrition benefits and facilitate the consumption of the yoghurt, there is still some work to be done. The health benefits of probiotic yoghurt should be communicated by policy makers and marketing professionals to bridge the knowledge gap between consumers and producers. Also, given that availability is the number one consuming factor in purchasing and consuming the yoghurt, it should be more easily available to the public.

- 89% of participants said that they will definitely buy probiotic yoghurt again
- 95% of participants felt that they did not have sufficient information on the nutritional benefits of probiotic yoghurt

***A fermented, pancake-like flatbread, traditionally made with teff flour.**

A humanitarian approach to the school milk programme in Tigray

The BRIDGE school milk programme (SMP) was implemented in collaboration with three humanitarian organizations in response to the humanitarian crisis in Tigray. International and UN organizations' support for the Tigray children included access to food – mainly foods that were high-energy – combined with a safe environment and education in emergencies (EiE) services. For children caught up in emergency situations, education means a continuation of learning and provides a sense of normalcy and hope for a better future which is essential in the face of conflict and instability. With the knowledge and skills gained through education, they can lead the country to a better future.

The aim of the BRIDGE SMP initiative was to not only improve the nutritional status and education of the Tigray school children, but also to inspire humanitarian organizations to consider adding milk and other dairy products to their nutritional programs to children. The nutrients in the dairy products can provide the students with renewed strength and reinforced spirits and enable them to focus on their studies. Interventions by BRIDGE in Tigray included training yoghurt processors, identifying and establishing partnerships with organizations, starting a pilot study in Mekelle city (and scaling up), monitoring progress and conducting sensitization* workshops with partners and representatives of the Internally Displaced Person (IDP)** community on the programme, and organizing events to raise awareness and educate the community during the launch of the SMP.

*** Sensitization means making people more aware of something (in this case the benefits of the school milk programme).**

**** Individuals or groups of people who have been forced or obliged to flee or leave their homes, particularly as a result of armed conflict, violations of human rights, or natural or human-made disasters. Unlike refugees, IDPs remain within their country's borders.**

School milk programme Tigray region
Photo: BRIDGE staff

School milk programme Tigray region | Photo: BRIDGE staff

Key achievements

The SMP in Tigray has shown significant impacts on both the children's nutritional status and their academic outcomes. The success of the pilot in Mekelle led to the expansion of the program to various IDP sites, including Maichew, Adwa, Axum, and Shire, in collaboration with organizations like Imagine1day. The sensitization workshop provided partnering organizations and government actors with the opportunity to witness the impact of the programme.

Over 55,000 students benefited from the humanitarian SMP approach

As a result of the successful SMP intervention, milk was considered in the school feeding programme in all public primary schools in Mekelle city, benefitting over 55,000 students. The success of the program has driven interest and commitment from communities and humanitarian organizations. Partners involved in the SMP reported that they are glad that BRIDGE has assured safe milk consumption at schools and that the SMP is now an integral part of the humanitarian response efforts in Tigray.

One of the participants from Shire town public sector stated that the SMP is "more than mere food access to children," but rather a way of "building a generation physically and mentally." The children now have enough energy to sustain them throughout the day, and the school milk increases their motivation to study.

Recommendations

It is recommended to scale up the program through strengthening partnerships, set up a proper monitoring and evaluation system, and assemble evidence-based documentation to further shape the program. Further research – which will include involvement of local actors – is vital to ensure the continued success and sustainability of the school milk program.

School Milk Program | Photo: BRIDGE Staff

General conclusions and reflections for the future

Checking the quality of milk | Photo: Sharp Videography

This book tells only part of the story of BRIDGE's achievements. The project has a lot to tell. However, time and space constraints limit us from presenting all the project's successes and learnings. We believe the lessons shared through this storybook will help our partners and practitioners in the dairy sector to replicate and scale up.

Moving Forward

The BRIDGE project, as described at the beginning of the storybook, has transitioned from a project focusing on the creation of direct impact at the smallholder level to a project with a broader sector objective. It has used an adaptive management approach to adjust its interventions based on insights gained and lessons learnt. This approach has also positioned the project to make use of emerging opportunities that contribute to sector changes. The first phase of the BRIDGE project ended in October 2023 and is moving to the next phase, named BRIDGE+.

Why BRIDGE+?

Since the BRIDGE project's initial implementation has shown positive results and established a strong base, there's a good reason to consider a follow-up phase, BRIDGE+. This next phase would capitalize on the momentum to create an even greater impact within the sector.

Specific justifications are highlighted below, but not limited to:

- The BRIDGE project has addressed three systemic issues: lack of professional knowledge, an inefficient value chain and unattractive sector, through its various strategies. These systemic issues may not capture all the issues constraining performance, but they certainly play a key role and have been the bedrock for many of the actual project interventions. This also justifies seeking another phase of the BRIDGE project to broaden the effort in addressing other systemic issues.

- Earlier dairy interventions were universal, i.e. creating small changes in large areas or with many actors, but under BRIDGE this has gradually shifted to sustained activities that create a substantial impact in a focused target area or group. Now, the next phase aims to spread these successful interventions further. This will involve encouraging people to learn from each other (peer-to-peer learning) and by improving how dairy products are produced and sold (market systems development).

- Throughout the project, BRIDGE has gradually expanded its scope, with interventions aiming at sector-level impact. This has led to new approaches (e.g. cooperatives as engines of the value chain) and the initiation of additional project components (commercial farmers and food safety), which would benefit from further support to come to completion.

- BRIDGE has initiated the perspective of dairy as a business. Many smallholder dairy farmers are now willing to shift from mixed crop-livestock farming to more specialised dairy enterprises. BRIDGE+ will stimulate this transition.

- Another issue that needs attention in BRIDGE+ revolves around the climate impact of dairy farming. Discussions around the dairy industry are now taking climate change into account. While the initial focus was on making dairy production more efficient (which lowers emissions per unit of product), there's a need for more solutions to reduce the overall environmental impact. This is because the dairy sector still needs to grow to meet the demands of a growing population and provide essential nutrients.

In conclusion, BRIDGE+ represents an exciting opportunity to build upon the project's initial successes and create a lasting impact on the dairy sector. By addressing systemic challenges, scaling up effective interventions, and promoting sustainable practices, BRIDGE+ has the potential to transform the dairy landscape for the benefit of all stakeholders.

Michael Farm Improved barn supported by BRIDGE | Photo: BRIDGE staff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