SNV

The Inclusive Dairy Enterprise (TIDE) project

Close-Out Magazine

Facilitating dairy sector transformation in Uganda

ACRONYMS

ACF	Agriculture Credit Finance
CIAT	International Centre for Tropical Agriculture
CDU	Cooperative Development Unit
DDA	Dairy Development Authority
EKN	Embassy of the Kingdom of the Netherlands
FAO	Food and Agriculture Organisation
ILRI	International Livestock Research Institute
ISDAP	Integrated Smallholder Dairy Development Programme
LCB	Local Capacity Builders
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MCCs	Milk Collection Centres
MoES	Ministry of Education and Sports
MoH	Ministry of Health
Mba	ZARDI - Mbarara Zonal Agricultural Research and Development Institute
MUST	Mbarara University of Science and Technology
NARO	National Agricultural Research Organisation
PTA	Parents Teachers' Associations
PDTFs	Practical Dairy Training Farms
QBMPS	Quality-Based Milk Payment System
SACCOs	Savings and Credit Cooperative Societies
SDG	Sustainable Development Goals
SMP	School Milk Programme
SNV	Netherlands Development Organisation
TEA	Training, Extension and Advisory Services
TIDE	The Inclusive Dairy Enterprise
UCCCU	Uganda Crane Creameries Cooperative Union
UDBL	Uganda Development Bank Limited
UPE	Universal Primary School Education
WUR	Wageningen University and Research

CONTENTS

FOREWORD

I am delighted to present this report on our transformative Inclusive Dairy Enterprise (TIDE) project. This initiative has bolstered Uganda's dairy sector, a rapidly growing industry that significantly contributes to the country's economy, nutrition, and employment.

The dairy sector in Uganda faces numerous constraints, such as a lack of quality breeding stock, shortage of water and feed resources during droughts, and poor integration in commercial dairy value chains. Through TIDE, our commitment was to enhance the overall productivity and sustainability of the sector. We have worked tirelessly to ensure that our interventions are tailored to the unique needs of each farmer, fostering a business-oriented approach and promoting sustainable practices.

Our multifaceted approach included technical training, financial support, market linkages, and social inclusion strategies. We have strived to create an environment where farmers can thrive, equipping them with the necessary tools and knowledge to succeed. From providing incentives to kick-start the adaptation of farming practices to facilitating access to finance for necessary investments, we have endeavoured to address the myriad challenges smallholder farmers face.

This report provides an in-depth look at our efforts and achievements. Our TIDE impact over the last eight years is significant: 21,823 farmers supported across 130 cooperatives, a 174% growth in cooperative membership, and a substantial 58% increase in milk volumes purchased under the quality-based milk payment system by 11 processors, demonstrating our commitment to amplifying market opportunities for dairy farmers. We also reached nearly a million children through milk and yoghurt programmes under the stewardship of the Ministry of Education and Sports.

While we are proud of this TIDE impact, we recognise that there's still work to be done. As we move forward, SNV is committed to intensifying our mission of facilitating dairy farmers, especially smallholder farmers and transforming Uganda's dairy sector. In 2022, the Embassy of the Kingdom of the Netherlands committed additional funding to implement our Integrated Smallholder Dairy Development Programme (ISDAP), which targets 15,000 smallholder farmers in Southwestern Uganda for improved livelihoods, income and food security. This focus shift aligns with SNV's new 2030 strategy, which focuses on bolstering the productivity and incomes of smallholder farmers. We aim to foster sustainable food production and resilient agricultural practices, addressing all aspects of the agri-food system. Our comprehensive approach targets everything from production to waste management, transforming food systems and contributing to SDG 2.

We hope this report will serve as a testament to our achievements and a roadmap for our future endeavours. Our experiences and lessons learned can provide valuable insights for other stakeholders in the dairy sector and contribute to the broader discourse on sustainable agricultural development.

In conclusion, I extend my deepest gratitude to all those who have contributed to the success of the TIDE project, including the dedicated TIDE staff, our many partners, including Agrittera, Yoba for Life, Wageningen University and Research, the Dairy Development Authority and especially the Embassy of the Kingdom of the Netherlands that funded this programme. Your commitment has made a significant difference in the lives of dairy farmers and the broader Ugandan economy. We can build on our successes and make even greater strides in transforming Uganda's dairy sector.

PHOMOLO MAPHOSA
Country Director, SNV in Uganda Country Director

WORD FROM THE PROJECT MANAGER

I am pleased to present this report highlighting our efforts and accomplishments in developing and contributing to transforming Uganda's dairy sector. Recognised for its significant impact on food security and nutrition, dairy plays a crucial role in Uganda's agro-industrialisation agenda. However, the sector has faced challenges that have hindered its full potential. The TIDE project, funded by the Embassy of the Kingdom of the Netherlands, works collaboratively with the government and partners to propel the sector forward and unlock its unique possibilities.

Within the pages of this report, you will witness the remarkable impact of the TIDE project that has grown and adapted to the evolving needs of communities while looking ahead to provide sustainable solutions. Our journey began in 2015 with an ambitious goal: to improve the livelihoods of 20,000 farmers across six key districts—Bushenyi, Isingiro, Kiruhura, Mbarara, Ntungamo, and Sheema—by addressing critical aspects of dairy farming. By 2023, we surpassed that target, impacting over 21,800 farmers in the implementation areas.

Over the past five years, TIDE-2 has been a catalyst for change, facilitating improvements in farm productivity for over 8,000 farmers by establishing practical dairy training farms, supporting on-farm investments valued at UGX 12.1 billion (£2.8 million), strengthening 139 cooperatives, and enhancing dairy input and repair services for farmers. We have championed milk quality by introducing and promoting quality-based payment systems while also focusing on improving regulation and investment facilitation. Furthermore, TIDE-2 played a pivotal role in enhancing household nutrition by supporting the introduction of milk and yoghurt in schools for over 922,779 children creating a stable local milk market leading to daily supply of over 125,000 lt and annual sale of raw milk valued at 33.6 billion UGX/year (8.4 million Euro) Building upon the successes of its first five years, TIDE-2 used it final phase from 2020, to adopt a comprehensive approach to deepen and expand our interventions. Our focus has shifted from market creation to development, emphasising a strategic approach to sustainable sector transformation. This involves ensuring that the products and services provided to dairy farmers are not only accessible, relevant, and affordable but also of the highest quality, incorporating a significant component of knowledge and skills transfer by the introduction of the Practical Dairy Training Farms (PDTF) approach.

Through our concerted efforts in productivity, milk quality, value chain development, and nutrition, TIDE is making substantial contributions towards achieving strategic national and global objectives.

I would like to express my sincere gratitude to the Embassy of the Kingdom of the Netherlands for their unwavering support on this transformative journey. I commend the TIDE project team and our implementing partners for their dedicated efforts in transforming the dairy sector.

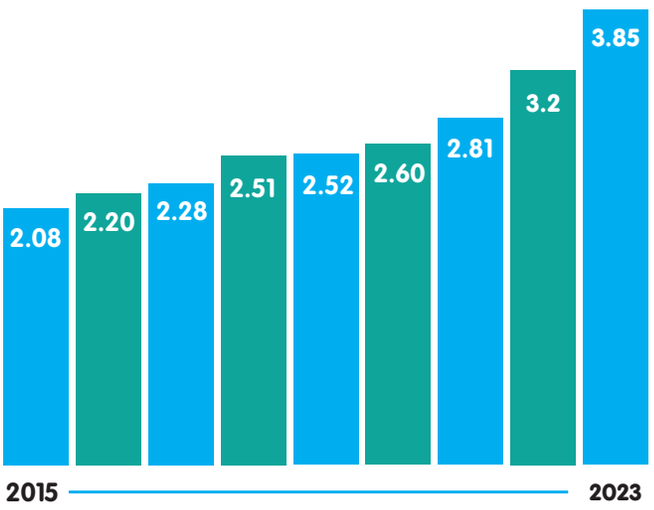
As we reflect on the achievements and challenges presented in this report, our commitment remains steadfast—to envision a thriving, inclusive dairy sector that not only improves farmers' incomes but also contributes to the broader socio-economic development of Uganda. The story continues, and our determination remains unwavering as dairy development and dairy sector transformation is not a sprint but a marathon engagement.

Martin De Jong
Project Manager,
The Inclusive Dairy Enterprise (TIDE) programme

INTRODUCTION

Uganda's dairy sector is a burgeoning industry that significantly bolsters the country's economy, nutrition, and employment. The nation boasts approximately 14.7 million cattle, with indigenous breeds constituting 80% and exotic or crossbreeds accounting for the remaining 20%[1]. Annually, Uganda generates an estimated 3.85 billion litres of milk in 2023, with 80% marketed and 20% consumed by farming households[2]. Uganda's per capita milk consumption is 62 litres, surpassing the Sub-Saharan Africa average of 44 litres[2]. Furthermore, Uganda exports dairy products to various countries, generating export earnings of Euro 224 million in the 2022/2023 financial year[3].

Table 2: Milk production volume in Uganda between 2015 and 2021

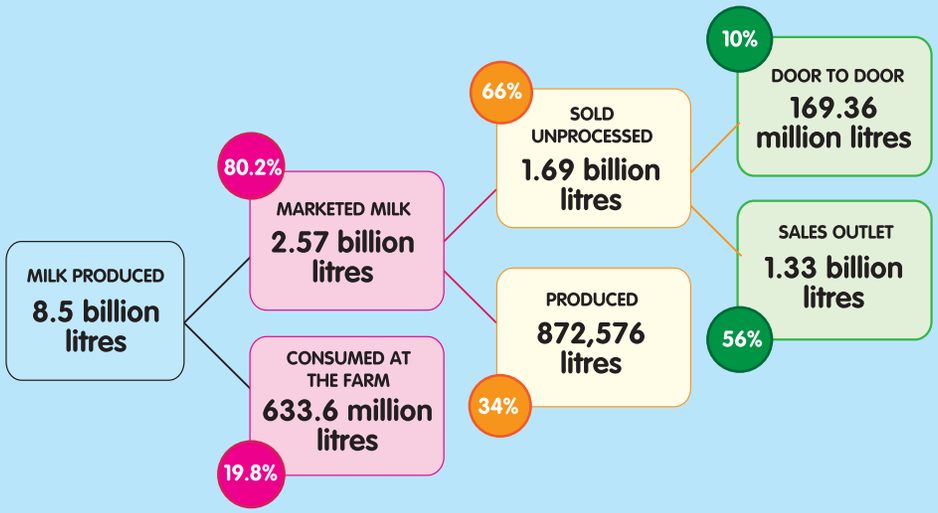


Source: DDA.

The Dairy Development Authority (DDA), established under the Dairy Industry Act of 1998, oversees the sector, managing licensing, quality control, standards, and promotion. However, the sector grapples with challenges such as livestock diseases, low productivity of local breeds, limited access to extension services, inadequate feed resources, and high input and processing costs. Despite these hurdles, the dairy sector continues its upward trajectory, with concerted efforts underway to address these issues.

For over three decades, dairy farmers in Southwestern Uganda have been investing in crossbreeding their traditional Ankole cows with the Friesian Holstein breed to develop higher potential crossbreeds. By 2015, more than 80% of dairy households in the Southwest owned these crossbreeds, necessitating improved nutrition and better herd management. However, despite introducing these enhanced breeds, the production system and milk yield only experienced marginal increases.

1 FAO, 2017. Strengthening Sector Policies for Better Food Security and Nutrition Results: Livestock (Policy Guidance Note No. 2), Policy Guidance. FAO, European Union, Global, Africa.
2 Dairy Development Authority. (2020). Annual Report 2019/2020. Retrieved from https://dda.or.ug/wp-content/uploads/2020/11/DDA-Annual-Report-2019-2020.pdf
3 Rachael Nabisubi (1 April 2022). "Annual milk production rises to 2.81 billion litres". Daily Monitor. Kampala, Uganda. Retrieved 12 April 2022.



Farmers were initially unaware that achieving a significant increase in production required a shift in the production system through the adoption of semi-intensification. This approach involved ensuring cows had sufficient access to water throughout the day, providing structured supplementary feeding, particularly during dry seasons, and enhancing herd management practices.

Since October 2015, SNV in Uganda has implemented The Inclusive Dairy Enterprise (TIDE) project in Southwest Uganda. The project concluded on 31 December 2019. The success of TIDE-1 in contributing to sector transformation led to the approval of a second phase.

TIDE-1 supported 20,000 farmers transitioning to semi-intensive production by creating a commercial input market in knowledge (training, extension), products and technical services, and finance (credit, subsidies, and grants). A market was established for input suppliers and service providers by supporting the development and marketing of products - such as dairy training and advisory, on-farm infrastructure and mechanisation - handholding the emergence of contractors and service providers and developing the market linkages with farmers and cooperatives. This was done through technical advice, strategic subsidies and matching grants. Similarly, TIDE-1 attracted local financial institutions (SACCOs) to provide loan products, empowering dairy farmers to make necessary investments in production enhancement.

Building on the results of phase 1, TIDE-2 endeavoured to deepen and up-scale TIDE-1 interventions. Under the deepening component, TIDE-2 focused on the current TIDE-2 project area (seven districts) to increase impact by equipping farmers and service providers with the requisite knowledge and skills to reap benefits from the investments made.

From market creation, the focus shifted to market development and – in addition - promoting a more strategic approach to dairy development by helping to create a vision for sustainable sector transformation and dairy intensification (socially, economically and environmentally).

This ensured that the market delivered products and services to dairy farmers that were accessible, relevant, affordable, and high-quality, with a high component of knowledge and skills transfer. TIDE-2 also supported interventions further up the value chain, deepened and upscaled the work with cooperatives and processors on service delivery and milk quality, domestic market diversification and scaling up the school milk project to over 922,000 primary school-going children.

Up-scaling was pursued by following the market in the products and services developed under TIDE-1 that were relevant for commercialising dairy farmers throughout Uganda (mostly peri-urban Kampala and Rwenzori Region). Private sector companies were actively supported to market their products and services in those areas, mainly through mobilising technical expertise, networking and market linkages.

In TIDE-1, financial incentives (subsidies and matching grants) helped to unlock the private sector and create the market. In TIDE-2, the role of subsidies was limited

This objective was realised by working on four components or outcomes:

Productivity:

Deepening the knowledge, inputs and finance market through quality offerings and diversification. Focus areas included knowledge and skills transfer, supply mechanism (Training and extension in coops, private dairy advisory, PDTFs, others) and sustainable forage intensification. Up-scaling efforts targeted other commercial farming areas by following the private sector input suppliers and service providers.

Milk quality:

Deepening by introducing/supporting milk tracking and tracing for various food safety parameters and critical control point analysis in the entire supply chain; up-scaling (and re-instating) QBMPS (Quality-Based Milk Payment System) using a processor-led model;

Value Chain:

Deepening dairy value chain linkages through support to cooperatives and inclusive business models; up-scaling by supporting more cooperatives in other districts, lobbying for and supporting the diversification of the domestic market.

Nutrition:

Deepening the school milk and yoghurt project in SW Uganda by increasing nutritional effects. Upscaling efforts involved expanding the approach beyond the project area through social campaigns and collaboration with processors to enter this market.

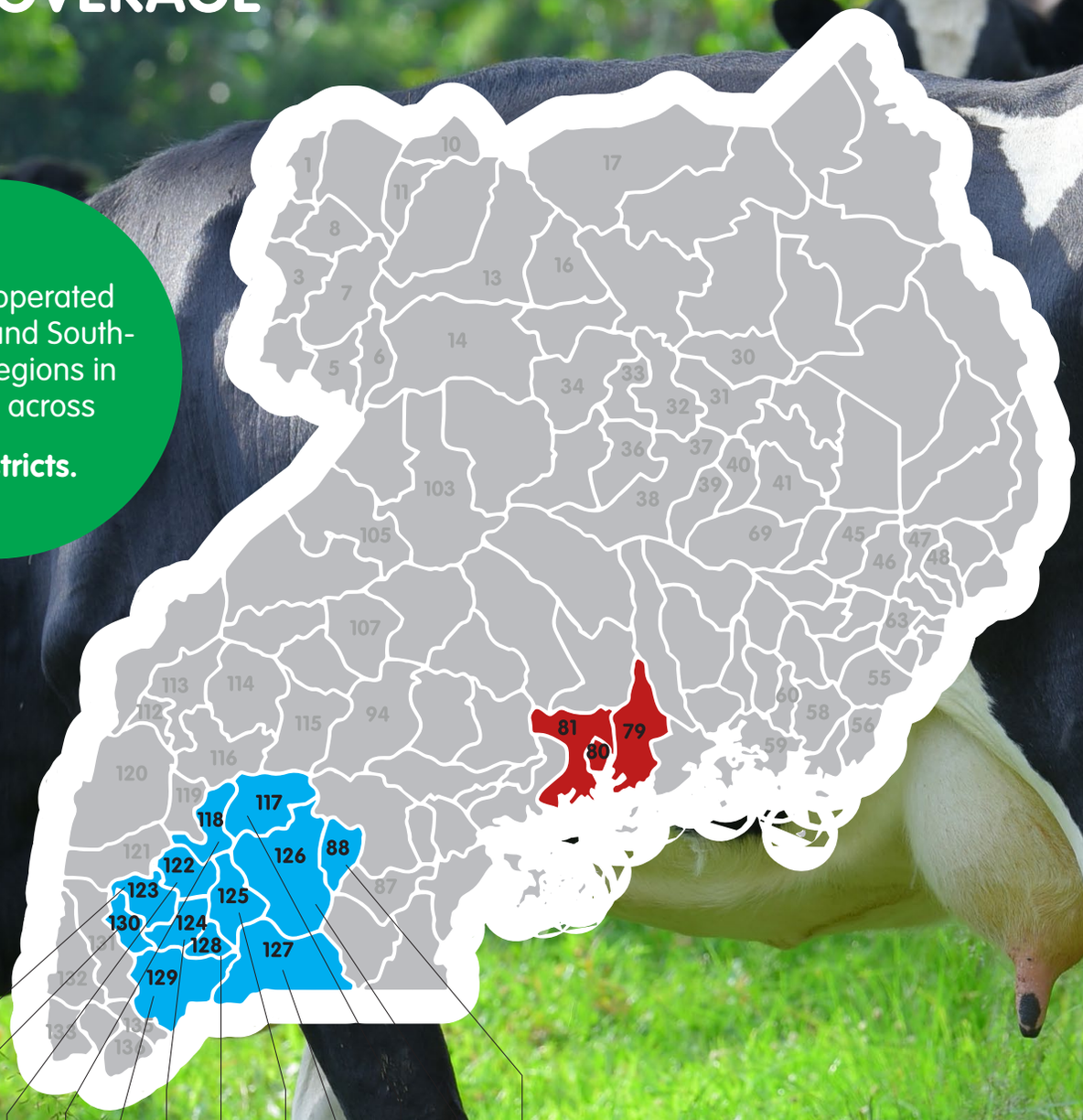
to initiatives focusing on quality improvements, interventions aiming at increased social inclusion (especially for women and youth), and innovations, particularly in the forage sub-sector. TIDE-2 worked to provide dairy farmers access to soft finance on a more sustainable and more effective basis, offering agricultural loan products through SACCOs, which provided loans to cooperative farmers at a value of UGX2.1 billion.

Leveraging insights from TIDE-1 and 2, which had minimal impact on smallholder farmers due to their dairy-centric focus, TIDE-2 was adapted to target smallholder farmers in 2022. With support from EKN, the €4.8 million Integrated Smallholder Dairy Development Programme (ISDAP) was launched in November 2021 as a component of TIDE-II, operating from 2022 to 2024. ISDAP aims to tackle challenges faced by 15,000 smallholder dairy farmers in Southwestern Uganda's Rwenzori, Kigezi, and Greater Ankole sub-regions, with objectives that include enhanced livelihoods, incomes, and food security through integrated farming.

In the past eight years of TIDE implementation, the dairy sector in Uganda has shown remarkable growth and resilience despite numerous challenges. The TIDE project's interventions have played a significant role in this progress, fostering a business-oriented approach among farmers and promoting sustainable dairy farming practices. The following sections of this report will delve deeper into the TIDE project's specific achievements, lessons learned, and prospects. We will also explore the impact of our initiatives on the lives of farmers, the dairy industry, and the broader Ugandan economy.

TIDE COVERAGE

TIDE has operated in Central and South-western regions in Uganda across **15 districts.**



Mitooma
Ibanda
Sheema
Mbarara
Kazo
Lyantonde

Bushenyi
Buhweju
Ntungamo
Rwampara
Isingiro
Kiruhura

TIDE IMPLEMENTING DISTRICTS

Southwestern Region

Central Region

TIDE DAIRY SECTOR IMPACT

Production

8,296
dairy farmers impacted by TIDE interventions.

31%
increase in milk production per day for 5,854 dairy farmers.

29%
increase in annual milk sales for 4,720 dairy farmers.

School Feeding

922,779
(52.4% female) children consuming milk in 2,482 schools in 2023, up from 60 schools in 2016.

UGX 33.6 billion
spent by schools on milk purchased annually.

27,000
children consuming yoghurt in 60 schools in 2023, up 242% from 5,839 children in 2018.

Milk Quality

11
new processors investing in quality-based milk payment system, growing from just one processor.

UGX978 million
Paid in bonuses for supply of quality milk.

58%
increase in milk volumes purchased under quality-based milk payment system by 11 processors.

Dairy Value chain

174%
growth in cooperative membership from 7,969 to 21,823 members across 130 cooperatives and 43 cooperatives, achieved with TIDE support.

UGX6 billion
accessed as loans by cooperatives members to support farm services.

4,187
jobs created on and off farm.

70%
growth in milk bulked by cooperatives from 67 million litres by 43 cooperatives in 2019 to 114 million litres by 114 cooperatives.

IMPROVING PRODUCTIVITY

Uganda's Southwestern region holds significant potential for low-cost milk production due to its fast natural pastures and cow-friendly climate. However, the current dairy farming system is inefficient, leading to low productivity per cow and acre of land. The primary factors contributing to this issue are a lack of sufficient 24/7 water supply to the cattle, inadequate year-round forages (fresh or silage) for the cattle, limited knowledge of optimal feeding practices related to milk production, high feed costs for concentrated feeds, lack of skilled labour, lack of skills in dairy cattle management by the farm workers as well as at the owner and fluctuating milk prices. The forages used are subpar regarding nutrition, digestibility, biomass yield, and not resilience to dry conditions. Additionally, the technology used for fodder production and conservation is rudimentary, lacking standardised procedures to ensure high-quality forages, silage and hay. Natural pastures are traditionally managed instead of treated as valuable nutritional forage crops.

Furthermore, there is a shortage of practical knowledge and skills among cattle keepers/dairy farmers and extension graduates, limiting their ability to maximise income from improved milk production. The main challenge is shifting from a mindset of simply keeping cattle to becoming successful dairy farmers.

Furthermore, there is a lack of understanding on how to align investments in feed, water, management practices, genetics, cow comfort, animal health, and quality milk with the constantly changing climate and business environment in the dairy farming sector. The absence of a unified approach further constrained effectively addressing central themes and topics necessary to improve on-farm productivity, profitability, and sustainability of knowledge and skills.

In response to these pressing bottlenecks in dairy production, SNV in Uganda launched interventions through the TIDE Programme in 2015. It aimed to comprehensively address the challenges and constraints faced in the region and enhance dairy production.

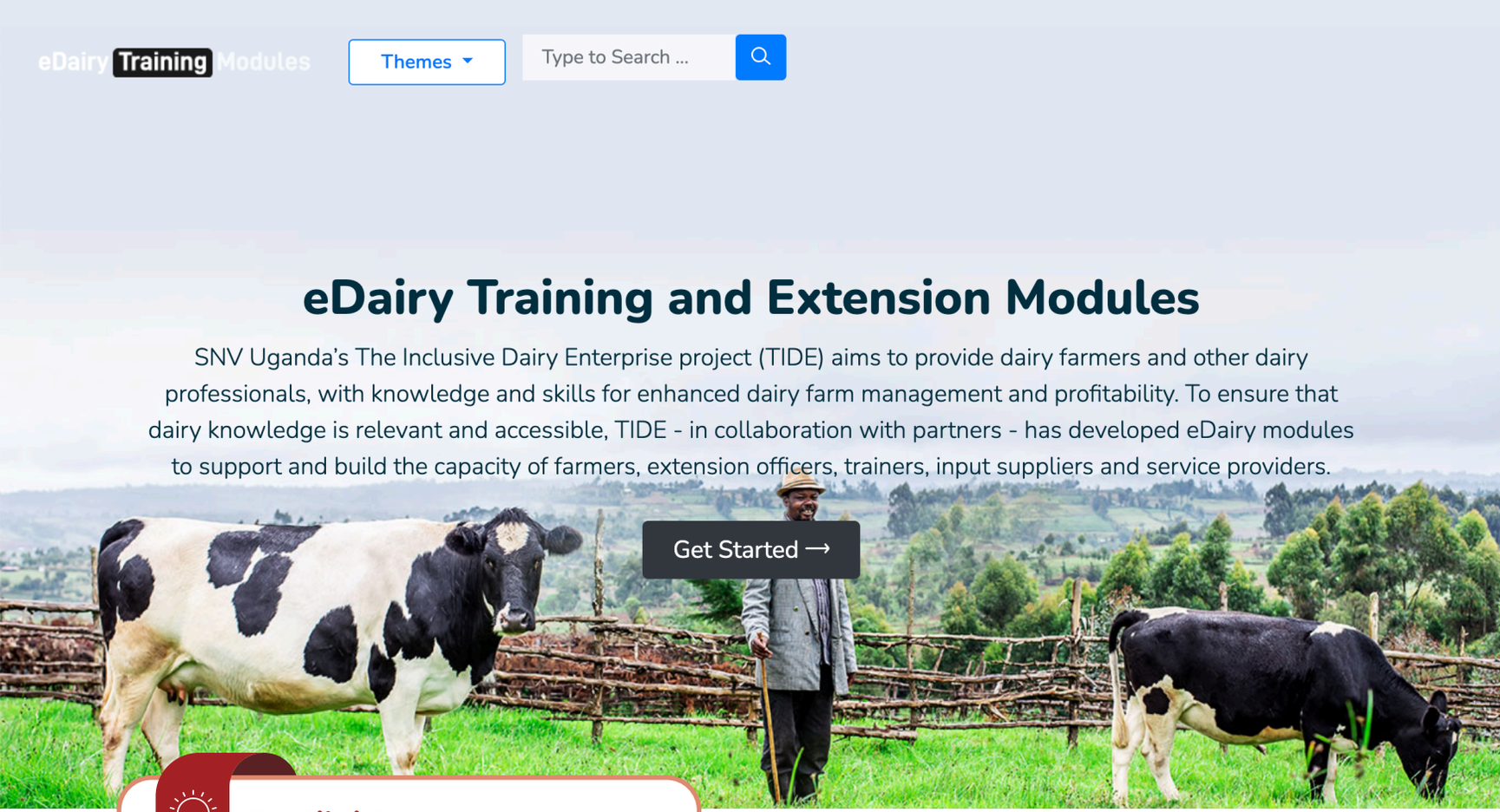
Training, Extension and Advisory Services

Under its Training, Extension and Advisory Services (TEA) component, TIDE established a practical learning environment on three selected dairy farms called Practical Dairy Training Farms (PDTFs).

A five-day training curriculum was designed based on the farm work routine activities and compiled into a training manual. Farmers paid to attend this valuable training, while the project covered the costs of farmer follow-up and review sessions. The hands-on, field-based sessions aimed to improve farm practices, offer advice, share market information, conduct outreach activities, recruit more farmers, and gather raw farm data for monitoring purposes. During the training, the private sector demonstrated the effectiveness of various technologies in improving productivity. The project also created subsidies tailored to each practice and technology, as these innovations were often new and, being new, still expensive for farmers and private sector companies.

Secondly, TIDE established extension services at selected cooperatives, providing support through 45 cooperative extension officers. These officers were young graduates who received intensive expert coaching. Their responsibilities included reporting on members trained at PDTFs and conducting outreach activities, with particular attention given to women and youth. The officers also monitored the number of on-farm investments, increased milk production, reduced calf mortality, and increased member enrolment and participation in cooperative activities. These extension workers became full-time employees of the coops.

Lastly, considering the lessons learned during the COVID-19 pandemic, TIDE introduced digital internet learning tools. These tools included the dairy farm benchmarking



eDairy Training and Extension Modules

SNV Uganda's The Inclusive Dairy Enterprise project (TIDE) aims to provide dairy farmers and other dairy professionals, with knowledge and skills for enhanced dairy farm management and profitability. To ensure that dairy knowledge is relevant and accessible, TIDE - in collaboration with partners - has developed eDairy modules to support and build the capacity of farmers, extension officers, trainers, input suppliers and service providers.

Spotlight

Since its launch in 2021, the e-Dairy platform (http://www.e-dairytrainingmodules.africa) has attracted an impressive user base of 22,109 individuals. These users spend an average of 10 minutes on the platform, indicating their keen interest in extracting valuable information to enhance their dairy businesses. This underscores the platform's significance as a valuable resource for the dairy community.

tool, the dairy competence builder, EARNED blended internet learning, and the e-Dairy training modules website. Before the outbreak of COVID-19 in 2020, the project strategically developed contextualised training and instructional materials for sustainable dairy intensification in Southwestern Uganda. These materials covered thirteen critical themes, addressing over 120 topics at three learning levels that impact profitability and sustainability on the farm. The messages were harmonised to cater to the average dairy skills and knowledge available in the sector, considering the literacy levels and socio-cultural factors affecting the absorption and adoption of skills and knowledge. By the end of 2023, over 50,000 visitors were recorded on the e-Dairy platform.

Quality Forages/Feeds Provision and Improvement of Dairy Nutrition

The TIDE forage and dairy nutrition initiative primarily focused on improving pasture management, forage crop production, preservation, and dairy cow nutrition. The project offered technical advice for on-farm forage production and supported agricultural contractors or service providers in commercial silage making. Additionally, it demonstrated new forage seed varieties, connected forage seed suppliers and research to the market, and introduced the use of Rumen8 software for dairy cow nutrition. The project pursued four main interventions in this area.

1. **Promoting the use of improved forages:** Improved forage demonstration plots were established in 14 districts in SW Uganda to showcase the performance of these forages under different ecological conditions and popularise their usage. This was done in collaboration with CIAT, who provided expertise on crop establishment and management and the seeds for the demo plots. The established forage varieties included *Brachiaria Mulato II, Cayman, Cobra, Camello,* and *Pannicum Mombasa*. Field days were organised to demonstrate the performance of the forages and provide training

on the necessary agronomic practices. Capacity-building sessions were conducted to train Coop Extension Officers, TOTs, and DDEs in improved forage establishment and management. Promotional materials, such as fact sheets and handouts, were created for sharing with the beneficiaries. District local government leaders and technical staff actively shared knowledge on improved forages and enhanced extension staff's capacity to establish, manage, utilise, and preserve these forages. To involve the private sector and expand coverage, SimLaw Seeds Uganda Ltd received a matching grant to establish an office in Mbarara to establish 25 forage demo plots to increase the supply of improved forage seeds and provide extension services to more districts leading to commercial seed sales of UGX143 million of which UGX30 million was for improved forage seeds

2. **Promoting pasture management and improvement best practices:** Twenty demo sites were set up to showcase pasture management and improvement principles for learning and experience sharing. Field days were held at these demo host farms to disseminate best practices to cooperatives and lead farms. Pearl Dairies Ltd was supported in doubling milk production through pasture improvement and management best practices. Promotional materials were developed to explain these practices and their practical utilisation. The project also enhanced the capacities of DDEs, CEOs, and the Rumen8 advisory team in this subject matter. Additionally, the project introduced innovations such as strip grazing kits and pasture plate meters to support executing these best practices. Pearl Dairy promoted learners of the pilots to their 5,000 raw milk suppliers.

3. **Contracting services through mechanisation for maize silage production:** Maize silage production is crucial for commercially oriented dairy farmers, especially during the dry season. However, many farmers used inefficient processes that did not yield the desired quantity (tonnes/acre) and quality of maize silage. To address this, TIDE introduced the Maize Train concept, which includes 12 steps to high-quality maize silage production through mechanisation. These steps were adopted from a sister project in Kenya. Pilot demonstrations were conducted with the help of an agricultural contractor (EngSol) to showcase good practices in minimum tillage soil and seedbed preparation, seeding, fertilisation, crop management, harvesting, and ensiling of maize. The project also facilitated interested farmers' access to quality maize seeds, contracting services, and knowledge in crop management, harvesting, and ensiling. Promotional material detailing the 12 steps in the Maize Train was developed and shared with stakeholders interested in improving their maise silage production.

Key Highlights

CIAT's improved forages:

152 demo sites were established, and **75 field days** were conducted to support information dissemination and upscaling. **4,200 farmers benefitted** from this intervention.

Pasture management and improvement:

20 demo sites and **10 strip grazing units** showcase the best practices. **28 field days** were conducted to promote the use of the best practices in the intervention.

Scaled use of Rumen8 software for dairy cows leading to a **20-30% milk production increase**, **15-20% higher margins** above feed costs, and **80 farmers** in sustainability model.

Facilitated maize silage mechanisation (maize train):

15-20 tonnes/acre yield (vs. 9 tonnes/acre traditional), applied to 600+ acres.

4. **Utilising Rumen8 software for improved dairy nutrition:** The project focused on quality forage and its relation to nutrition, production, farm economics, and profitability. In line with this, the project introduced the use of Rumen8 software, which supports dairy cow diet formulation based on body requirements, milk production, and the cost of feeds. The tool assists dairy advisors in making informed decisions regarding optimal ration for their cows. In 2021, the project worked with 28 dairy farmers to pilot the Rumen8 software in Uganda. In 2022, the project completed the Rumen8 pilot and initiated a sustainable model by sharing 50% of the service's costs with beneficiary farmers. A total of 81 farmers participated in this model. In 2023, the project is implementing the sustainable model, now covering 25% of the delivery cost, down from 50% in the previous year. A total of 72 dairy farmers are participating, supported by TIDE-trained Rumen8 advisors. Farmers bear 75% of the monthly cost of the service, amounting to $38.

TIDE also collaborated with Mbarara University of Science and Technology (MUST) and Mba-ZARDI to conduct action research on topics that would address questions that arose while implementing the forage and dairy nutrition interventions.

Impact

"The cows like these forages so much, and the body condition of the lactating cows has improved. We feed the imsproved forages only to the lactating cows twice daily, in the morning and afternoon. The effect of these forages on milk production is immediate if we don't feed them to the cows, we lose two to three litres from each cow.

Stella Rwasheema, Demo Host Farmer in Bushenyi District

"The grasses are very palatable; the cows like them so much. I concentrated on two cows to find out the impact of these grasses on production and found out that cows add two litres of milk every time we feed the improved forages, especially Panicum. Pannicum acts like sugar too even when I feed other forages, I drop in Pannicum.

George Kashereka, Demo Host Farmer in Ntungamo

"The changes in practice at my dairy farm because of following the Rumen8 programme brought about an increment in milk production. Where cows would usually be milked for 3-4 months after giving birth, one cow called Nzomukunda was milked for almost a year. Daily quantities of milk rose from 13 litres per day to 25 litres - a near doubling of yield. The results have been staggering. We are very grateful to all, but most of all, we are thankful to the Rumen8 team for all these initiatives.

Marie Claire Ndayikunda, MCMN Dairy farm, Ishaka town council, Bushenyi District. Rumen8 software partner

Results

TEA interventions have yielded significant results and made a substantial impact. The professionalisation of dairy extension, farm advisory, and customised farmers' training has reached new heights. Training has transformed into a thriving business where farmers gather, pay, and acquire knowledge for positive transformation. The demand for professional expertise has led to additional training farms. Communication and expression of knowledge and skills in farm advisory have greatly improved, resulting in enhanced quality and variety of feed, pasture management, water access, and animal health. These improvements are evident in milk's increased quantity, quality, and overall animal health. This progress has also given rise to a new generation of local experts who have established consultancy firms specialising in training, extension services, and dairy advisory, allowing them to tap into the opportunities created by farmer knowledge empowerment.

Furthermore, there is now a digital internet platform tailored specifically for African dairy practitioners, offering 120 localised PowerPoint topics suitable for four different levels of practitioners: non-educated informal farmers, educated formal farmers, trainers of dairy farmers, and learners in colleges. Additionally, TIDE 2 supported several interventions and introduced innovative approaches to enhance productivity in the regional dairy sector. Some of the results of the different interventions include.

Lessons

Lessons from the TIDE training, extension, and advisory activity are as follows:

- Mindset flexibility is crucial for improved productivity. By practising easy-to-implement techniques and achieving quick results, farmers can stimulate earnings and create demand. However, this growth depends on the quality and quantity of supplies, which require a significant investment in knowledge and professional expertise.
- Due to the SNV TIDE project support, credible and high-quality local expertise is available in dairy training and service provision.
- Stakeholders should avoid relying on random internet sources for dairy farming knowledge. Instead, they should visit the SNV website at www.edairytrainingmodules.africa. Here, they will find contextualised toolkits for four levels of dairy practitioners in Africa: non-educated informal farmers, educated formal farmers, trainers of dairy farmers, and college learners.

Lessons from the TIDE forage and dairy nutrition aspect include:

- High-quality forages are crucial in sustaining milk production in the region.
- Innovative tools like Rumen8 enable us to practice dairy farming with more professionalism.
- Extension workers who utilise digital tools provide comprehensive and high-quality services to dairy farmers compared to those who have not embraced technology.
- Improved management, allocation, utilisation, and introduction of better pasture species can enhance the quality of natural pastures. This, in turn, makes dairy farmers more competitive by reducing their production costs.

An integrated approach that combines input provision with extension services ensures the sustainability of projects aimed at scaling up improved forages and facilitating knowledge transfer regarding best practices in forage production.

TIDE has strategically collaborated with emerging progressive commercial and dairy training farms, private extension practitioners, universities, and polytechnic institutes for further growth, improvement, and sustainable impact. These include Mbarara University, Nkozi, Kabale, Mountains of the Moon, Ibanda, Rwentanga, Kyera, NTC-Kabale, Ibanda Farm Institute, Rubindi Vocational Institute, Alliance College, and others. The aim is to introduce and promote various knowledge products and technologies, such as forage varieties. Through their performance, these initiatives inform progress, enhance curriculum delivery, and drive improvement.

Engaging and receiving support from the private sector is crucial to ensure the long-term success of these interventions. The involvement of different stakeholders, including district local government extension personnel and dairy cooperatives, is essential for replication and upscaling. This collaboration facilitates the handover process and fosters stronger ownership of the intervention by both the private and public sectors.

Private sector engagement is key to sustaining the interventions promoted by the TIDE. It is vital to involve various stakeholders, including district local government extension personnel and dairy cooperatives, to ensure the scalability and longevity of these initiatives. This approach aims to facilitate the handover process and establish a strong sense of ownership among both private and public sector actors.

ELEVATING MILK QUALITY

The dairy sector in Uganda is of paramount importance, contributing significantly to the region's economy and the livelihoods of countless farmers.

Increased milk quality is important for food safety and nutrition for milk consumers in and outside Uganda, including schoolchildren participating in the school milk programme. Especially in export markets where food safety standards (and enforcement) may be higher than in the domestic market, it is expected that milk quality will increasingly become a key factor in successfully maintaining or growing the export-led model currently in force in Uganda. Hence, the ability of processors to pay reasonable prices to dairy farmers who are part of this export-led value chain is also of utmost importance.

Recognising the need for improved milk quality, the project championed implementing a Quality-based Milk payment system. This system incentivises dairy farmers to produce higher quality milk through financial rewards, fostering a culture of improved milk production and enhancing the growth of the dairy value chain. Additionally, by rewarding Farmers and cooperatives for quality milk through bonuses, they can gain extra income for investment in their farms and farm support services.

The intervention focused on key pillars that included.

Deepening and Scaling up the QBMPS pilot and bonus payment system.

The deepening agenda involved the consideration of safety parameters (antibiotic and bacterial count) in addition to composition parameters (SNF, batter fat, added water, and freshness). The introduction of standard operating procedures at MCCs and schools. The introduction of milk control programs for schools.

The scaling agenda involved the expansion of the QBMPS from southwest to central Uganda and increasing the participating MCCs and processors from 11 and 3 to 65 and 11, respectively. The number of farmer beneficiaries was increased from 1,000 to 4,750.

Conducting Baseline studies on the status of milk quality parameters

During the initial stages, the TIDE project conducted expanded baseline studies on 55 MCCs in collaboration with stakeholders to determine the region's milk quality status and set standards.

The project invested in equipping collection points with quality testing equipment to support the milk testing regime, seamlessly integrating the testing process into the existing dairy value chain.

Additionally, the project introduced and established a fully functional track and trace system for four antibiotic residues (tetracycline, sulphonamides, Beta-lactams and cetipar) in seven MCC and processor locations.

Payment Based on Quality Parameters

The core emphasis of the TIDE project revolved around achieving enduring change. Remuneration contingent on quality factors formed the backbone of the project's commitment to producing tangible results. This strategy harmonised with TIDE's objective of cultivating lasting transformation by directly engaging with farmers' incentives and conduct through monetary incentives linked to quality achievements.

This included supporting the participation of MCCS and processors in acquiring milk testing equipment and associated capacity support to operate and maintain acquired milk testing equipment.

The Quality-Based Milk Payment System directly links milk quality and financial remuneration for farmers. By measuring key parameters such as fat content, protein levels, somatic cell counts, and bacterial load, the system assigned a value to each batch of raw milk. Farmers were then paid based on the quality of their milk, encouraging them to adhere to stringent quality standards. This mechanism not only benefited individual farmers but also contributed to the production of higher-quality dairy products for consumers.

Dialogue and Support for Non-Compliance

The comprehensive assistance provided by TIDE was at the core of its achievements. Open discussions and aid for instances of non-compliance reflected TIDE's dedication to enhancing capabilities and involving stakeholders. The project conducted training sessions to educate farmers on adhering to quality standards and provided a platform for dialogue to address compliance challenges. By supporting farmers encountering challenges in upholding quality benchmarks, the TIDE initiative cultivated a sense of unity and mutual accountability, emphasising inclusiveness and collaborative alliances.

Positive Outcomes

The implementation of the Quality Based Milk Payment System yielded various positive outcomes:

- **Improved Milk Quality:** Financial incentives motivated farmers to produce higher quality milk, resulting in reduced somatic cell counts, lower bacterial loads, and increased nutrient content.
- **Enhanced Farmer Livelihoods:** The system increased farmers' incomes, reducing poverty and improving rural communities' livelihoods. The bonus payment amount paid as a reward to farmers increased from approximately UGX300 million to over UGX1 billion. As of August 2023, the national average farm gate price of milk stood at UGX1,244, while the retail price reached UGX1,871. Farmers from the project TIDE implementation areas also experienced the positive outcome of increased farm gate prices.

Region	Farmgate	Retail
South Western	1,187	1,900
Central	1,000	1,800
Eastern	1,328	1,776
North Eastern	1,450	1,950
Northern	1,300	2,000
Mid-Western	1,200	1,800
National Average	**1,244**	**1,871**

- Expanded domestic milk market: The school milk quality programme reached 66 schools, benefitting 52,800 children by providing access to safe and quality raw milk.
- Market Competitiveness: Higher milk quality allowed Southwestern Uganda dairy products to compete in local and international markets, bolstering the region's reputation.
- Sustainable Dairy Sector: By promoting sustainable practices, the system ensured the long-term viability of the dairy industry, benefiting present and future generations.

The quality-based milk payment system has proved an effective strategy for elevating milk quality. Through this innovative approach, the project not only enhanced the livelihoods of dairy farmers but also contributed to the overall growth and sustainability of the dairy sector in Uganda.

IMPACT From Farm to Market: TIDE's Milk Quality Boost to Uganda's Dairy Sector

In Western Uganda, farmers faced significant challenges selling low-quality milk and struggled to receive fair prices. This hindered their economic prosperity and competitiveness in the market. The primary issues were milk cleanliness and farmers' inability to meet quality standards.

To address these challenges, SNV's The Inclusive Dairy Enterprise (TIDE) program introduced the innovative Quality-Based Milk Payment System (QBMPS). This aimed to motivate farmers to adhere strictly to safety and quality standards. QBMPS implemented standard operating procedures to ensure top quality at every production stage. The program promoted hygiene practices like thorough udder cleaning, handwashing before milking, and using cleaner milking spaces at the farm level. It also included milk quality checks and testing at milk collection centres and fostered collaboration with 11 milk processors to uphold quality standards.

The results were remarkable. Eleven processors, 95 milk collection centres, and 4,758 farmers earned over UGX2 billion as premium pay in 18 months. They experienced a significant improvement in milk quality, leading to substantial financial rewards. By producing high-quality milk, they sold it at better prices, boosting morale and motivation.

Nuweneishe Eriasafu, a farmer from Rakai district, shared, "Before SNV came, we produced milk but didn't benefit. But when SNV taught us cleanliness practices, we started producing high-quality milk, and our earnings increased."

Amos Dairies, a dairy company, faced challenges maintaining high-quality standards for products like UHT milk and instant whole cream milk powder. This prevented them from scaling in the consumer market due to demand for quality products. However, through QBMPS, they realised improvements. Enhanced raw milk quality allowed the dairy to diversify its product range, increase production volume, and expand market access.

"These products require very high quality, and with SNV's intervention, the milk quality we receive is greatly improved, enabling us to enter the consumer space," said **Ms Theodora Marimo, the Chief Executive Officer of Amos Dairies.**

This intervention had a significant economic impact in local and international markets, demonstrating growth for Amos Dairies. Ms.Theodora Marimo added, "We have registered volume growth and expanded our product range, accessing both domestic and export markets."

STRENGTHENING DAIRY VALUE CHAIN:

In 2016, only an estimated 23 dairy cooperatives existed in Southwestern Uganda. These cooperatives were predominantly comprised of young starters who lacked proper governance and faced numerous operational inefficiencies. As a result, they struggled to establish viable businesses, leading to significant losses for most dairy farmers in the region. This was primarily due to their failure to capitalise on milk aggregation opportunities in the dairy farming communities.

Furthermore, these cooperatives were at various stages of maturity in governance, financial management, and business development. Consequently, they lacked sufficient bargaining power for farmers' milk in the market and other farm inputs and services that dairy farmers required to support them in production. They failed to capture maximum added value for their members, as they remained mere suppliers to processors. This condition left them as price takers rather than price influencers.

Moreover, the cooperatives were too small to drive the professionalisation of the dairy sector effectively. Despite possessing the essential resource – milk for dairy products – their contribution was negligible. Additionally, there was a misconception that cooperatives did not influence farm gate prices. This is crucial and essential when determining dairy farming business cashflows, which are a significant consideration in deciding investment options at the farm.

SNV in Uganda partnered with Agriterra (through the TIDE-1 and 2 project phases) to address these challenges. Their objective was to strengthen the dairy value chain by leveraging cooperative societies as a vehicle. The key focus areas were to strengthen the existing cooperatives in governance, financial management and business development activities aimed at enhancing production by improving productivity per cow and increasing farmers' income by creating cooperative business hubs that better milk market, leading to better milk prices at the farm gate level.

The Cooperative Development Unit

Agriterra effectively managed the Cooperative Development Unit (CDU) under TIDE-1and 2 to address and capitalise on the challenges and opportunities in the project implementation areas.

This involved forming and registering farmer-owned dairy cooperatives, enabling them to operate legally and professionally. Initially, there were 23 dairy cooperatives in the region in 2016 at the start of the project, but now there are 139 at the end of TIDE-2 in 2023.

Agriterra, under the TIDE-1 and 2 project phases, implemented a comprehensive training program to enhance cooperative governance, financial management, and business development. The 3-track approach focused on engaging dairy cooperative leaders and management in building their skills in cooperative governance, financial management practices, and cooperative business case development. TIDE-Project recognised that improving governance among cooperative leadership was crucial for achieving financial discipline and fostering successful business development services. Empowering cooperative leaders with leadership skills was a key aspect in setting a foundation for business growth at cooperatives. Leadership mentorships focused mainly on addressing the leaders' trust and transparency issues; this challenged them to act in a visionary manner and provide a clear strategic business direction.

The CDU also gave women's and young people's involvement in cooperative activities top priority. During the TIDE-1 and 2 project phases, a significant push was to involve young, dynamic people and creative women in the dairy value chain operations. The cooperatives have generated work possibilities for approximately 2,100 young Ugandans since 2016, demonstrating their active participation. Furthermore, about 200 women and young people have executive roles in cooperative leadership. Additionally, they actively participate in value-adding projects such as owning mini-processing plants and producing yoghurt. The Kayan Youth Group, the Ishongororo Cooperative, and the women's organisations in Kashaka, Bukanga, and Kanyaanya Cooperative are notable examples.

Cooperative Business Models.
The CDU successfully developed a Cooperative Extension Services Grant Facility, benefiting 42 cooperatives and reaching 1,000 dairy producers, in collaboration with TIDE's Training, Extension, and Advisory unit. Currently, the majority of these extension agents work full-time for the cooperatives. The consulting services and resources required to improve the provision of extension services were given to these cooperatives. These included chaff cutters to help farmers prepare animal feed during dry seasons, computers for internal data management and reporting, tablets for field data collection and immediate information exchange, and motorcycles for increased mobility.

Furthermore, chairs and tents were provided to support cooperative events like annual general meetings as part of the matching grant facility. Dairy farmers could rent these items for small cooperative events, which helped generate cash for over 3,800 dairy farmers. The funds generated are utilised to maintain the sustainability of the cooperative extension program.

Cooperative Digitisation Initiatives: The Value Chain Unit spearheaded the adoption of cooperative digitalisation to improve the efficacy and efficiency of data management systems in cooperative enterprises. To facilitate the hosting of management information systems in 14 dairy cooperative societies, TIDE funded the development of software systems and the acquisition of hardware needs, such as computers and other essential equipment. Approximately 3,000 dairy farmers have profited from this digital technology, which offers dependable and effective data management solutions. Because of this data collection, EMATA, a digital lending company, can now lend money to members of cooperatives on a short-term basis by using this information as collateral.

Cooperative Categorisation Exercise: TIDE introduced a cooperative categorisation exercise to ensure targeted interventions and personalised support. Starting with 77 cooperatives, TIDE assessed their performance levels and determined specific interventions tailored to their unique needs. TIDE successfully categorised 139 cooperatives, placing them in different tiers based on their business performance and service delivery to their members. The peer-to-peer competition arising from the categorisation exercise has facilitated the emergence of over fifty bankable cooperatives.

Access to Affordable Finance for Dairy Cooperatives: Recognising the importance of finance in supporting farm investments and working capital, TIDE actively negotiated access to affordable business loans for dairy cooperatives. TIDE engaged with institutions like the Uganda Development Bank and Microfinance Support Center to secure favourable loan terms. The interest rates offered are below the internal rate of return for the benefiting dairy cooperatives, ensuring sustainable financial support. To date, over UGX12.1 billion in loans has been accessed by 6,500 dairy farmers through their cooperatives. This has enabled them to make essential investments in their operations.

Results

Dairy Farmers and Cooperatives:

- Engaged with 22,529 dairy farmers through organised cooperatives and farmer groups.
- Supported 123 cooperatives in delivering milk to processors using two channels: direct delivery and through milk buyers.
- Assisted 139 cooperatives in developing business skills since the project's inception in 2016.
- Facilitated the delivery of over 100,000 250-litre batches of milk to processors.
- Collaborated with 6 financial institutions/ SACCOS to develop products and services for cooperative customers.
- Cumulatively enabled access of over UGX 26 billion for 16 cooperatives.
- Attracted an investment of over UGX14 billion from 960 dairy farmers.

Employment and Skill Development:

- Created over 2,103 employment opportunities for youth along the dairy value chain.
- Supported 30 cooperatives in developing 5-year strategic plans.
- Provided cooperative extension grant facilities to 42 cooperatives.
- Trained 709 cooperative leaders in governance and leadership.
- Impacted 550 youth and women with leadership and business development services.

Financial Support:

- Helped 125 cooperatives access UGX 3.61 billion through SACCOS to support capital investment.

Value Addition and Mechanisation:

- Supported 6 cooperatives in adding value to their milk, particularly in producing yoghurt.
- Linked 40 cooperatives to Uganda Government's Operation Wealth Creation programme for access to mechanisation resources, including tractors and implements.

Lessons

In 2016, **dairy cooperatives were perceived as failed businesses, with most of their farmers practising traditional pastoralism.** Through TIDE training and capacity-building programs offered to cooperatives, there has been a noteworthy transition from traditional pastoralism farming to a more business-oriented approach in dairy farming. Calculated decision-making strategies have marked this shift. As a result, previously seen as failures, dairy cooperatives have gained bankability status. They have become attractive to potential partners across various sectors.

Financial institutions have shown interest in offering business loans for on-farm investments. Meanwhile, different private sector companies engaged, for example, in providing farm mechanisation services and products, water for production, milk equipment and other associated have started to see cooperatives as viable business partners, and several of them have signed mutually beneficial agreements with different cooperatives.

One key aspect that has enabled this transformation is knowledge sharing. **Affordable, low-cost, and subsidised capital was introduced** through initiatives such as Agriculture Credit Finance (ACF), lending by Uganda Development Bank (UDBL) and SACCOs. Dairy farmers have become more inclined to invest in their farms and cooperatives. These funds have facilitated several investments, including water infrastructure for production, pasture establishment, and restocking of farms with high-milking breeds. Such investments support farmers in their pursuit of running successful dairy businesses.

However, the high cost of capital remains a deterrent to investment. Many dairy farmers, also members of savings and credit cooperative societies (SACCOs), only borrow from these institutions to address emergencies due to the exorbitant interest rates charged. Efforts are underway to initiate discussions to make appropriate finance options that are affordable and patient available. It is hoped that such interventions will create a more favourable environment for farmers.

Lastly, **introducing internal capitalisation mechanisms at the dairy cooperatives has purposefully affected the cooperatives and the individual farmers** who are part of these farmer organisations. To meet their daily farm needs, dairy cooperatives have established their SACCOs, which provide financial access exclusively to members who are subscribed to the cooperatives. It is worth noting that approximately 20 cooperatives and unions operate internal capitalisation models.

Spotlight

In Southwestern Uganda, the dairy industry is undergoing a transformation, with TIDE support to dairy cooperatives and farmers. For years, dairy farmers struggled with the relentless torment of ticks infesting their valuable cows. But cooperative-led research introduced spray race technology, a game-changer in tick control. With TIDE's financial and technical support and partnership, 400 dairy farms in the area now boast these facilities. The result has been a significant reduction in the mortality rate of dairy cows due to ticks and tick-borne diseases.

Dairy cooperatives and unions have not only focused on production but also strengthened their business operations. With TIDE support, over 30 cooperatives and unions have established one-stop centres, the backbone of dairy farmers' success. These hubs offer vital services accessible through a convenient check-off payment system. The outcome has been remarkable: increased member loyalty and unwavering commitment to their dairy cooperatives and unions.

Conclusion

The merger of small cooperatives operating in close proximity is essential for enhancing their bargaining power and ensuring the relevance of dairy cooperatives to their members, who supply them with milk. Through merging, cooperatives can increase their business volumes and attract greater attention from milk processors, leading to more favourable prices for the milk they supply. Moreover, mergers can result in cost savings for processors by consolidating milk collection into a single bulk centre.

It is crucial to empower district unions, enabling them to become strong and influential entities for member cooperatives. This will enable them to advocate on behalf of their members, particularly addressing the issue of counterfeit inputs negatively impacting production and productivity in farming.

Cooperatives and unions with the capacity for value addition should embrace this opportunity to establish sustainable dairy businesses. By taking on the responsibility of value addition, they can effectively meet the market's demands.

IMPACT Fuelling The Resurgence of Dairy Cooperatives in Southwestern Uganda

In 2016, dairy farming in Southwestern Uganda faced significant challenges, with just 23 dairy cooperatives struggling with governance issues and inefficiencies, resulting in losses for farmers. However, a partnership between SNV and Agriterra, as part of the TIDE-1 and 2 projects, aimed to address these issues and turn things around.

These cooperatives were hindered by governance and financial problems, lacking market power and unable to maximise value for farmers despite having a crucial resource - milk.

SNV and Agriterra joined forces to strengthen the dairy value chain by focusing on governance, financial management, and business development. The Cooperative Development Unit (CDU) played a pivotal role in transforming the initial 23 cooperatives in 2016 into a robust network of 139 by the end of TIDE-2 in 2023.

Santos Foods Limited became part of Tide 1 and later Tide 2 to enhance milk quality. These initiatives not only improved milk quality but also addressed environmental impact. Through the implementation of solar-powered solutions and changes in payment systems, Santos Foods reduced their environmental footprint, increased employment opportunities, and achieved higher overall cheese production.

> In just one year, we witnessed a remarkable improvement in the quality of milk received at our factory. The butter content of the milk significantly increased, allowing us to acquire the Q Mark from UNBS due to the superior product we brought to the market. The project's success was evident when it concluded," **shared Santos Ugiambo, Managing Director of Santos Foods Limited.**

Nyamisindo Dairy Cooperative Society faced water shortages and collaborated with SNV and Agriterra to construct dams and implement water harvesting programs. This led to increased productivity, stable income, and expansion into community development projects. Capacity building further strengthened the cooperative, contributing to sustainable agricultural development in the region.

> "At the cooperative level, we established four dams with the support of SNV. Small farmers were provided with water tanks and assistance in building reservoirs and troughs. Now, there is sufficient water for our cows, which has had a significant impact considering our drought-prone area," **explained Mr. Ericsson Nabimanya, Chairperson.**

Agriterra brought together 139 different cooperatives under the TIDE project, creating jobs and establishing a thriving business.

> We have mobilized 22,529 farmers from these cooperatives, who collectively produce 114 million liters of milk annually as of 2022. Additionally, we have generated 938 new jobs within the cooperatives. Our business size has reached 114 million liters, and we have installed a capacity of 600,000 liters per day, fully owned and paid for by the cooperatives," **shared Mr. Emile Agaba, Senior Cooperative Advisor, Agriterra.**

Through TIDE training, dairy cooperatives transitioned from traditional approaches to a more business-oriented mindset. Financial institutions and private companies now view cooperatives as valuable partners. Accessible capital and knowledge-sharing initiatives have enabled these groups to make crucial investments, driving the success of dairy businesses.

The transformation of dairy cooperatives in Southwestern Uganda serves as a powerful testament to the potential of collaboration. By empowering cooperatives and embracing value addition, the dairy sector has undergone significant evolution. The lessons learned provide hope for a sustainable future for dairy businesses in the region.

IMPROVING NUTRITION

A 2017 national study on Uganda's progress towards Sustainable Development Goals (SDG) Number 2 on Zero Hunger reported that only 34% of learners accessed a meal at school. School feeding and nutrition programmes serve a dual purpose of providing a channel for distributing food to children of low-income families and an incentive for such families to send their children to school. It also contributes to increased school enrolment and attendance while improving the health and nutritional status of the children. Girls in school are more likely to delay their first pregnancy, leading to better nutritional outcomes for the mother and infant.

Many children drop out of school due to failure to get a meal while in school. Malnutrition weakens Uganda's economy and results in productivity losses due to poor physical health, low school performance, and lower education or grades, primarily stemming from impaired cognitive development.

In 2016 and renewed in 2021, SNV signed a memorandum of understanding with the Ministry of Education and Sports (MoES), the Ministry of Health (MoH) and the Dairy Development Authority (DDA) to pilot a parent-led School Milk Programme (SMP) in the TIDE project area based on the 2013 National Guidelines on School Feeding and Nutrition Programme.

The school milk project under the TIDE project covered 14 districts of Kiruhura, Kazo, Ibanda, Mbarara, Ntungamo, Isingiro, Bushenyi, Sheema, Rwampara, Lwengo, Kamwenge, Rwampara, Rukungiri and Lyantonde, in Southwestern Uganda. Additionally, it encompassed three districts in the Kampala metropolitan area, namely Kampala, Mukono and Wakiso. The project, which commenced in 2022, drew insights from the lessons learned in the Southwest region.

When the TIDE project was launched in October 2015, many primary school children in the Southwestern region attended school without any prospects for meals, and over one-third of the children joining the school system were stunted.

In response to this challenge, school milk consumption was integrated as a social support investment to mitigate school hunger, improve education, increase access to market and income for dairy farmers and enhance the dairy value chain industry.

SNV's goal was to mobilise parents to contribute towards providing milk as part of a hot midday meal for learners, employing a parent-led approach as prescribed in the 2008 Education Act and other supporting circulars issued by the Ministry of Education and Sports.

Key Highlights

The School Milk Programme was successfully scaled up to **2,482 primary schools.**

922,779 children (52.4% girls) have milk mixed with porridge and processed milk at schools in Southwestern Uganda and in the Kampala metropolitan area.

The proportion of learners taking milk in participating schools increased, with some schools posting 100% coverage (private schools performed better than public schools).

The programme created a new local market for farmers' milk, with the schools consuming an average of **125,549 litres daily.**

Dairy farmers earn an estimated **daily income of UGX 126 million** and UGX 33.6 billion per annum in sales through the programme.

The project extended grants to participating schools.

500 schools, improved energy saving stoves.

173 schools, water purification systems

250 schools, handwashing facilities

30 schools for kitchen construction

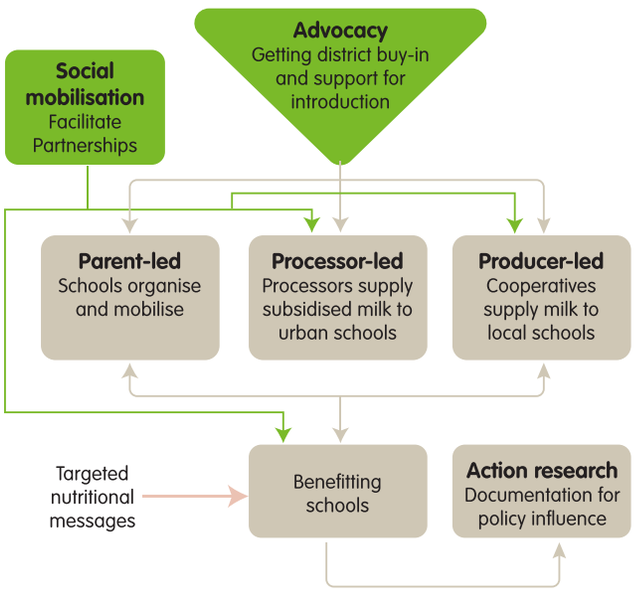
Piloting the Parent-led Approach in the School Milk Programme

The SMP targeted vulnerable households and children by collaborating with district local authorities, school foundation bodies, and parents through Parent Associations and Dairy farmer cooperatives. This was achieved through school milk campaigns designed to raise awareness of the importance of school meals in enhancing their nutritional status.

SMP pilot objectives:

- Promote milk consumption among school-going children to reduce short-term hunger and improve their nutritional status,
- Cultivate a milk-drinking culture.
- Create a new market for milk across the region by integrating it into school programs.
- Use community nutrition approaches around the school to enhance dietary diversity in dairy farm households.

The TIDE Milk Approach



The SNV SMP focused on operationalising the MOES 2013 school feeding and nutrition policy guidelines. The programme was anchored on strengthening parental involvement to contribute towards feeding children at school meals that included milk to improve learning and nutrition outcomes.

SNV supported the formation and operations of the national and district-level school milk task forces.

Spotlight

Milestone – the National Declaration on Parent-Led School Feeding, 31st October 2017

The Honorable Minister for Sports and Education and First Lady of Uganda, Maama Janet Kataha Museveni, and the Deputy Ambassador of Netherlands in Uganda, endorsed the National Declaration on Parent-led School Feeding, she also inaugurated a National Technical Working Group on School Feeding and Nutrition to pursue concerted efforts to end hunger and malnutrition of school children.This Declaration put parents at the centre of school feeding for their children with options that include the provision of home-packed meals, the contribution of fees for a hot meal, or fees for full boarding care, including meals and payment in kind through physical food, labour and time.This gave the programme a boost and policy guidance to all school feeding and nutrition programmes in the country.

This was followed by a National Flagship campaign by the Minister to all parts of the country, during which she mobilised the masses about the benefits of good feeding, nutrition, and care for children.

Additionally, local actors contracted by SNV played a key role in promoting school feeding. They mobilised and sensitised parents to actively contribute to their children's feeding and nutrition. This was done through face-to-face meetings with community members, PTA meetings, and community awareness campaigns using mass media.

The parents were encouraged to contribute to providing milk, either in cash or in kind. In each school, the parents agreed to contribute an agreed amount of money (ranging from UGX10,000 to 15,000) per term or its equivalent to purchase milk and other consumables (e.g., maize flour, sugar, and firewood for boiling the milk). In most cases, milk was added to maize porridge, thereby improving the porridge's nutritional value.

Upon the commitment by schools and parents (through Parents Teachers' Associations), SNV TIDE provided support through matching grants to schools that attained a 50% enrolment of learners consuming milk.

The incentive included 50% financial support towards the construction of improved kitchens, the purchase of improved energy-saving cooking stoves, and the purchase of water purification systems with Impact Water LTD. SNV also supported the training of teachers on milk quality testing and handling, including setting up mini labs in selected schools, carrying out hygiene campaigns, establishing vegetable and fruit gardens, and supporting the District Local Governments on deworming and vitamin A supplementation campaigns in schools.

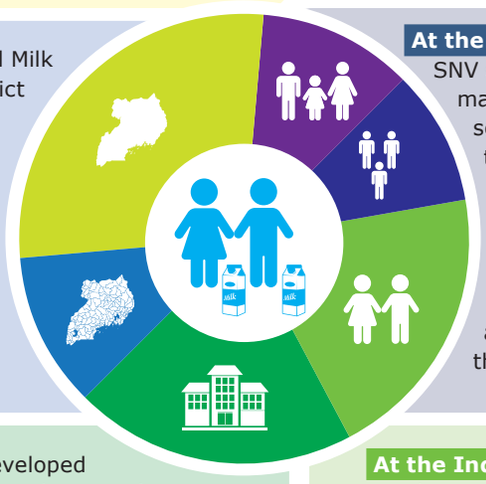
The parent-led approach, therefore, established strong linkages with the community, Local Government structures and the private sector players, specifically Dairy cooperatives, milk processors, milk collection centres, and private sector companies that supplied inputs such as improved cookstoves and water purifiers. These connections were strengthened through SNV matching grants, fostering market linkages and collaboration among various stakeholders.

Muti-stakeholder contextualised model for the school milk programme

At the National level: A task force comprising representatives from the MoES, MoH, DDA, MAAIF, academia and SNV played a crucial role in supporting the programme's implementation. This task force facilitated linkages and alignment with national-level policies and actions, actively participating in joint supervision, monitoring, validation, and verification of the program in implementing schools.

At the Parental level: Through PTA meetings and one-on-one contacts, parents discussed the proposals and committed to making termly payments for each of their children. They also agreed on an affordable fee for learners to access a meal with milk.

At the District level: A district School Milk Programme Task Force, chaired by District Education Officers (DEOs) on behalf of Chief Administrative Officers (CAOs), took responsibility for sensitising and mobilising communities to support the SMP. This included explaining school feeding guidelines and organising Parents-Teachers' Associations (PTAs) meetings to convince parents to pay an agreed fee for their children to access a meal with milk at school.



At the Community level: SNV supported the provision and marketing of milk by Dairy cooperative societies and milk processors through the engagement of Local Capacity builders (LCBs). The LCBs also carried out community sensitisation, education and mobilisation on milk's nutrition and health benefits and overall good nutrition for education and development. LCBs worked with the district school milk task force.

At the School level: Headteachers developed their school feeding proposals and convened parents' meetings to sensitise the parents. They were responsible for the purchase of milk and administration of the scheme. The school management and the PTA persuaded parents to pay for the milk. Schools established School Nutrition Committees to monitor the purchase of milk, preparation and feeding of the children.

At the Individual Child level: Children were educated about the nutritional benefits of milk (directly through improved nutritional status and physiological development or indirectly through improved cognitive development, learning capabilities and school enrolment) through nutrition clubs at school.

Lessons learnt

1. A national policy and statutory instrument on school feeding is of the essence to guide sustainable school feeding in all schools of Uganda.
2. SNV TIDE generated evidence based on the implementation of the SMP, and it showed that the school feeding and nutrition guidelines developed by the government of Uganda are instrumental and practical if there is an organisation ready to support its implementation in the school.
3. While the parent-led approach is conceptually understood, its practical implementation can be challenging, particularly in regions grappling with poverty and food insecurity.
4. School feeding programmes should integrate health promotion measures like deworming and promote safe access to water, hygiene, and sanitation.

Sustainability and Scale-up

1. A parent-led school feeding program is feasible but requires effective mobilisation and alignment with government policies from the beginning. This helps build rapport and gain support from school head teachers, PTAs, and community leaders, serving as a robust sustainability foundation for the program.
2. The fact that the government and many schools bought into the SMP concept suggests it is a relevant initiative. However, the programme was not embraced by all parents and communities (with 70% adoption), thereby limiting full adoption in all the schools. Follow-up is needed to understand what demotivates or prevents parents and schools from participating and identify the barriers and enablers to effective participation at the different levels.
3. The evidence base generated by SNV on the implementation of the SMP indicates that the 2013 School Feeding and Nutrition Intervention Guidelines developed by the Ministry of Education and Sports are instrumental but need to be reviewed to address emerging issues around Home-Grown School Feeding, Nutrition-sensitive menu options, monitoring and reporting.
4. While the School Milk Program (SMP) appears to be a sustainable initiative due to widespread support across different levels and alignment with national policy, school buy-in seems predominantly motivated by SNV's enticing matching grants for water purification installation, kitchen upgrades, and energy-saving boilers. In addition, SNV enlisted the assistance of grassroots organisations called Local Capacity Builders to support the schools in implementing the SMP.

IMPACT Scaling School Milk Programmes to Transform Lives Through Nutrition

In the heart of Kitunga, a long-standing challenge was threatening the future of its children. Low enrollment and lack of regular meals at the local Day and Boarding Primary School in Southwestern Uganda were impacting students' health, concentration, and academic success. Recognising the urgency of this situation, SNV partnered with the Ministry of Education and Sports and introduced a transformative initiative in 2015 - the School Milk Programme (SMP) implemented by The Inclusive Dairy Enterprise (TIDE) programme.

The impact was immediate and profound. Kitunga Day and Boarding Primary School, Parents-Teachers Association (PTA) Chairman PTA Rukundo Martin Kariho, witnessed a significant increase in pupil enrollment due to the milk program. "We have benefited from the milk-drinking program. In 2016, our enrollment increased from 788 to 1,484 pupils after introducing milk at break time. The program has improved the health of our students, resulting in no dropouts and regular attendance," he shared.

> **Musinguzi Herbert, Headteacher of Kitunga Boarding Primary School, echoed these sentiments.** He highlighted how the programme transformed the school's approach to student nutrition. "Now, with the help of SNV, we have procured materials such as saucepans for boiling milk and established a school kitchen. We also have milk testing equipment to ensure the quality of the milk. This has significantly improved our ability to provide nutritious meals," he said.

The results were overwhelmingly positive. Reduced absenteeism, improved focus in classes, increased motivation among the children, and enhanced academic performance over time were all direct outcomes of the programme. "When the program started, we observed several benefits. Absenteeism decreased, attention span in the classroom improved, and our overall performance increased. Last year, we achieved the highest performance ever, with 120 students in Division 1 and 43 in Division 2. This success is attributed to the school milk programme," emphasised Herbert.

Prosper Atukiriza, a P6 student at the school, previously faced hunger during classes, which affected her concentration and enjoyment of school. "I wanted to leave that school because there was no milk. But when I came to Kitunga, I found milk every day, and it made me very happy," she shared.

Today, Prosper and his peers are happier, more confident, and better able to concentrate and enjoy their time at school. "When I came to Kitunga, I found milk every day, and it made me very happy. I am now happy and confident," shares Prosper.

The impact of TIDE's School Milk Program extends far beyond Kitunga. Across the country, 2,482 schools are participating in the program, providing milk to 922,779 children (52.4% girls) daily. This translates to a total volume of 125,549 litres of milk consumed each day, generating a daily income of UGX126 million for farmers through milk sales, which amounts to an impressive UGX33.6 billion (US $8.9 million) annually. The School Milk Programme has not only filled stomachs but also brightened days, transformed lives, and significantly contributed to the local economy. It stands as a testament to nutrition's power in shaping our children's future.

INVESTMENT AND MARKET DEVELOPMENT

TIDE-2 looked at dairy as a market system with dairy value chain actors (farmers, coops, processors, and consumers), dairy value chain supporters (input suppliers and service providers, incl. finance and dairy advisory) and dairy value chain facilitators or enablers (government policies and the regulator).

As the project cannot address all issues in the sector, TIDE-2 was characterised by an approach that tried to address some of the key bottlenecks in the sector and the wider dairy market system to support investments and market development. It followed a market-led approach by working with and through private market sector actors to catalyst markets and foster farmer/cooperatives investments and parents' contributions to the school milk feeding programme. The project also engaged with government agencies for support at the policy level. This required an adaptive planning approach where the project was able to adjust and align project interventions, activities, and targets to the market's needs and opportunities.

The critical market support interventions included;

- Market development of relevant products for the dairy sector intensification process: product improvement and diversification of providers of relevant dairy services, including supporting business development support services and inclusive access to finance for all chain actors.
- Capacity building of input and service providers, particularly business development, technical advice and embedding of extension services.
- Design/implement an approach that assists farmers in accessing relevant and feasible finance options for investment and uptake of scaled technology.
- Proactively create and support market linkage opportunities (exhibitions, field days, trade missions, B2B).
- Assisting the Dutch private sector, where relevant, in accessing and supporting the dairy market development in Uganda.

Strategically, the project made use of innovation funds that were applied through a mix of smart incentives, matching grants and credit guarantees using three channels: (a) grants through the service providers, (b) cooperatives and (c) financial institutions.

Through the fund, the project established and facilitated a network of 30 local companies (including financial institutions) to provide farmer products (inputs) and services. By the start of 2020, the combined business transactions between farmers and service providers had grown by over €14 million. Part of the innovation fund was also used to support six different Tier IV institutions (SACCOs) and two banks to provide better agricultural loans to farmers and dairy businesses. Through financial institutions' facilities, dairy sector stakeholders' investments leveraged €3.18 million. Each euro invested through the facility led to approximately €7 in leverage in terms of investment in the dairy value chain in Uganda.

The project also had a dedicated unit that offered technical support to private sector actors in financial management, governance, product development and business growth services. Through these interventions, the total value of domestic trade volumes increased by over $14 million in 3 years. After five years, according to DDA data, national dairy exports increased from $35 million to $180 million, becoming the country's second-largest agriculture export earner in 2019. The market has continued its gains, and by the close of 2022, the dairy industry was one of Uganda's largest agriculture sector export earners, with exports of $263 million out of a total marketed milk value of $3.8 billion.

KEY LESSONS AND WAY FORWARD

This section provides key insights from SNV in Uganda's TIDE Programme, emphasising lessons learned and the importance of inclusive strategies for engaging smallholder farmers. These insights cover crucial areas from TIDE's efforts, including integrated farming systems, participatory approaches, social inclusion, technology adoption, market linkages, grant customisation, and community buy-in. categories.

Export-dependent market: In Uganda's agrarian economy, heavy reliance on export-led markets presents growth opportunities and vulnerabilities. While it holds potential for exponential growth, it is also highly susceptible to market failures, standards, regulations, and geopolitics.

Single value chain approach: Viewing dairy farming as just one facet of Southwestern Uganda's integrated farming system has limitations. Addressing critical farmer challenges such as soil fertility, water availability, climate adaptability, and socio-economic issues necessitates a shift from a single value chain approach to a more comprehensive crop-livestock integrated farming systems approach.

Inclusion of smallholder dairy farmers: Activities under the TIDE project had a strong technical focus, with subsidies to kick-start the adaptation of farming practices. Interventions focused on commercialisation largely benefiting medium-scale and large-scale farmers. As originally anticipated, this marginalised the direct participation of typical smallholder farmers (SHFs) through dairy cooperatives. The lesson learned is that the participation of smallholder farmers requires specific attention and related interventions. For the inclusion of the majority of SHFs, there is a need for alternative approaches that explicitly focus on SHFs so that they can become part of the ongoing sector transformation.

Build in social inclusion from the start: ISDAP showed that social inclusion for all marginalised groups is essential, as men dominate the dairy value chain. At the same time, the employees of service providers are usually a mix of young men and women, and married women mainly operate as unpaid family workers or labourers. This inclusion aspect was not a main focus activity under TIDE. Future programmes would serve better if a social inclusion strategy were built into the project from the start.

Single value chain approach: Buy-in from parents and schools is critical for the success and sustainability of the SMP. Achieving this requires a participatory approach, emphasising the tangible benefits of the SMP. Key factors include its contribution to providing nutritious food for school-going children, lowering cooking expenses, and ensuring access to clean water. These aspects are crucial in garnering support and ensuring the program's effectiveness over the long term.

OUR PARTNERS

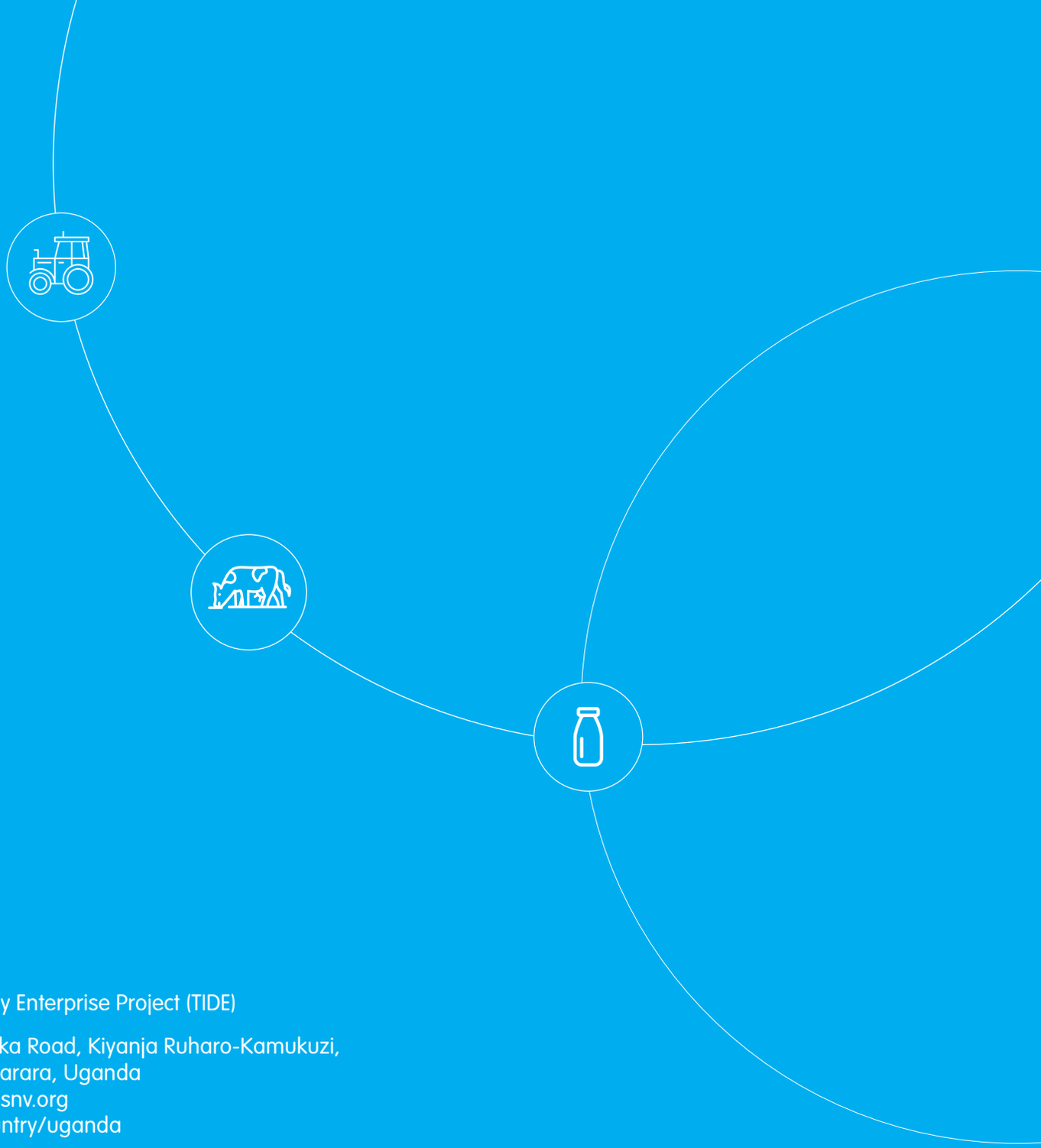
Mandated partners: These are local partners with a specific role or mandate within the dairy sector. The project provided operational funds to enable them to execute their mandated tasks within the context of project objectives, i.e., **National Agricultural Research Organisation** (NARO) carrying out applied research, **Dairy Development Authority** (DDA) implementing dairy-related regulatory and sector services, **Mbarara University of Science and Technology** (MUST) providing research and monitoring and evaluation services, and **Uganda Crane Creameries Cooperative Union** (UCCCU) supporting cooperatives.

Technical partners: These were international partners with relevant expertise for developing the Ugandan dairy sector. They provided (technical advisory) services to the project based on specific requests (Terms of References), i.e., **Wageningen University and Research** (WUR), **Bles Dairies Consultancy and Pro Dairy EA Ltd.** WUR was supportive in the MEL activities, Bles Dairies provided expertise and support in the milk quality agenda, skills training, development and strengthing the cooperative extension services, ProDairy supports SNV with valuable knowledge and skills on all aspects of forage production and cattle nutrition. Pro Dairy played a strategic role as the custodian of Rumen 8 software and the SNV tropical feed library on behalf of SNV. It has strong networks in ILRI and CIAT. ProDairy and Bles Dairies provided their technical expertise to provide content to the eDairy website.

Co-funding partners: Several partners provided leverage by co-funding specific activities in cash or providing expertise at no (or reduced) costs. Partners in this category included **Agriterra, Yoba for Life, and PUM. , International Centre for Tropical Agriculture** (CIAT) and **International Livestock Research Institute** (ILRI). Agriterra was leading in developing the Cooperative and SACCOs, while Yoba for Life introduced probiotic yoghurt as a part of the dairy value development chain. The number of pupils consuming Yoba probiotic yoghurt through the school feeding program in the TIDE 2 core area and Kampala Metropolitan area is 21,883, and 27,779 pupils are countrywide. The weekly production of probiotic yoghurt in the TIDE 2 core area and Kampala Metropolitan and countrywide stand at 39,070 and 61,844 litres, respectively. PUM provided senior expertise on R8 and cheese processing (Sanatos food). CIAT provided improved seed varieties for the manifold forage demo plots and provided technical expertise in forage management.

OUR TEAM


SNV
TIDE
PROJECT
CIAT



The Inclusive Dairy Enterprise Project (TIDE)

Plot 10, Haji Kasaka Road, Kiyanja Ruharo-Kamukuzi,
P.O. Box 1653 Mbarara, Uganda
Email: mdejong@snv.org
www.snv.org/country/uganda

The TIDE project was funded by the
Embassy of the Kingdom of the Netherlands and
implemented by SNV

THE REPUBLIC OF UGANDA

Kingdom of the Netherlands