

This Case Story was submitted to the 2016 CLA Case Competition. The competition was open to individuals and organizations affiliated with USAID and gave participants an opportunity to promote their work and contribute to good practice that advances our understanding of collaborating, learning, and adapting in action.

How Technology is Transforming the Dairy Sector in Bangladesh

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Credit: CARE.

What is the general context in which the story takes place?

In Bangladesh, more than 80 percent of the rural farming households consists of small-scale dairy farmers who are contributing to more than 90 percent of the milk production in the country. According to a report by country's Department of Livestock, the sector generates approximately 20 percent of full-time employment nationally. The development of Bangladesh's dairy sector holds tremendous potential for economic empowerment of the rural poor.

But the country's milk marketing system is plagued by unstructured collection and marketing systems, and an unavailability of and steep prices for inputs. The Sustainable Dairy Value Chain Project (SDVC), funded by the Bill & Melinda Gates Foundation from 2007 to 2016, works to strengthen the dairy industry in Bangladesh and improve outcomes for the key stakeholders in the process: small-scale producers, service providers, processing companies (especially the BRAC Dairy and Food Project, a key output market partner in the initiative), and consumers.

The first phase of SDVC (2007-2012) showed a noteworthy 50 percent increase in average daily milk production and a 97 percent change in income from sales of milk. But due to an unstructured milk collection system, lack of appropriate technology, and the regulatory system for milk processors

(e.g., Milk Vita, BRAC, and PRAN Foods), a broken supply chain, and the high price of inputs, small-scale producers were unwilling to invest in this activity because they did not feel confident of a long-term return. From 2013, SDVC worked to redefine the way milk is produced, collected, and marketed throughout the rural areas of Bangladesh in partnership with BRAC Dairy.

What was the main challenge or opportunity you were addressing with this CLA approach or activity?

CARE Bangladesh implemented the first phase of SDVC from 2007-2012. It focused primarily on working with producer groups, and especially getting women the tools, training, and empowerment they needed to be productive and successful dairy farmers to increase household incomes. This phase involved 36,400 dairy farmers, yielding a noteworthy 50 percent increase in average daily milk production and 97 percent change in income from sales on milk. Despite the successes, it was clear that producers had a hard time selling into the end markets. Average production was 1 liter per cow per day, well below the potential. A more sustainable solution would require a market systems-wide approach to provide the most benefit to small-scale producers

With the growing demand for milk and other dairy products, the barriers to growth were concentrated around low smallholder production systems and ineffective, opaque output market linkages. In the traditional system, the power is placed in the hands of the milk collectors, who aggregate the milk they receive from individual farmers. The collectors then sell the milk to chilling plants, which pay them based on the milk's fat content. The plants use the traditional Gerber method for testing the fat content. Collectors are paid based on the average fat content of the milk they sell to the plant, and there is no incentive for an individual farmer to have high-quality milk. Farmers receive a correspondingly low price for their milk and find little profit by selling milk to the formal markets.

Producers face barriers such as input shortages, poor cattle-rearing practices, limited access to veterinary care, and insufficient access to information. On the marketing side, poor infrastructure, inconsistent business practices by processors, and lack of transparency often discourage producers from investing in improving growth and productivity. In response to such issues, CARE and BRAC are collaborating to establish integrated dairy hubs that could overcome the barriers for smallholder producers and processors equally.

The lack of transparency also causes the processing companies to struggle. Previous methods of testing for quality were time-consuming, expensive, and inaccurate, and required extensive training. When producers have no reason to increase quality, processing companies do not get the high-quality milk they need to supply consumer demand and build a reputable brand name. Because the supply is erratic, chilling plants often operate below capacity, wasting time and resources for the processors. At the same time, there is demand in the market for up to 40 percent more production—a demand processors would like to meet.

BRAC, the second-largest processing company in Bangladesh, agreed to work with SDVC. Its motives went beyond higher quality, a more stable source of milk, and more profit: As a social enterprise,



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BRAC also wanted to get more money into the hands of producers, rather than seeing it diverted to middlemen. It was looking for a way to connect with producer groups and train people for higher-quality milk production so individual farmers would benefit.

Describe the CLA approach or activity, explaining how the activity integrated collaborating, learning, adapting culture, processes, and/or resources as applicable.

To solve these challenges, CARE piloted a process of testing the quality of individual farmers' milk and paying a premium for high-quality milk. It worked with 2,400 farmers and used basic digital ultrasonic milk testers; the results were extremely promising. Eighty-seven percent of farmers received a higher price for their milk. Not only did producers benefit from improved income, but so did the processing companies, which realized higher milk production with higher fat content. The evidence was strong enough for CARE to show the approach to different formal milk processors, and BRAC was convinced to partner with CARE.

CARE and BRAC adapted the pilot to build a better system. They switched to a slightly different testing technology, and introduced the Collection Point Model with digital fat testing (DFT) for 89 collection points and 22 chilling centers. The Collection Points are run by independent businessmen and women who sell high-quality milk to BRAC on a per-liter commission. Each collection point has a DFT machine that prints receipts recording the producer number, the quantity collected, the fat content, and the price per liter. Collection point managers take the milk to a BRAC chilling center, which uses a DFT machine to test the milk again and confirm quality. Using this data, producers and collection point managers are paid on a weekly basis.

The DFT machines also store data into an online platform. This system includes a data dashboard and a management information system that allows project management staff and BRAC employees to see trends, make adjustments to training, find new areas to productively invest, and reduce the workload of their staff. The online system includes producer and quality data, as well as geographic information system data about service providers, producer groups, and collection points that allows them to invest in resources that will do the most good for their supply chain. They also get a platform through which they can reach out to the producers with new tools and information, and access the support of CARE in providing women-focused training for improving the quality of the milk supply. Because SDVC was able to create an environment in which BRAC saw the benefits of real-time data collection, BRAC changed its *entire* system to include an automated data dashboard for decision-making, not just its system in SDVC areas.

SDVC solved the input supply problem using Krishi Utsho, a CARE Bangladesh social enterprise project, an initiative to implement the rollout of access to quality and services as a part of SDVC through a micro-franchising network. It is a supply chain and distribution network of different agro inputs, all linked by a common brand but owned by individuals. Krishi Utsho sells inputs such as dairy feed and veterinary medicines to farmers through a network of franchises, generating both financial and social returns.



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Additionally, the project uses the Hub Model, which connects producers to output market through DFT collection points. Producers can purchase inputs on credit showing the payment slip received from DFT machine. Service providers receive payment once a week.

Using this data platform, along with regular follow-up with producers, CARE and BRAC hold monthly coordination meetings to make necessary changes to operations. Other changes include shifting the hours that BRAC accepts milk at the chilling plant in order to accommodate local realities. Most recently, it also means BRAC choosing to invest in scaling up the model to 90 new collection centers across its entire system, because the model has been so successful for them.

Were there any special considerations during implementation (e.g., necessary resources, implementation challenges or obstacles, and enabling factors)?

It took longer than SDVC anticipated to install the first batch of DFT machines in 2012 and engage producers to the collection points. Causes included having to import the DFT machines, and access to the collection points was difficult without support from CARE and/or BRAC.

Another challenge was changing smallholders' behaviors and patterns of selling milk. For the last several decades, smallholder farmers in the north and northwest of Bangladesh have been accustomed to selling their milk to informal market processors. CARE had to convince farmers that they could receive higher economic returns from BRAC through higher fat content and actual weight measurement, as well as communicate the other benefits of DFT machines/collection points, such as transparency. Once farmers make the joint decision to participate in the process, they also need time to improve their milk to a 3 percent fat content, the minimum to participate with DFT machines.

Another challenge was empowering milk collectors to run DFT machines/collection points as their own businesses. Collectors need to be trained to create marketing awareness events to increase the number of dairy producer customers, leading them to greater milk volume and, ultimately, higher income.

Additionally, producers often prefer receiving a lower price for their milk in exchange for immediate cash. The DFT system is credit-based, and farmers are paid for their milk weekly, not immediately. CARE must try to encourage farmers to accept a larger, but delayed, payment.

Another challenge is collectors' resistance toward DFT itself. Many collectors have been resistant to this change, but the economic incentives are hard to turn down as income improves and milk supply increases.

As CARE moves forward with the DFT initiative, a key consideration is how to scale up the program. In order to maximize project effectiveness, CARE is analyzing production yields and fat content of producer groups throughout northern Bangladesh. The aim is to identify locations with the lowest production levels and fat content. These areas will be targeted for installation of DFT machines. Another important part of improving the dairy market is to strengthen linkages between market



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players to make the supply and demand of milk as consistent as possible. CARE must work to link collectors with multiple suppliers in both the formal and informal sectors. This will ensure that collectors can always sell their milk, even if a chilling plant is not accepting milk on a given day.

Finally, it is critical to have good private sector partners to take the initiative forward. In 2012, when CARE approached processing companies with the pilot data, BRAC was the only partner to accept using the system and focus on the pro-poor methods. This was because of its explicitly social mission. Now that the model is proven on a broad scale, several other processors in the sector want to adopt it, even though they were not convinced of the business case earlier.

With your initial challenge/opportunity in mind, what have been the most significant outcomes, results, or impacts of the activity or approach to date?

This system has benefits for all of the stakeholders.

- 1) **Producers see an average income increase of 373 percent**, and get an honest point of sale close to home. They have a clear and transparent record of production volume and prices. They can earn up to two times more per liter through this quality-based method than by selling in the informal market. Producers also get a loyalty bonus of \$0.013 per liter from the milk processors after every 3 months to reward continuous involvement with the system.
- 2) **Collection point managers' income increased by 71 percent**, to an average of \$292 per month. They have a record of each producer, and a clear set of transactions that document their own commission. Extension workers and training help the producers in their community produce more milk (raising collectors' commission). The collection point becomes a hub for dairy information in the community.
- 3) **Chilling plant managers have a consistent stream of high-quality milk**. Average milk fat content increased from 4.07 percent to 4.5 percent. The collection points and producer groups offer a platform and a loyal set of producers to reach with new training, tools, and approaches if they want to encourage a change in supply. They also have instantly accessible, transparent records.
- 4) **BRAC** gets a loyal supply of producers and access to high-quality milk. The quantity of milk coming from SDVC-trained producers went from 2 percent of BRAC's supply chain in 2012 to 55 percent in 2015. BRAC's business grew by 31 percent in 2015, and it has decided to scale the model up to its entire supply chain.
- 5) **The market as a whole is stronger**. Producers sell directly to processors and eliminate middlemen. The variety of small businesses develops entrepreneurship and encourages micro-franchises in private-sector business growth (e.g., dairy input shops, livestock health services).

What were the most important lessons learned?

This provides us with a useful set of guidelines for engaging with broader private-sector initiatives and market-based solutions and useful lessons to apply to developing technology-based solutions to

any of our development approaches. BRAC is using the approach to revolutionize its entire model, not just the places where CARE works.

- 1) **Having a trusted broker in the system is critical.** CARE was able to work with all of the different stakeholders by aligning their interests and finding a system that served everyone. Those partners do not traditionally work together or have a somewhat adversarial relationship (such as between producers and traditional milk collectors), so finding ways to overcome those barriers and create transparency is vital.
- 2) **Test, prove, redesign.** Rather than settling on one technology and rolling out widely, CARE and our partners went through extensive phases of piloting and re-working the system in terms of what DFT machines to choose, how to analyze data, and what information was most important. We did not stop at just one method, but continually added features (such as the geographic information system component) when problems or other needs arose.
- 3) **Engage partners.** CARE does not do this alone. We work closely with BRAC in monthly coordination meetings and with producer groups through various participatory tools. We do not prioritize our own experience over that of the farmer or the private sector; we try to find ways to bring all of the actors together.
- 4) **Participatory approaches are key.** Our experience showed that participation worked better in establishing DFT/collection points, and motivating participating producers and developing their knowledge and skills.
- 5) **Consistently monitor user experience.** The check in/out survey helps to identify duplication of producers in the system, provides insight into producers' barriers, and helps improve the implementation strategy.

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