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# Zambia Dairy Transformation Programme

## Evaluation Report

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Kevin has a comprehensive understanding of the need for compliance in donor programs having worked, consulted and evaluated programs funded by the World Bank, USAID, DFID, UN, SIDA, AFDB, Norwegian Agency for Development Cooperation (Norad) and the EU and leads by example in administration and program management.

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Steve is an independent consultant and currently the Team Leader of the NZ MFAT funded Sri Lanka Dairy Excellence Training Initiative. Other development organisations that Steve has worked with are: UNDP, FAO, AusAID, EU [Stabex], aBi Trust [Uganda], and the Government of Pakistan. He is an experienced farmer and sits on the board of a New Zealand based development NGO. Steve has been involved in all parts of the project cycle, as a leader and technical advisor in dairy development interventions large and small-scale; in a wide range of economic and political realities, and in climates ranging from humid tropics to desert and montane.

**Warwick Thomson** has over 30 years of experience in the design and development, governance, management and evaluation of development undertakings, primarily in the fields of agriculture, agribusiness, rural financial services, trade and competitiveness, private sector development and post-conflict economic recovery in Asia, Africa and the Pacific. Warwick is a certified company director and independent consultant whose development partner clients have included the New Zealand Ministry of Foreign Affairs and Trade (MFAT), the Foreign, Commonwealth and Development Office of the United Kingdom (DFID), the World Bank, UNOPS, Finnish International Development Agency (FINNIDA) and the Danish Ministry of Foreign Affairs. Warwick was a founding member of the aBi group of companies in Uganda and remains on their boards.

As an advisor, programme manager, development partner representative, in governance roles and as a consultant and practitioner, Warwick has led and managed development interventions – small, large and complex – in all phases of the project cycle, from policy, strategy, identification and formulation, to implementation, reviews and evaluations.

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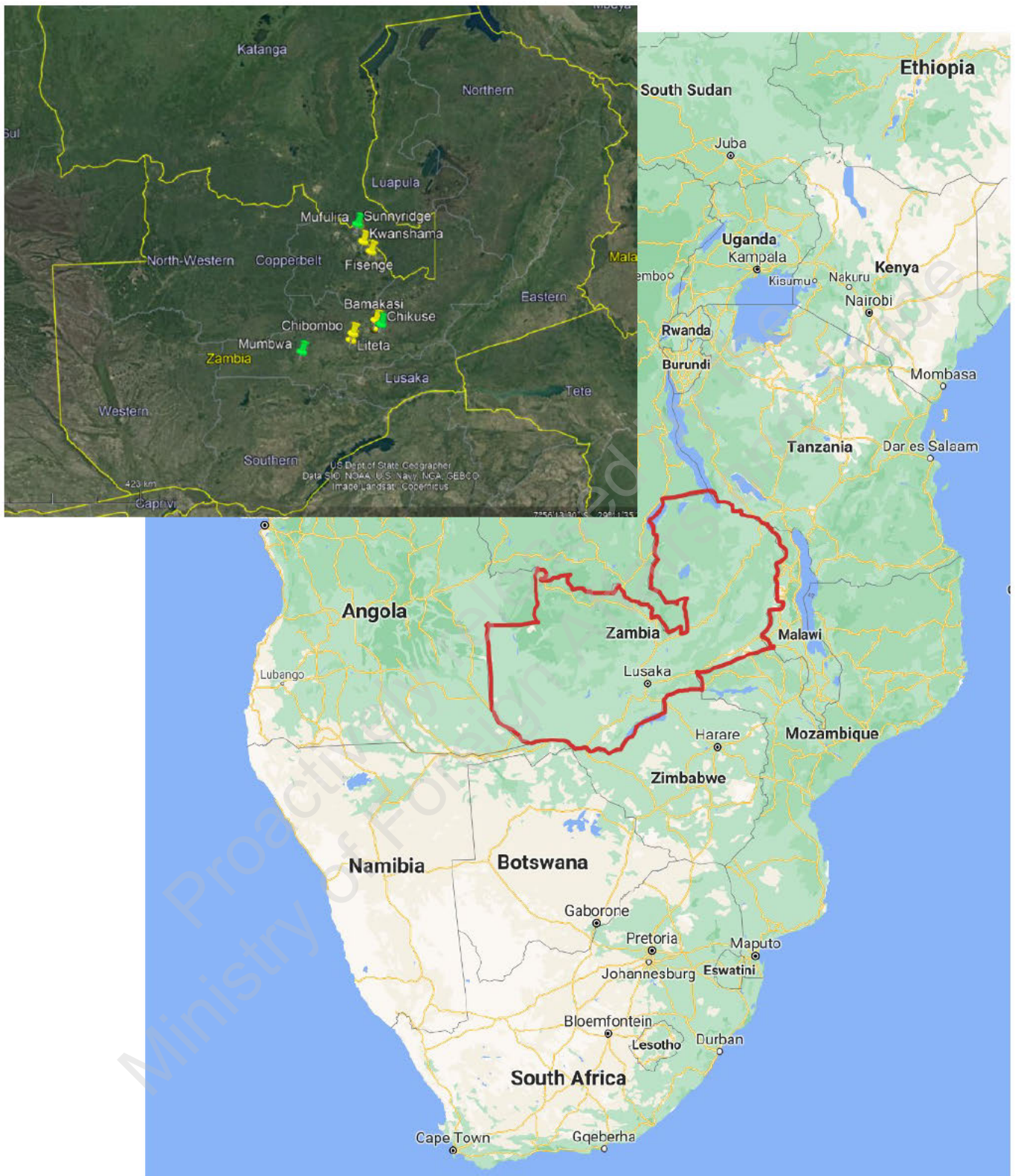
## Acronyms

ABS	Annual Benchmarking Survey
ADD	Activity Design Document
app	Mobile or software application
BSO	Business Support Officer
CAADP	Comprehensive Africa Agriculture Development Programme
DAZ	Dairy Association of Zambia
DCED	Donor Committee for Enterprise Development
DST	(MFAT) Development and Sector Thematic Division
EO	Extension Officer
ESG	Environment, Social and Governance
FTE	Full Time Employees
GDS	(MFAT) Global Development and Scholarships Division
GRA	Global Research alliance (on agricultural greengouse gases)
ha.	hectares
HDDS	Hosuehold Dietary Diversity Score
IT	Information Technology
LOV	Letter of Variation
MCC	Milk Collection Centre(s)
MFAT	New Zealand Ministry of Foreign Affairs and Trade
MFL	Ministry of Fisheries and Livestock
MOG	MFAT's Evaluation Oversight Group
MPI	(NZ) Ministry for Primary Industries
MSC	Management Services Contractor (Prime Consulting)
MSD	Market Systems Development
MSME	Micro, Small and Medium Enterprise(s)
NDP	National Development plan (of Zambia)
NZ	New Zealand
NZD	New Zealand Dollar
PAC	Policy Analysis and Coordination division (of the Cabinet Office, Zambia)
PCI	Prime Consulting International Ltd.
PCM	Programme Country Manager
PSC	Programme Steering Committee

PTC	Programme Technical Committee
RTM	Real Time Monitoring (ZDTP proprietary monitoring system for farmers)
SOP	Standard Operating Procedures
SPC	Standard Plate Count
TA	Technical Assistance
TOC	Theory of Change
TVET	Technical and Vocational Education and Training
USD	United States Dollar
VFM	Value for Money
ZATP	Zambia Agribusiness and Trade Project
ZDTP	Zambia Dairy Transformation Programme
ZMW	Zambian Kwacha

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# Map<sup>1</sup> of Zambia and ZDTP activities



**Figure 1. Programme locator map** showing original milk cooperatives (yellow pins) plus groups/cooperatives (green pins) ZDTP now also works with. Courtesy Google Maps and NOAA (US Department of State)

# 1

## Abstract

The Zambia Dairy Transformation Programme was evaluated in mid-2021. This five-year programme was initiated in 2017 as a partnership between the Government of Zambia and New Zealand Ministry of Foreign Affairs and Trade, delivered by New Zealand (NZ) firm Prime Consulting International. In Zambia's Central and Copperbelt Provinces, improved dairying practices and technologies are being introduced, and supported with programmes of training and demonstration. As a result, 1,000 smallholder farmers have changed their dairy farming, lowering their costs of production and improving the quality of their milk. The six small cooperatives (coops) they supply milk to are supported to run those businesses more efficiently. The programme has developed a collection of training and extension support materials and a strong body of evidence. Results for these farmers and the coops are generally positive, but modest and very variable, also reflecting market structure challenges and a drought of emergency proportions in 2019, followed by the Covid-19 pandemic.

The logic of the programme rests on a model of facilitated diffusion, expecting that the common-sense and efficacy of the practices being promoted will be taken up by other farmers and coops, in an enabling environment provided by government, industry and growing markets. It is too early to be able to measure that this is happening and the evaluation concludes that more time will be required to do so. A better design could have improved the efficiency, effectiveness and sustainability of the programme and also provided more evidence about how dairy development can support resilient social development, gender and environment outcomes.

# 2

## Executive Summary<sup>2</sup>

**This evaluation** of the Zambia Dairy Transformation Programme was undertaken by the authors in mid-2021. The evaluation was tasked with: assessing the relevance, effectiveness, efficiency and sustainability of the programme; and to assess impacts, identifying lessons learned and recommending options for a one-year extension of the programme and continued support for dairy industry development in Zambia in the future.

The evaluation was able to undertake a limited programme of field work and consultations, but otherwise relied heavily on remote consultations and the data and information provided by the programme and sourced in the public domain. Preparation for the evaluation did not include an evaluability assessment. Doing so would identify issues with design (eg. clarity, plausibility, validity, contextual and complexity) and information (eg. control group, data, gender disaggregation) but these issues are not considered to detract from the major findings, conclusions and recommendations, which were anyway quite apparent to the evaluation.

**In Zambia** about 200,000 smallholder dairy farmers milk about 640,000 cows. At just 3.2 cows on average, herd size is small and productivity is very low at about 5.2 litres per day over the lactation period. Average consumption is estimated at just 28 kgs per person per year of liquid milk equivalent and 84% of Zambia's domestic milk supply comes from smallholder dairy farmers. Milk and dairy product consumption is growing fast in Zambia, providing renewed opportunities for dairy farming and the businesses associated with that. Although the Government does not have a comprehensive dairy development strategy, it recognises the importance of the industry. There is long history of quite fragmented bilateral and multilateral support to dairy development in Zambia but the still undeveloped and poorly organised state of the industry and its supply chains indicates that sustainable impacts have been elusive.

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<sup>2</sup> The opinions, findings and recommendations in this document are those of the consultants and do not necessarily reflect those of the New Zealand Ministry of Foreign Affairs and Trade, or of any other parties.



**The Zambia Dairy Transformation Programme** is a partnership between the Government of Zambia and New Zealand Ministry of Foreign Affairs and Trade. This NZD7.5 million programme of dairy development commenced in January 2017 and is due to end in December 2021. New Zealand firm Prime Consulting International are contracted to deliver management services for the programme's implementation.

The goal of the activity is to '*Sustainably strengthen emerging dairy value chains by increasing the quantity and quality of milk produced by smallholder farmers for sale to national and regional markets*'. To realise this goal, the programme includes activities to: support smallholder farmer productivity; train and build the capacity of farmers and extensionists; build the business capacities of the farmer-owned cooperatives that the supported smallholders deliver their milk to; and work with government to support the enabling policy and regulatory environments for dairying.

The programme has made good progress in delivering its outputs and shorter-term outcomes.

The **main conclusions** about the programme are that:

The programme is well established and its operations are administered competently and responsively to the needs and requirements of both MFAT and the local government counterpart. There is good recognition of the programme and its activities by dairy sector stakeholders in Zambia and the support provided to the government's reform processes are appreciated and evident. But, there are no agreements made for handing over the programme's activities or capacities to government, industry or another development partner and so there is a high risk that many of the achievements may not be sustained.

**Design, strategy and implementation.** Aid effectiveness principles could have been better attended to. Design was done quickly, prescribing a fairly traditional farmer-facing productivity focussed technology adaption and demonstration programme of work. The evaluation's opinion is that the diffusion theory that underpins the programme's strategy for realising scale is not credible and does not recognise the broader complexities of dairy development.

The programme has understood binding constraints for smallholder dairy farmers and their cooperatives and is successfully demonstrating technologies and practices to improve productivity and the business of smallholder dairy farming and primary cooperatives. A good library of collateral materials to support training and extension has been developed.

The interventions are pragmatic and adoption rates by the farmers and coops supported, are satisfactory. The drought of 2019 and then the Covid-19 pandemic have been disruptive, but demand for the milk is strong and prices have increased considerably. There is interest being shown by other agencies and industry, and some anecdotal evidence of them incorporating ZDTP's practices in their activities.

The programme is deficient in its strategies for delivering gender, environment, and climate-change impacts. This need not have been costly and not being able to demonstrate outcomes for these cross-cutting issues is an opportunity lost. The programme has also not addressed financial services needs and not much attention has been paid to understanding how farmers and coops will finance their enterprises. This is a common design failing in technology driven programmes and one that future programming should address.

**Pathways to impact and value-for-money.** The pathways for higher level, sectoral outcomes and impact are not well articulated and it is likely that the programme will exit without really being able to measure how it has influenced higher level outcomes for the dairy sector in Zambia. The stand-alone nature of the programme challenges the effectiveness, efficiency, sustainability, and particularly the value-for-money of the undertaking, but, being able to confirm even modest improvements at higher-outcome and impact level that could credibly be attributed to the programme could change that proposition markedly.

**Evidence and its use.** Although there are deficiencies in the results measurement framework and the choice of KPIs, the level of effort made by the programme to measure and report activity and the results for participating farmers and cooperatives is comprehensive, well structured and of a high standard. This is generating a body of evidence that can be very helpful in supporting policy and investment decision making and the programme is now positioned to make a potentially very valuable contribution to policy reform and programming. This is a window of opportunity that provides a strong argument for an extension of the programme and New Zealand's engagement.

Outcomes for the participating farmers and their cooperatives are generally positive but are variable and fragile. This also reflects the small-scale of their enterprises, their very low levels of capitalisation, inability to materially influence industry or trade practice, low geographic density of production and distance to market, and the vagaries of weather. Indications are that increasing volumes of this milk are being consumed in markets local to the farmers and cooperatives, rather than being delivered to industry, and that is likely beneficial to local outcomes.

**Learnings and recommendations.** The evaluation's learnings are mostly directed to MFAT and have to do with: improving design for aid effectiveness and socio-economic outcomes; better understanding pathways to impact from the start; using risk-based approaches to support the credibility of implementation strategies and their impact attribution; and, paying more attention to financial services functions for enterprise-based programmes.

The **commonality of approach** across the New Zealand Aid Programme's dairy projects implemented in the 2010-present period is critiqued as being a simplistic and incomplete approach to development that does not represent good practice and which also undersells what New Zealand has to offer dairy development. The activities are something of a confused amalgam of livelihoods and private sector

development approaches. Deeper analysis by people whose specialisation is international development might have yielded designs that learned from contemporary good practice for agribusiness development, connecting more with local issues, realities and weaknesses rather than seeking to impose “tried and true” formulaic approaches.

**Dairy development takes time and is a complexity of partnerships and functionalities.** Ambitions for a single-phase, localized, stand-alone, direct delivered programme like the Zambia Dairy Transformation Programme need to be modest and focused. Because they have only limited scope, resources, and time with which to influence or convene change more broadly in the market system, being able to attribute higher-level impacts or systemic change to them is usually difficult and the value-for-money proposition challenging. The project cycle is usually too short to institute sustainable business models at scale or ensure that activities promoted are properly institutionalized and integrated as standard practice.

- Exceptions to this would most obviously be found with the private sector, where specialist support was given to programmes of investment being driven by the firms or industry, who also carry the risks and rewards associated with that investment.
- Mitigation measures include: making longer term commitments; ensuring strong alignment with, or participation in, Government and the private sectors’ policies and investment programmes; making credible and robust business case for the intervention in the local context, as part of the preparation process; and, taking the time to properly understand the local context, where that includes learning from previous interventions

Developing a strong, competitive, sustainable dairy industry requires **decades of continuous, consistent, unambiguous commitment and investment by all stakeholders** along the value chain; producers, service providers, traders, industry and regulators alike. When the premise is to build the industry on smallholder production, the complexity of the undertaking is made even more demanding because of the small volumes of often non-standardised, highly perishable milk that need to be produced, aggregated, transported, processed, manufactured, distributed, and retailed. Multiple and quite differentiated markets exist and for the formal manufacturing industry, fresh locally produced milk is readily substituted with imported milk and ingredients.

None of the above are reasons for not doing dairy development projects. Rather, they are reminders of the development promise of dairy development done well:

*“Dairy has the power to provide a major pathway out of poverty for individuals, families, and communities by making the necessities of life— food, water, shelter and clothing – accessible and affordable”.*

*But*

*"Given the diversity and technical as well as institutional complexities of dairy supply chains, dairy development strategies need to be carefully tailored to specific contexts and must consider efficiency and competitiveness of all actors in the dairy chain". [FAO, GDP, IFCN. 2018](#)*

The **evaluation concludes** that an extension of the ZDTP is warranted: to close down the field programmes in an orderly manner, if another sponsor cannot be found; to properly assemble and package the evidence and learnings, facilitate the translation of extension material into local language[s]; and, to use the opportunity that it has created to support government's policy reforms and programming for dairy development.

**Recommendations** are made in the context of what the evaluation understands to be reasonable and actionable suggestions to improve the programme's outcomes and MFAT's future development assistance and the headline for those is to **extend the programme**.

There is a case to be made for an extension, purely on the grounds of a year lost to Covid, but under all circumstances it is important to give the programme the time needed to manage an orderly close-out.

There is reason to be optimistic that some of the most promising and accessible practices promoted will continue to be used; for example, silaging and the milk quality assurance SOPs. Also, that a window of opportunity to work with MFL on policy and regulatory reforms exists. Positive outcomes will rest on a seamless transition into the extension and so there is an urgency about that.

# 3

## Background

This is an evaluation of the Zambia Dairy Transformation Programme (ZDTP).

**Agriculture, diplomacy and development in 2015.** To understand the ZDTP, an appreciation of its genesis is important. MFAT's thinking for its agricultural development interventions linked to priorities which included:

- Using the development programme as a way of introducing NZ's agricultural expertise internationally, by developing "flagship" agricultural projects in Asia, Africa and Latin America. Around the same time as the ZDTP was conceptualised, in South America and South East Asia, NZ initiated several other dairy projects of a generally similar design.

s9(2)(d)

- Informing NZ's UN Security Council tenure with a better understanding of issues faced by Africa Union members by increasing bilateral development assistance.
- The ZDTP was the first dairy project in Africa that set out to showcase NZ dairy technological knowhow, focussing on productivity gains for small holder farmers, improving milk quality, access to market information and policy/regulatory improvements. Ironically, there is nothing particularly "NZ" about the ZDTP; it promotes smallholder farmer strategies and activities that are similar to those that have been implemented in Africa and elsewhere by other modest-sized, direct-financed bilateral dairy projects.
- The design phases of dairy initiatives in Ethiopia and Tanzania got underway but circumstances changed and neither of them were concluded and implemented. Zambia remains the only country in Africa where the New Zealand Aid Programme supports dairy development.

If this all sounds a far cry from the magnanimity that is often associated with aid, it is also important to realise that the world's economies were still reeling from the [Global Financial Crisis which reduced aid flows](#) and also caused many countries to more closely associate their aid programmes with their own trade and investment interests. And, ambitions of a more transparent and efficient international aid industry that were the harmonisation and alignment aspirations of the [Paris Declaration for Aid Effectiveness](#) were being bruised by budget-support failures and high-visibility corruption cases, one after another, inclining many development agencies to return to direct-financed, often stand-alone, projects or programmes.

**Dairying in Zambia.** Zambia's 2018 Livestock and Aquaculture Census Report indicates that about 200,000<sup>3</sup> smallholder dairy farmers run about 1.5million cattle, milking about 640,000 of those; and average size of 3.2 milk-cows per herd<sup>4</sup>. Herd productivity is very low with perhaps 250,000 of these cows in milk at any time. The average yield of these cows is low by international standards. When milking, they yield approximately 5.2 litres per day over an average 250+/- day lactation period<sup>5</sup>

The average consumption per person<sup>6</sup> in the total population is estimated at 28 kgs per person per year of liquid milk equivalent and the total daily supply from smallholders is estimated to be 1.2 million litres per day, either via street sales or processors, with an additional 100,000 litres per day estimated as being consumed by smallholders in their own households.

84% of Zambia's domestic milk supply comes from smallholder dairy farmers. They produce about 450,000 metric tonnes of milk (liquid equivalent kgs) out of the total supply of 533,000 tonnes. The balance is produced from a small number of commercial herds.

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<sup>3</sup> From the Livestock and Aquaculture Census Report (Draft) of 2018 and the Zambia Demographic and Health Survey 2018

<sup>4</sup> These are best estimates, as the Census did not record the primary use of cattle but simply gave definitions as cows, bulls, etc. without differentiating between cows that were milked for human consumption or only for pregnancy and calf rearing, even if milk was also taken for domestic home use.

<sup>5</sup> Lactation length is the number of days during which milk is produced after calving. It is one KPI used to understand cow/farm productivity. In this case, all of lactation productivity per cow has been expressed as the dividend and lactation length is an assumed divisor to yield average daily milk production as the quotient, eg. 1300 litres/250 days = 5.2 litres per day. For more more information on KPIs, refer to Annex 3.

<sup>6</sup> The figures reported for production and consumption are many and varied and none authoritative. Estimates of consumption in the documentation that the evaluation read, ranged from 16-38 kg per person per year. This is not particularly material in the context of this evaluation. What all agree on, and which does matter, is that consumption is low but growing quite fast, also in its sophistication.

## THE ACTIVITY

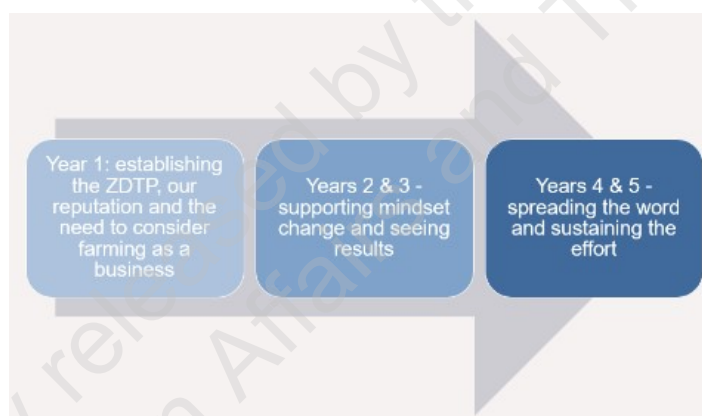
The ZDTP is a 5-year NZD7.5 million development partnership between the New Zealand Government and the Government of Zambia. The ZDTP commenced in January 2017 and is due to end in December 2021.

The long-term goal of the activity is '*Sustainably strengthen emerging dairy value chains by increasing the quantity and quality of milk produced by smallholder farmers for sale to national and regional markets*'.

The conceptual framework for the intervention model is as shown in Figure 2.

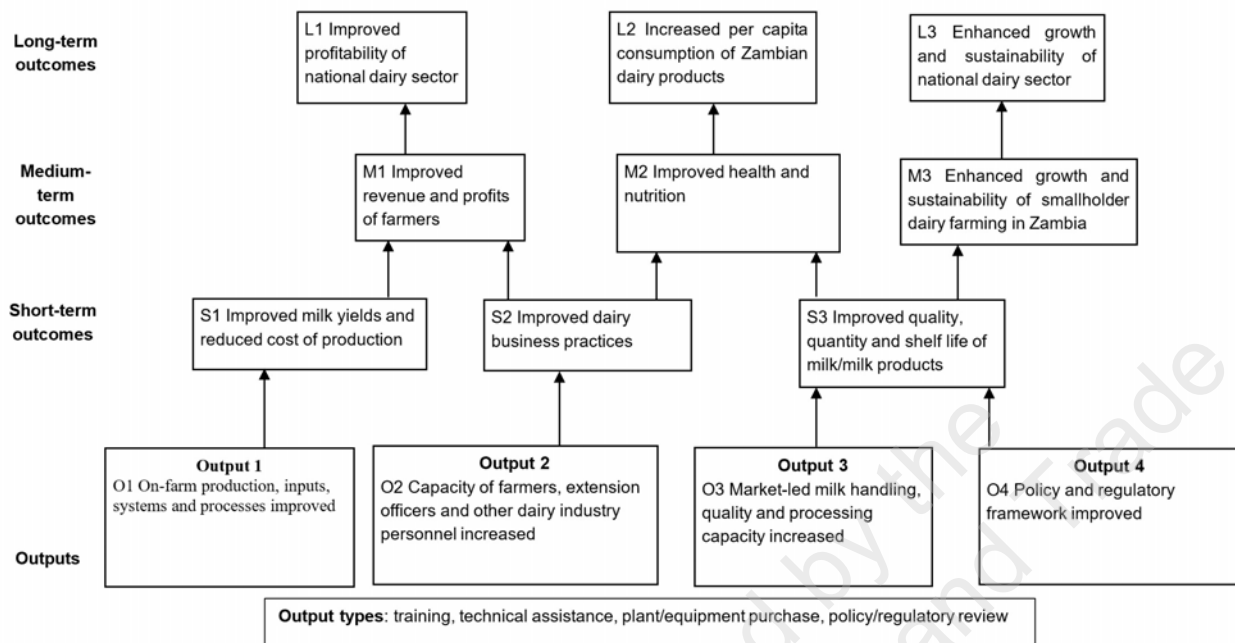
The expected long-term outcomes of the activity (see Figure 3 below) include:

- Improved profitability of the national dairy sector.
- Improved health and nutrition.
- Enhanced growth and sustainability of the national dairy sector.
- Improved revenue and profits for smallholder farmers.
- Increased per capita consumption of Zambian dairy products.
- Improved dairy industry investment environment.
- Improved milk yields and reduced cost of production.
- Improved dairy business practices; and
- Improved quality, quantity and shelf life of milk/milk products.



**Figure 2. ZDTP Conceptual Framework**

The results diagram for the programme is shown in Figure 3. ZDTP works with smallholder farmers associated with six target cooperatives, supporting them to increase the quantity and quality of milk produced and sold to processors. Three of the cooperatives are in Central Province (Liteta, Chibombo, Bamakasi) and three are in Copperbelt Province (Fisenge, Kwanshama, Mufulira). More recently, support to farmers associated with two cooperatives in Mumbwa has also been initiated.



**Figure 3. ZDTP Results Diagram**

Prime Consulting International (PCI) of New Zealand are the Management Services Contractor (MSC). They were contracted to design the programme and then to implement the first phase. PCI partner with international consulting firm NIRAS who deliver in-country administrative support from their Lusaka offices. They have also supplied technical specialists.

Implementation got underway in January 2017, although the Development Partnership Arrangement was not signed until July 2018. It was not until May 2019 that the Programme Steering Committee (PSC) and Programme Technical Committee (PTC) -the programme's governance and advisory bodies, respectively- held their first meetings.

**A major revision of the programme was captured in February 2020** formalising the following changes to the Activity Design Document (ADD):

- formalising the change in geographic focus made in March 2017, ie. moving from Southern Province to the Central and Copperbelt Provinces.
- acknowledgement that achievements against Long Term Outcome 1: *Improved Profitability of the Dairy Sector* and Medium Term 2: *Improved Health and Nutrition* would be more uncertain.
- acknowledgement that development of a quality based payment system had become irrelevant because it was clear that processors were not willing to implement this.



- modified the ambition of supporting a school milk programme as a means of market development to focussing support on the Fisenge Cooperative's products and markets.
- relinquished the ambition of working with the Zambia College of Agriculture to develop vocational training capacity, because of the geographic and contractual complications.
- budget revisions were managed within the original resource envelope. No additional funding was required.
- ascertaining that the activity logic remained relevant and the approach outlined in the ADD valid with no change required.

To give some idea of the **scope and scale** of operations, at the time of this evaluation, the ZDTP<sup>7</sup>:

- has existed for just four annual cycles
- the six cooperatives<sup>8</sup> supported receive milk from about 350 farmers who are supported by the programme. These farmers make annual gross profits from their dairying of about ZMW 15,500 or NZD 950. It is not known what impact the ZDTP has had on all-of-household income, but 60% of Zambians live below the USD 1.90 per day poverty line<sup>9</sup> and NZD950 [approx. USD 1.80 per household per day] could represent a substantial contribution to lifting people out of poverty.
- the cooperatives generated average monthly gross profits of ZMW 8,000 (NZD 490) in 2020, with a range from ZMW 600 to 26,000. These cooperatives are mostly fragile, under-capitalised businesses vulnerable to the impacts of fluctuations in supply, market volatility, risks associated with expensive equipment failure, loss of key staff, or non-payment by processors for milk quality impacted by operational issues.
- about 1,000 dairy farmers have participated in the programme's activities and this is a good level of penetration given the low total number of dairy farmers in the catchment area [less than 6,000] and that they are more geographically dispersed than in other dairying areas of Zambia.

The project is entering its last year and there are prospects for an extension which would be informed by this evaluation.

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<sup>7</sup> Information derived from ZDTPs 2020 Annual Report and March 2021 Results Framework

<sup>8</sup> The support provided to the farmers of the two Mumbwa cooperatives supported does not include business support officer and limited data is collected.

<sup>9</sup> <https://www.ifad.org/en/web/operations/w/country/zambia>

## EVALUATION PURPOSE AND DESIGN

### **PURPOSE**

The primary audience for this evaluation is MFAT. Other important audiences are in-country partners, particularly Ministry of Fisheries and Livestock (MFL), and MFAT's contracted supplier, Prime Consulting International (PCI).

The evaluation is intended to be used by MFAT and its partners to:

1. Assess the relevance, effectiveness, efficiency and sustainability of ZDTP from January 2017 to January 2021.
2. Assess apparent impacts to date; and, identify lessons learned, alongside those gained from MFAT's other global dairy projects, recommending potential options for a 1-year ZDTP transition period to ensure continued support for dairy industry development in Zambia in the future.

### **SCOPE**

The scope of the evaluation has included implementation since the programme started in 2017, in the Central and Copperbelt Provinces.

### **Engagement with key stakeholders**

The Evaluation Team engaged a cross section of key stakeholders, including:

- MFAT staff: Programme and Activity Managers and other MFAT Pretoria staff
- MFL staff
- The Programme Steering Committee
- Management partners: PCI and NIRAS staff as well as ZDTP field staff
- Dairy industry
- Participating farmers and their communities and local cooperatives.

### **DESIGN and METHODOLOGY**

The design of this evaluation is guided by the OECD-DAC Evaluation Quality Standards, applying the relevance, efficiency, effectiveness and sustainability criteria DAC prescribes.

Covid-19 travel restrictions meant that the two New Zealand members of the evaluation team were unable to travel to Zambia to undertake the evaluation; the national consultant undertook all of the field work and face-to-face consultations. Remote consultations and meetings were unproblematic; participants were comfortable and familiar with the virtual platforms used.

The evaluation has relied on secondary data, mostly that generated by the ZDTP, but also from other sources, where these were frequently used to triangulate the programme's data. The quality and structure of ZDTP's data and documentation is to be commended, though statistical interpretations need to acknowledge the limitations determined by the sample sizes, which are not large, particularly given the number of coops, the membership and the wide geographic spread of farmers. More robust KPIs [see Annex 3] and some initial guidance from a biometrician could have improved the comparability and credibility of reported outcomes.

Preparation for the evaluation did not include an [Evaluability Assessment](#). Doing so would identify issues with:

- design (eg. clarity, plausibility, validity, contextual and complexity)
- and, information (eg. control group, data, gender disaggregation)

These issues are understood as limiting the rigour of the evaluation but are not considered to detract from the major findings, conclusions and recommendations, which were anyway quite apparent to the evaluation.

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# 4

## Overarching Findings

In this section, the questions posed from the evaluation design are responded to using the OECD's evaluation criteria and [guidance](#).

### RELEVANCE

**New Zealand.** The ZDTP aligned itself to the New Zealand Aid Programme's Strategic Plan 2015-19 prioritisation of support to agricultural development, with its individual country initiatives for Africa that drew on New Zealand's strengths and competences. In that decade, the ZDTP was one of a portfolio of stand-alone, direct-delivered dairy development projects to countries that also included Colombia, Peru, Indonesia, Fiji, The Philippines, Sri Lanka and Myanmar. <sup>s6(a)</sup>

The projects all prioritised notions of "the New Zealand way" of dairying, were heavily characterised by high levels of New Zealand technical assistance and were all contracted to New Zealand companies to implement and manage.

The programme design and implementation has involved trading off [commitments to aid effectiveness](#) in favour of trade and foreign affairs imperatives, though with the benefit of hindsight, it is clear that these compromises were not necessary; a different design brief, allowed more time, could have accommodated good practice and trade and diplomacy agendas.

### Zambia.

**Markets.** At about 28 litres<sup>10</sup> per person per annum, milk consumption is low but demand for milk and dairy products is growing. About 6,000 smallholder farmers

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<sup>10</sup> Agricultural and trade statistics for Zambia are inconsistent and with large variance from source to source. Accordingly, for this document, the reader is asked to treat non-ZDTP statistics and data as indicative only.

produce an estimated 450,000 tonnes of milk annually which is aggregated at some 74<sup>11</sup> milk collection centres (MCCs) and then sold on to processors. Although production has increased perhaps six-fold since 2005, the industry can not source the quantities of locally produced milk it wants and prices paid to farmers have more than doubled over the past couple of years.

The [devaluation of the Kwacha](#) by more than 50% against the United States Dollar, coupled with [increasing commodity milk prices](#), provides strong support to local milk production and prices paid to farmers and cooperatives.

**National Policy.** The national ambition for development is guided by the Zambia Government's [Seventh National Development Plan](#) (NDP) which is structured with the five pillars:

- Economic diversification and job creation.
- Poverty and vulnerability reduction.
- Reducing developmental inequalities.
- Enhancing human development.
- Creating a conducive governance environment for a diversified economy.

Relevant to the ZDTP, there are various sectoral policies and plans that are to deliver the NDP, for example: the [Implementation Plan for the Second National Agricultural Policy](#) and the [Strategic Plan for the Ministry of Fisheries and Livestock](#)

The ZDTP's intent and design aligns with the NDP and, we understand, the 8th National Development Plan which is being drafted. The ZDTP was designed to address some of the key binding constraints identified as affecting the dairy sector, including low labour productivity and inadequate skills and innovation.

Access to finance is an NDP priority and is critical to formalising the dairy value chain but financial services<sup>12</sup> remain expensive for most Zambian farmers and rural [financial inclusion](#) still lags behind urban inclusion. This is a function not only of macro-economics, but also because the financial sector's capacities to offer agricultural and rural finance are nascent. The ZDTP approach to emphasise farmers and coops cashflow positions as the "bankable" asset, is a short term strategy that does not appreciate the important role financial inclusion plays in economic transformation. More attention should have been paid to partnering with financial institutions to inform and support their capacities to finance dairying.

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<sup>11</sup> Nilsson A, Chuzu P. 2020. Project Review of the Dairy Association of Zambia (DAZ)'s Digital Information Management System (DIMS) project. Niras for Sida.

<sup>12</sup> Financial services are more than just the various forms of credit enterprises need. They also include savings, advisory, risk management and insurance instruments, brokerage and collateral management.

Gender equity, environment and climate smart agriculture are prominent themes in NDP. The ZDTP design addresses these agendas but the realisation of results in these areas appears to be more by coincidence than strategy driven plans and intentions. There are no specific results, targets or KPIs for these themes specified in the Results Framework, for example. It is fortunate then that the default in Zambia is that *“women farmers and female-headed households work fulltime in smallholder dairy business and perform better than their male counterparts. Women are the most likely agents of change, and when women and girls earn income, they reinvest 80–90 per cent of it in their families, compared with only 30–40 per cent for men”*<sup>13</sup>.

Human nutrition and health is a priority for the NDP and the programme acknowledges with its: (i) measuring change in participating farming families’ nutrition using the [Household Dietary Diversity Score](#) (HDDS) methodology; and, monitoring Brucellosis and TB herd testing.

***Government appreciates the ZDTP despite the challenges it has to support dairy development from its own budgetary allocations.***

The ZDTP generally aligns with and is relevant to Government’s plans and ambitions, although there is no obvious prioritisation of dairy development from public expenditure allocations to MFL which fell from 1.3% in 2016 to 0.9% in 2018<sup>14</sup>. There is no national dairy development (or similar) strategy that focusses Government’s investments but MFL’s Strategic Plan has an objective to achieve a “30% increase in Dairy products by 2021” and there is ambition to develop the National Livestock Development Policy. <sup>s6(a)</sup>

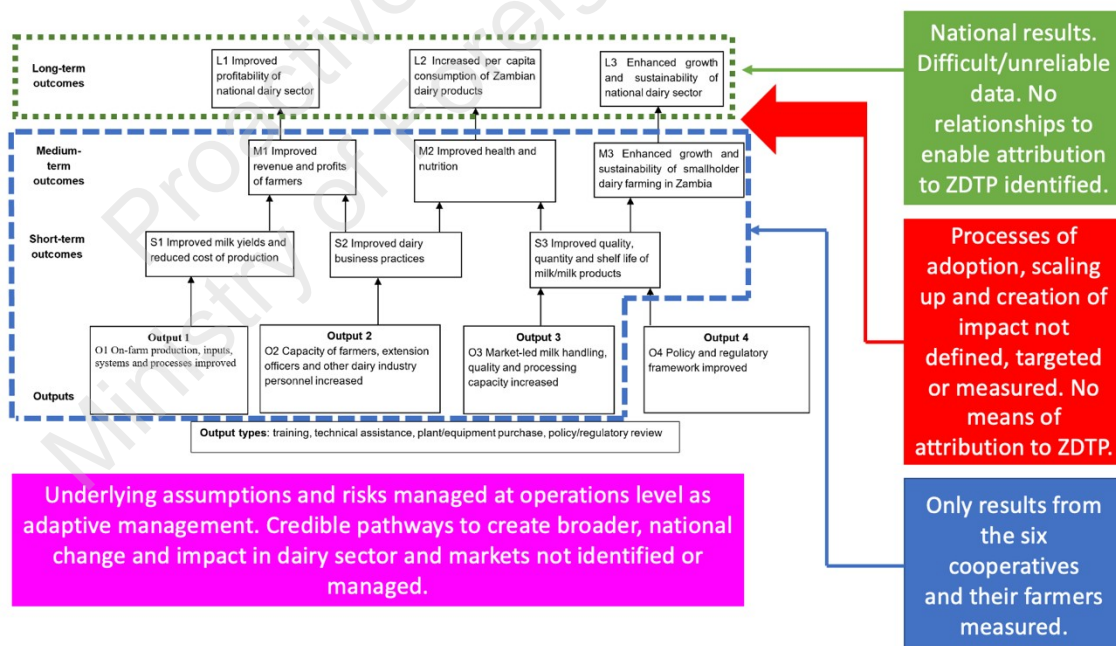
<sup>13</sup> Pandey, GS. 2014. International Journal for Rural Development. Food security and poverty mitigation through smallholder dairy – the Zambian case

<sup>14</sup> The Comprehensive Africa Agriculture Development Programme (CAADP), launched by African heads of state in 2003, offered the prospect of a new, intensified focus on agriculture throughout the continent. Zambia is a signatory to CAADP. The key CAADP commitment made by African states was to allocate 10% of public expenditure to agriculture and like most of its peers, Zambia is not meeting that commitment.

### **To what extent is ZDTP implementation consistent with its intended goals and objectives?**

**Overarching strategy.** Following a 2016 ZDTP “design options” paper that assessed existing dairy development programmes and the potential to collaborate with those, to bring some agility to finalising the design a decision was made to contract direct delivery in project-mode. This would allow applying learnings about how to secure better milk supplies from a patchwork history of former dairy and livestock development interventions in the country since the 1990s including: Government programmes underwritten by multilateral institutions; bilateral projects (eg. Sweden, USA, Netherlands); NGO projects; and the dairy industry’s own work. Viewed though the lens of traditional technology-transfer project delivery, the architecture of the programme was appropriate, but if the underlying analysis had included a credible **theory of change** exercise and a more detailed understanding of how **systemic change** was to come about and be managed and sustained, then options for alternate design approaches, or at least a re-think, could have emerged.

A fundamental weakness in the design is that it is: not integrated as part of a more comprehensive development and investment undertaking to build a stronger national dairy industry and markets; and, it doesn’t attempt to engineer or monitor the systemic change processes and national impact that it seeks to inform with its own medium-term outcomes. Figure 4. below sums up the isolation of the ZDTP.



**Figure 4. Understanding ZDTP’s results**

Having decided on an adapt-and-demonstrate modality, the ZDTP's decision to adopt a smallholder farmer approach as the central strategy is well argued for in the ADD's Annex F.7: *Further Observations on the Rationale for a Smallholder Based Commercial Dairy Industry in Zambia*. The outputs prescribed and the programme of work are relevant to the smallholder-centric approach chosen. Unfortunately the programme's design doesn't adequately attend to embedding and sustaining the approach, post-ZDTP. Doing so requires government agencies, coops or industry to deliver extension services to farmers, for which substantial capacity building is required. This includes curriculum development and investment in training facilities (capital and operational), ongoing professional development and resourcing of service delivery. Some of the most promising innovations in dairy extension are now digital.

The ZDTP promotes the notion of dairying as a business for farmers, coops and goods and service providers alike, but chose not to attend to financial services for dairying in the design, or to recognise (for example in the risk management framework) their importance for sustainable dairy development. The programme's central strategy is to develop and demonstrate a "bankable proof-of-concept" enterprise and scaling model which promotes technologies and practices such as silage making and mechanised services for fodder-maize production. As noted earlier, to support systemic change, a financial services results area<sup>15</sup> would preferably have been included in the approach and deliverables.

As noted earlier, focusing ZDTP's activities in Central and Copperbelt Provinces, leveraged development activities already gaining ground in these two provinces, filling in gaps that the existing and past development partners did not adequately address. Namely: lowering the farmers' costs of producing milk and animal husbandry, including provision of Artificial Insemination (AI) services. s6(a)

and because of this farmers remain vulnerable to the impacts of diseases such as the 2019 outbreak of East Coast fever in the Bamakasi cooperative which reduced the total herd numbers by 43%. Additionally, s6(a)

is also a risk to dairying that must, at some level at least, demotivate smallholder farmer investment in dairy development.

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<sup>15</sup> Including financial services in the ZDTP could have been as a formalized partnership for the purpose with a financial services development programme or financial institution(s) and preferably would not have involved the ZDTP functioning as a financial intermediary or source of funds.



What is understated in the ZDTP's design is that building a national dairy industry on a smallholder foundation takes decades of continuous, consistent, unambiguous support and commitment by the public, private and civil society sectors; all in markets competed for by industries who manufacture diverse and sophisticated offerings of milk and dairy products for rapidly growing urbanising populations, efficiently and rationally substituting locally produced milk for globally traded dairy ingredients. The longer term outcomes prescribed for the ZDTP are by-and-large beyond the direct material influence of the programme, which is also struggling to report credibly against them. At the least the ZDTP Design should have made clear its intention to be the first phase within a requirement for a longer term campaign to galvanize industry capability and performance in order to meet its stated outcomes. As the MFAT AMA for June 2020 rightly notes: "...long term outcomes should (sic) have a direct link to the Activity and more importantly for which the Activity can measure. Ultimately the Activity should be in a position to prove causal effect between the activity and the change noted".

*Conclusion: When it was initiated, the ZDTP design was highly relevant to NZ's foreign policy and trade interests. The ZDTP was highly relevant to Zambia's national development plans and strategies, albeit that in the national budget other more pressing priorities take precedence over the resourcing of dairy development. The smallholder strategy chosen was relevant, but incomplete; with too little attention paid to enterprise sustainability, scaling-up and the time it takes to generate real change at national level.*

## EFFECTIVENESS

The programme has made good and consistent progress supporting farmers to adopt practices to improve the efficiency of their dairying, reduce their costs of production (COP) and improve their financial position. There is a well defined strategy for this that includes technology adaption, demonstration, training, the establishment of focus farms, ongoing extension support and the development of technical guidelines and training materials.

Farm record keeping, an annual benchmarking survey (ABS) and the development and introduction of a real-time monitoring (RTM) system are all tools developed and used by the ZDTP to understand, track and report results. This information gathering and the use of data, importantly also to help farmers and extension workers' understanding, is impressive. If there is a single criticism to make, it would be that there are analyses being made that involve quite small cohorts of farmers and it is important to understand *whether or not those small sample sizes are adequate to draw robust conclusions*. For the sake of project management, this

is probably immaterial but if results are to be used more broadly, some quality assurance by a statistician would be worthwhile.

***Farming:*** *On-farm production, inputs, systems and processes improved leading to improved milk yields and reduced costs of production and improved revenues and profits for farmers*

In terms of farm level impacts, the Programme is generally tracking well, though variably across the six cooperatives. The strongest progress made is in reducing costs of production (COP) by introducing better feeding practices and feed conservation (silaging), resulting in more profitable and resilient businesses.

About 70% of the 482 participating farmers from the cooperatives supported have adopted at least one practice. COPs have reduced markedly; by 41% per litre of milk produced (Figure 5). This has contributed to increases in annual farmer gross profit and overall financial position (Figure 6), but these are also very variable and the interpretation needs to account for a more than two-fold increase in the price farmers are now being paid for their milk, compared to what they received at the beginning of the programme.

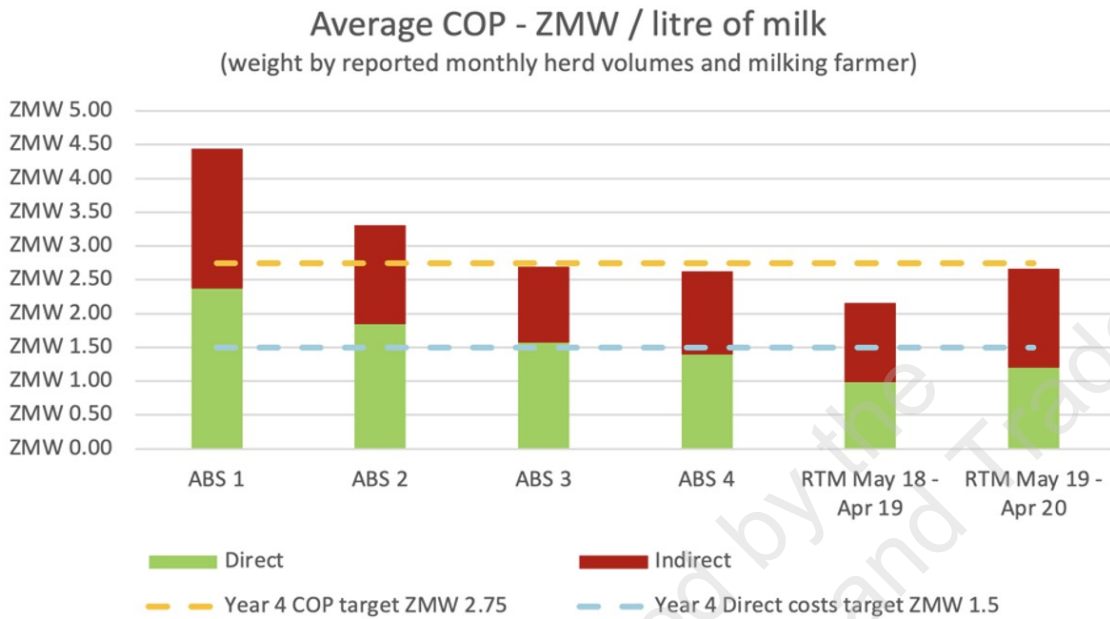
Investments required for farmers to adopt the new practices include: purchase of forage choppers, increasing areas of fodder planted, as well as inputs to improve animal health or milk quality. The volumes of milk being sold don't appear to have changed significantly but this also reflects: more milk being consumed by the farmers' households, which can reasonably be assumed to be a benefit to livelihoods through improved nutrition; more power-outages, which affect the MCCs' ability to accept milk; and, farmers feeding more milk to their calves, which will positively impact on farm productivity through the production of better heifers, calving younger]. See figure 7.<sup>16</sup>

There is good evidence to show that farmers who are actively participating in the programme and who are adopters of the practices being promoted are better off than their peers who don't. See Figure 8.

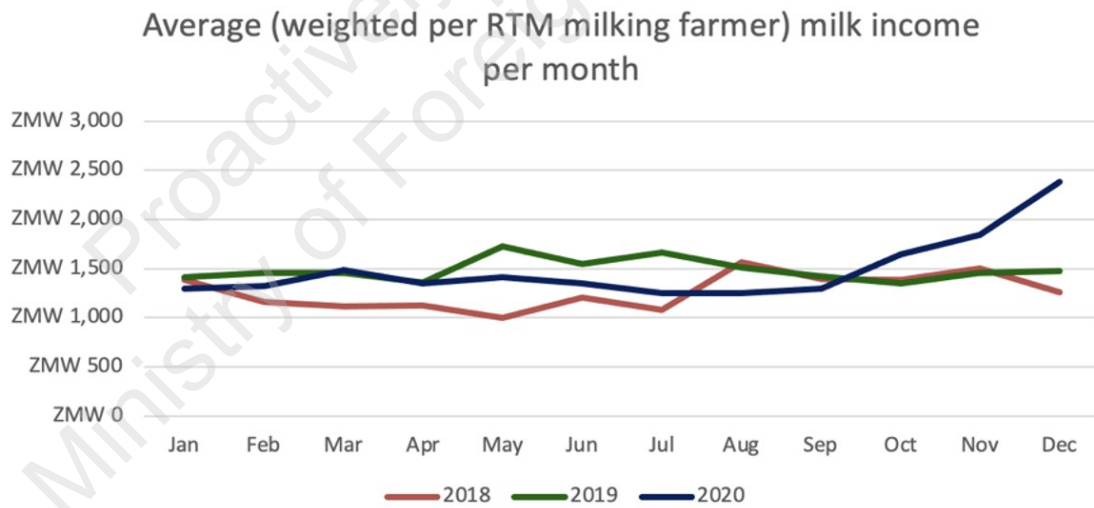
The programme goes to quite some length to understand where costs and profits lie for the various cohorts of farmers, where this also includes farmers still repaying their [Loan a Cow](#) and other loans. The programme doesn't measure "whole of farm" or household net incomes.

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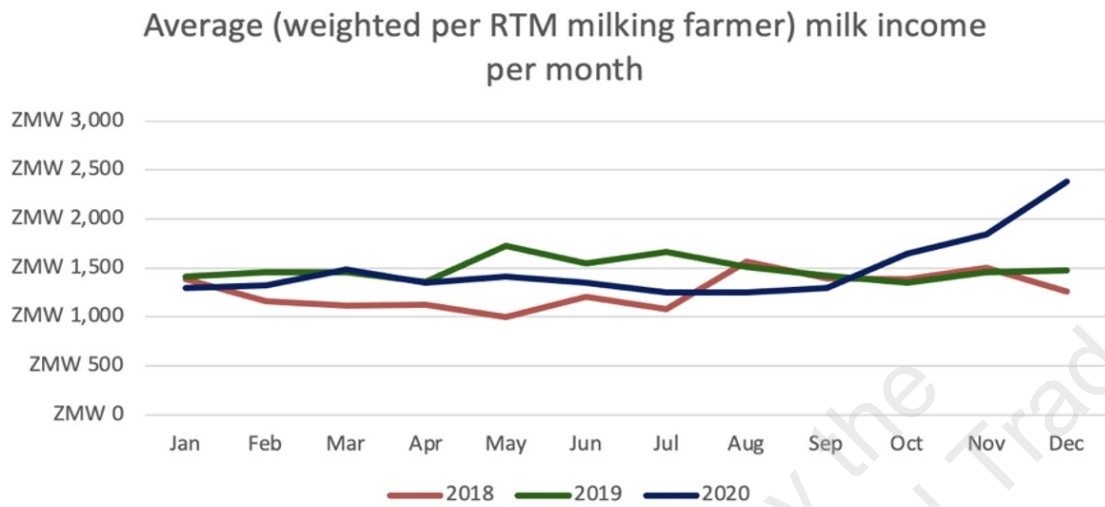
<sup>16</sup> Figures here are from the (ZDTP) Activity Progress Report for 1 April 2020 to 31 March 2021



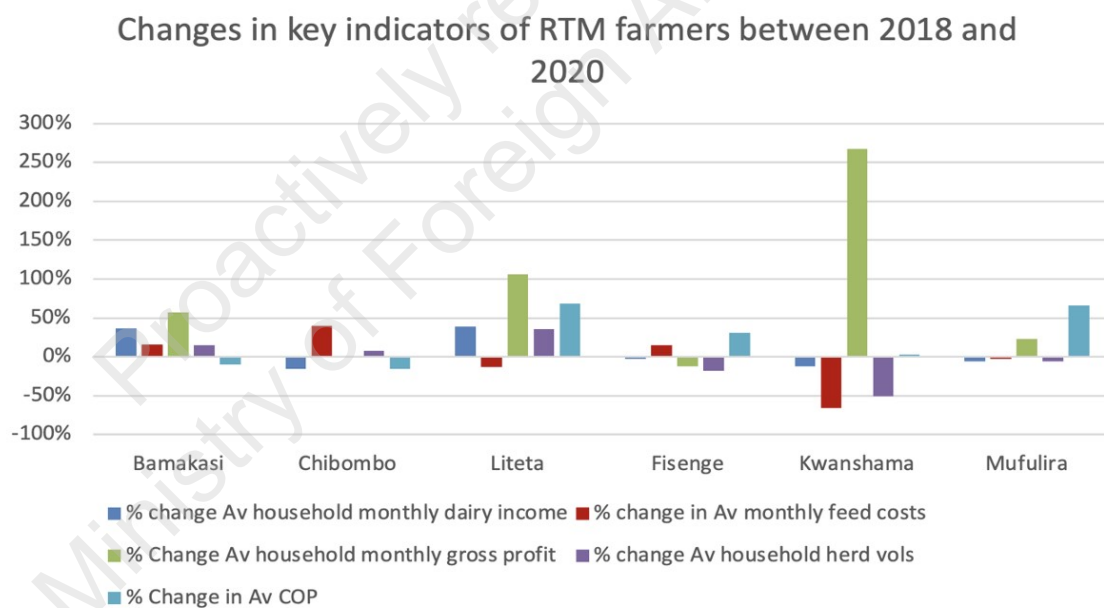
**Figure 5. Changes in cost of milk produce**



**Figure 6. Average monthly milk income**



**Figure 7. Average herd volumes of milk produced**



**Figure 8. Key farm indicators**

The overall impression given is that:

- there is progress, but most gains came early in the project-life and more time is needed to understand how these changes in practice persist and disseminate, post-ZDTP.
- progress in improving herd quality and net income is fragile and variable. Reducing costs, improving herd productivity and debt reduction are perhaps the best strategies for smallholders to manage risk, but since sustaining improvements will likely require farmers accepting seasonal (eg. to grow fodder) or capital debt (eg. for choppers or stock), will require access to finance options for the farmers and aspirant adopters beyond the ZDTP. It is understood that the programme has initiated work to address these issues.
- more appropriate KPIs which focus on herd productivity would have encourage farmers to better utilise available resources [especially feed] leading to higher profits based on better productivity. See Annex 3.
- the drought of 2019 was a shock to farmers, who are still recovering.
- taking a whole-farm approach to understanding change-on-farm and its impacts would have been useful. Monitoring even a small panel of representative units could enable stakeholders to understand the resource allocation and trade-off decisions farmers make as they try to improve their farming activities and what the outcomes are in terms of all-of-farm profit, productivity, wellbeing and climate change resilience.

**Capacity development.** The ZDTP employs training and extension staff and has active programmes of training and demonstration:

- a diversity of practical, hands-on training is provided in matters that can quickly generate benefits for farmers. Some examples are: building a concrete silage pit; making home-made concentrates; a simple milking parlour; heat detection; and, the use of the Sunlight Rapid Mastitis Test.
- training and extension collateral and news is shared on the [ZDTP website](#). There are 41 farm-related fact sheets or associated practical tools available on this site, but they are all in text-rich English language which is not the first [language for many Zambians](#).
- farmers are encouraged to participate virtually on WhatsApp groups and this is popular, and has been an effective response during the pandemic.
- there is a network of focus farms and field day events are run, however the scale of these have been reduced due to Covid-19 related social distancing requirements.
- there have been a few collaborations with other agencies who want to understand and learn from ZDTP. In 2020 there was a ministerial visit, ongoing training and extension work with Lactalis and the German

development agency (GIZ), and visits and discussions with World Vision with a view to providing training. Silage making is an activity that a number of agencies, including industry, have wanted to learn more about.

To date, about 1,000 farmers have participated in ZDTP's events and the programme measures its capacity building success by participant head-count and with the results that can be measured on-farm. This is pragmatic and practical but is only a partial measure of success because it is not clear how this rate of adoption can be sustained and accelerated once ZDTP is closed, nor how these efforts will be scaled up across the country.

ZDTP cites [Roger's Diffusion of Innovation Theory](#) as underpinning their strategy for broader, national-level outcome and impacts, noting that farmers will adopt techniques if they find them useful, but that time is required to ensure the benefit of any intervention is realised. This is a reasonable hypothesis, but the evaluation questions whether ZDTP has been able to achieve the critical mass required to catalyse change at scale. With 1,000 or so smallholder farmers, spread over six (plus two) cooperatives, a diversity of environments, and with the experience of only a few annual cycles this can at best be considered "a good start". It is reported that to March 2021, 341 farmers have adopted 1 or more of the 4 "good dairy farming practices" promoted by ZDTP: a good start.

Rogers suggests that it is necessary to induce change in both innovators (2.5% of the population) and early adoptors (13.5% of the population)<sup>17</sup>. It would have been impossible to achieve high levels of adoption of technologies by 1,000 [16%] farmers of the approximately 6,000 in the catchment area, within the timeframe and budget of ZDTP. Therefore it stands to reason that a plan should have been in place with the Government of Zambia to give clear line of site as to how this would be achieved post ZDTP.

*Our assessment is that there is a high probability that these capacity development activities and the resources that have been developed to support them, will diminish quickly in the absence of further sponsorship. There is no firm indication that any agency is preparing for that.*

**Cooperatives' Business Development.** *Milk handling, quality and processing capacity increased, leading to improved shelf-life, improved health and nutrition (of animals and humans) and enhanced growth and sustainability of dairy farming.*

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<sup>17</sup> The importance of early adoptors as opposed to innovators is: early adoptors tend to be integrated into the local social system more than innovators. The early adoptors are considered to be localites, versus the cosmopolite innovators. People in the early adopter category seem to have the greatest degree of opinion leadership in most social systems

There are about 74 smallholder dairy cooperatives in Zambia. They are mostly small and fragile as business units. The ZDTP has developed a structured programme of support to the six cooperatives focussing on strengthening their business management practices, governance and management and marketing of milk received. These cooperatives were already in existence when ZDTP came to them; each quite different from the other in terms of memberships, business development, financial position and market access. In total for the 6 cooperatives, there are about 350 farmers delivering milk to them. s9(2)(b)(ii), s9(2)(ba)(i)

Across the board, annual revenues for the six cooperative fell by 36% in 2020. Information from a GIZ programme that supports 33 coops is that this decline was typical and was caused by the drought and Covid-19. s9(2)(b)(ii), s9(2)(ba)(i)

The cooperatives don't just limit their activities to aggregating and marketing milk; they offer a variety of products and services to their members to generate revenues, these include: AI; selling feeds and concentrates; milk collection; and, renting choppers for silage making. We don't have a metric for how critical these functions are for the coop members but in more remote areas *where options are limited, these services maybe as important to their farming activities as having a bulking centre to deliver to.*

The evaluation's observations are:

- the work done to improve milk quality through better handling, mastitis control, improving chilling and storage and testing is important and is being done well, but translating this into profits is frustrated by low volumes of milk, sometimes long bulking times and power supply issues. The milk quality SOPs and fact sheets and trainings developed are important contributions.

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<sup>18</sup> Refer to: Review of Zanaco loan product taken up by farmers in Chibombo and Liteta Dairy Cooperatives: Preliminary Report from Phase One. Marvellous Chansa ZDTP Business Support Officer – Central Province, 24<sup>th</sup> May, 2018 [Power Point presentation]

- there are emerging technologies to support more energy efficient chilling and storage of milk and although beyond the scope of the ZDTP at this late stage in the programme, this might be of interest to future programmes. See for example [Promethean's Rapid Milk Chiller](#) that uses “thermal battery” technology and which also has solar options.
- the ZDTP has provided important material support to these coops. This has included business support and milk quality officers, equipment repairs, procuring generators and choppers and providing materials for training and demonstration.
- to make smallholder production, collection, bulking and marketing viable, a density of participating farmers and production is crucial. <sup>s9(2)(ba)(i)</sup>  
(refer below a discussion of the reasons) and will remain that way unless volumes of milk delivered to them increase so as to make handling, storage and collection economical. It may not fall within the scope of ZDTP, but an assessment of alternative, collection and bulking -probably private sector based- is needed and inspiration for this may come from an entrepreneur who is reported to be doing this in the Southern Provinces.
- the tools and practices developed to support the cooperatives’ business development are appropriate.
- the ‘traffic light’ tool is instructive and a good way to monitor and assess progress against the thematic areas: Governance; Financial management; milk quality; records; MCC management; legal compliance; and, sustainability.

Good progress (see Figure 10.) in improving the quality of the coops’ business management and governance is being made but issues of low volume and challenges to realise economies of scale, frustrate seeing these improvements translate into profits and growth. In some areas, private sector players have become involved via a mutually beneficial arrangement to lease and manage milk collection centres for coops. Another option may be to look at improved milk transport options to accumulate larger volumes in less milk collection centres.

More support from processors would be desirable however there is a trust issue. The minutes of the PTC meeting November 2020 noted: an increased percentage of milk produced by farmers has been sold into the informal market, i.e. ‘side selling’. This is due to a number of factors including: farmers getting a better price for their milk, farmers using business principles to maximise their profits (i.e. a better price and a reduced COP), rejections by processors, challenges with back-up power to allow continued milk cooling by MCCs <sup>s6(a)</sup>

The contributions of the ZDTP to supporting smallholder dairy cooperative development can best be capitalised on if the tools, procedures and support



materials developed are taken up by other organisations working in this field. This sort of capacity building function would normally be the work of apex organisations such as the Dairy Association of Zambia.

s9(2)(b)(ii), s9(2)(ba)(i)



Figure 10. The Traffic Light tool.

**Improved policy and regulatory framework** supports improvements in milk quality and shelf life, contributing to growth and sustainability of smallholder dairying and the national dairy sector.

There is a diversity of activities in this results area and they have included:

- a review of policies in the sector, though this was more of a stocktake than a critical assessment of the fit and utility of the various policies for the national development ambitions.
- a Study Tour to New Zealand which has clearly developed a lot of goodwill as well as interest in dairy development in New Zealand and the governance of that.
- discussions with the New Zealand Ministry of Primary Industries (MPI) and Global Research Alliance (GRA) to access support in the area of Greenhouse Gas (GHG) accounting.
- workshops to discuss the transformation of MFL and the livestock sector with follow-on work to draft strategies and plans
- a study to “stimulate discussion on how training and skill needs of small-scale dairy farmers may be met into the future in Zambia”. This was finalised in February 2021 as *The Provision of Sustainable Community Based Training to Support Small-Scale Dairy Farming in Zambia*. This is a thorough and comprehensive discussion about community based and vocational training needs, strategies and financing options. The work is progressive in its thinking but also very ambitious in so far as it anticipates paying for vocational training by imposing a levy on milk produced; something done elsewhere (eg. Kenya, Uganda) and not without difficulty. We understand this study responded to an MFL request to look at how skill needs in the industry could be addressed, but are unclear about how this work will be continued.
- support to the Department of Policy, Planning and Information and Department of Veterinary Services to develop a national animal health policy and accompanying strategy. This process has received strong support from the ZDTP. The policy was reviewed by Cabinet’s Policy, Analysis and Coordination Division (PAC) and an implementation plan and national animal health strategy are now being finalised.
- PTC and PSC meetings and field visits which are regular and well documented. These are important fora for discussing policy, presenting evidence and seeing good practice in action.

*The contributions ZDTP is making to policy reform and management appear to be valued and useful. Policy advisory work requires technical skills and patience, but to be effective, also relationships of trust and credibility. It is apparent that the Programme Country Manager enjoys the confidence of Government counterparts working with policy and at this stage of the ZDTP where there is now a good body of evidence and learning that can be used to inform evidence-based reform, this is very positive. This is a window of opportunity to use the evidence and learnings from the programme to inform processes of national development. Successful outcomes from doing this can improve the value proposition of the programme, by magnitudes. Though, that will take time beyond the ZDTP's current engagement. Some work by the ZDTP to see how these reforms are reflected in government's budget processes could be a valuable way of monitoring the implementation of the reforms.*

**Gender, Environment and Human Rights.** The programme expresses very little ambition to proactively manage these cross-cutting issues beyond notions of doing no harm and some reporting of participation of women in promoted activities. There is some narrative in the annual reports about female participation but no real ambitions or targets or real understanding of outcomes. The "Gender Strategy" that was prepared earlier in the programme life isn't actionable and doesn't demonstrate a contemporary understanding of working with gender equity in agriculture, how to plan for that and how outcomes can be monitored and measured. Similarly for human rights and environment where both of these important areas are dealt with in just a couple of narrative paragraphs, without reference to active management for transformation or metrics of performance.

*Basically, the ZDTP's performance against these cross-cutting social-performance themes is unevaluable, which is also to say, not good enough. This is unfortunate because it is quite likely that there is evidence to glean and that there are stories to tell about how families are benefiting, how dairying can benefit food security and nutrition, and, how the promoted activities can support resilience and mitigate environmental damage. This sort of evidence is needed to supplement the economic growth imperatives that typically underpin theories of change for improving agricultural enterprise.*

*It is something of a failure of the programme's design and then its subsequent implementation and supervision that this has not been better attended to, but there is still an opportunity to commission an ex-post assessment of cross-cutting issues, outcomes and learnings and it is a recommendation that this is done. The lack of baselines and results measured will mean this is not straight forward, but there are methodologies available.*

## EFFICIENCY

To what extent has ZDTP management and governance been efficient?

**Modality.** There are multiple options available for agencies to channel their development assistance and they are not all equally efficient. They include co-financing an existing programme or multi-donor fund, providing budget support to government, general or earmarked contributions to multilateral agencies, or, commissioning a contractor to directly deliver the implementation, which is the option chosen for ZDTP. This modality –particularly when it is a stand alone project that is not embedded in local counterparting institutions and their investment programmes- also challenges New Zealand’s commitments to the aid-effectiveness agendas of the [Paris Declaration and Accra Agenda for Action](#).

Direct delivery by a New Zealand firm in a country where they have no existing presence or experience is challenging in terms of securing value for money and sustainability, especially for a shorter-duration intervention. More than NZD 4 million of the ZDTP’s NZD 7.5million grant budget is associated with fees and expenses related to expatriate staffing. The project runs on cost-structures that cannot at all be assumed by the local economy and there is no exit strategy that credibly indicates how activities and functions will be carried on once the programme closes.

A programme of systematically replacing international staff with local or regional staff, and of progressively institutionalising the work programme, could have improved efficiency and value for money and left a greater legacy of capacity once the programme closed down.

**MFAT’s contract management and oversight.** The MSC relate that they had a month to design the programme and that there was no formal inception period<sup>19</sup>. Prime Consulting would have preferred a recognised inception period within the early implementation and setup of the programme but MFAT’s strategy was to use an adaptive management approach to getting the programme up and running while a design was finalised. This has been problematic: since implementation started in 2017 there have been six variations of the contract approved, the ADD has been revised and the geographical focus shifted. This is a lot of revision and adjustment for a modestly-sized, highly prescriptive, direct-delivered project, all of which is costly in time and administration and most of which could probably have been avoided if more time had been provided to preparation.

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<sup>19</sup> An initial phase of a project during which implementation strategies, plans and budgets are elaborated and implementing partnerships and collaborations formalised. This detailing is done to improve the quality of project management, implementation and outcomes.

The **Covid-19** pandemic has restricted Post's ability to participate physically in the ZDTP, though their "virtual" engagements have remained active. For MFAT more generally, the pandemic has been disruptive; staff have been tasked to respond to changing priorities and travel has been curtailed. Post<sup>20</sup> participates actively in the PSC and PTC and appears to provide adequate levels of supporting and monitoring of the activity. The same is to be said of MFAT's Wellington support to the activity.

An observation made is that the turnover of desk-officer level staff in MFAT's Wellington offices is frustrating for the MSC. This is experienced as a lack of continuity and consistency, and time and patience needing to be spent in discussing fundamentals repeatedly. The evaluation isn't privy to how many officers have held the role over the project-period but the criticism is not unique to the ZDTP. All of the development agencies we are familiar with have these issues of high staff churn and perhaps the best way you mitigate the effects of that on activity management is to improve handover processes.

**Monitoring and evaluation.** The programme pays attention to gathering data to understand how farmers and cooperatives participate, adopt practices and how benefits accrue. Activities are well recorded. *At activity, output and short-term outcome levels there can be a high degree of confidence in the results measurement and interpretation.*

In late 2017, the programme developed and rolled out its Real Time Monitoring (RTM) system, which is based on MS Excel. Not all farmers supported are reporting in on this platform. As would be expected, it is the most progressive farmers who are and their general performance results are also above their peers. The programme undertakes an annual benchmarking survey which is a 100% sample of participating farmers and this also helps them to normalise the results reported in via the RTM. All of this results in an impressive and comprehensive collection of data that has a value beyond the programme, for example, to inform policy development, other development partners' undertakings, and private sector investment. Banks who were interested in financing smallholder dairying could find this information valuable, for example. The value of this data is timebound however. Within a few years much of it will be dated and lose its relevance. This means, there is a window of opportunity to use the knowledge and learnings of ZDTP to inform broader processes.

Observations the evaluation have to make are that:

- Other **KPIs** could have been chosen to give better measures of farm productivity and herd performance and we discuss that in Annex 3.

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<sup>20</sup> "Post" refers to the New Zealand High Commission in Pretoria

- beyond the short-term outcomes, the **pathways to medium and long-term impacts** are not well defined and the measurement of those changes and how they can be attributed to the programme are not clear. This is about understanding [systemic change and using tools to measure that](#).
- though prescribed in the ADD, gender disaggregated data is not reported in the results framework. **Neither are there results areas and KPIs identified for gender or environment or climate change resilience.**
- the progress reports go to a good deal of effort to present the results, often for what are quite small cohorts (farmers in a cooperative with and without loans, 19 emergent farmers spread across 4 target areas, etc). The conclusions drawn are for guiding programme management and as the basis of discussions, but the **statistical credibility** of these [samples warrants an assessment](#) if the analysis and interpretation of results is to be used more broadly.
- the drought of 2019 and then Covid-19 have challenged the programme's operations and they have needed to **adjust their operations to respond to these challenges** to their modus-operandi. For example, by using virtual platforms to communicate, adopting Covid SOPs, and gearing up their development of web-based guides and training material.
- The 2019 drought also highlighted the need for action and narratives around resilient farming systems.

**The Value for Money** proposition of ZDTP is challenged by the direct-delivered, stand-alone design and the uncertainty of its outcome and impact pathways. This is exacerbated by the relatively short project-life: effectively four growing seasons and with a drought disaster and Covid-19 amongst those. The diffusion logic that the design says will generate impact at scale and that will be able to be attributed to the programme is uncertain, given the small scale, narrow scope and lack of formal alignment other programmes of public or private investment. There is no formal process of handing-over or transitioning to a national agency carrying on the activities post-ZDTP ownership. Allowing the programme more time might support better value-for-money outcomes, but to that extension should identify firm milestones and include commitments from the national counterpart.

Being able to confirm even modest improvements at higher-outcome and impact level that could credibly be attributed to the programme could change the value-for-money proposition markedly. Figure 11 illustrates. At the moment the programme is not in a position to do this.

The Costs of Production for participating farmers have been reduced by about 2 ZMW/litre. If those cost savings were made for just half of the 450,000 tonnes of milk produced annually by smallholder farmers, that would effectively put an extra ZMW 450 million in their pockets; - **annual returns of about 4x the total ZDTP cost.**

As a rough benchmark, project investments per-farmer beneficiary of US\$50 - \$250 over the whole project life, would be the norm for contemporary agribusiness or market systems development programmes in Africa. At the moment, and **until there is broader adoption at scale of the technologies and practices promoted**, the ZDTP's per-farmer costs are an order of magnitude greater than this.

**Figure 11. The importance of scale**

## SUSTAINABILITY

*Will ZDTP's outputs and achievements will be sustained in the longer term and to what extent?*

**Farmers and Coops.** The farmers supported have been assisted at levels that Zambia's smallholder dairy farmers would not normally receive. But, the generally positive results most of these farmers experience when they adopt the technologies and practices promoted, and the levels of sustained adoption being recorded, are grounds for optimism that these farmers at least will continue to farm this way, sustaining their achievements. If prices remain encouraging and there are no insurmountable shocks to the production environment (drought, disease, etc), then we think it likely that some neighbouring farmers, or those who receive the newsletter or attend field days and who can see at first hand the benefits, are also likely to adopt. There is some evidence to support that this is already happening, albeit on a small scale. These will be farmers who have the inclination, some surplus labour and land, and some milking animals.

The results experienced by the 6 cooperatives supported are generally positive and demonstrate what is possible, but they are variable and quite fragile. These coops are small, under-capitalised businesses that operate in a high-risk environment. But the better business practices that have been introduced to them are sensible and pragmatic and so there should be a reasonable expectation that they will continue to use them.

**Sustaining broader processes of dairy development.** Government, industry, and other development agencies are showing interest in the work of the ZDTP and there have been a couple of collaborations. This is encouraging but it is too early to

assume that the achievements made by the ZDTP will translate into a significant adoption and replication of the activities by other stakeholders. The programme's results framework is not set up to be able to measure these changes and their attribution to ZDTP.

Perhaps the most promising process that is underway and which could become a major contribution to a sustainable dairy development in Zambia, is the relationship that the Programme Country Manager has with her MFL counterparts and the support she is giving to their ongoing policy and regulatory reform work. Being able to continue this work, informed by the evidence that ZDTP has assembled, could generate sustained change, at scale.

These processes of policy development and then developing and implementing investment programmes and capacities to deliver them, take time and are continuous processes. To be able to support good decision making at the outset can be very determinant to the outcomes and their sustainability. Noteworthy here is that the study tour to look at the state-industry-farmer partnerships for dairying in New Zealand, have demonstrated to Zambian policymakers that their role is first and foremost to build the enabling environment for the business of dairying.

Per-se, although the packaging and presentation might be particular to the ZDTP, none of the technologies and practices being promoted are new to the region; in various guises and iterations they all have histories of being promoted by not dissimilar project-style interventions. The interpretation of *why Rogers Diffusion of Innovation Theory has not already led to these practices and technologies* being increasingly the norm for smallholder dairying has to be that, amongst others:

- there are a host of other linked, supporting goods and services functions in the sector that are needed to work and those enterprises all need to make business sense to their owners
- the structure of the market, with many smallholder farmers producing small volumes of a highly perishable product into lengthy cold chains that are unstable, is a competitiveness challenge when imported product and ingredients can directly substitute
- weather and livestock-health risks can be mitigated, but there are costly capacity and resource challenges to doing so.

**Environment, Social and Gender sustainability.** For the ZDTP, the sustainability of activities and outcomes for these central development themes are unevaluable; because the programme has not credibly targeted them in the design and neither has it made adequate efforts to measure them. This is unfortunate because it is quite likely that there are positive stories to tell.



# 5

## Evaluation Conclusions

The main conclusions about the Activity are that:

**Management and Implementation.** The ZDTP is well established as a project unit. Its operations are administered competently and responsively to the needs and requirements of both MFAT and the local government counterpart; the MFL. There is good recognition of the programme and its activities by dairy sector stakeholders in Zambia. The support that ZDTP provides to the government's reform processes are appreciated and evident. The execution of budgets and plans is satisfactory. The programme's responses to the restrictions imposed by Covid-19 have shown a good duty-of-care and have been pragmatic. The programme is overseen by the High Commission in Pretoria ("Post") who remain active in this function, albeit virtually during the Covid-19 pandemic.

But, there are no agreements made for handing over the programme's activities or capacities to government, industry or another development partner and so there is a high risk that many of the achievements may not be sustained.

**Design.** The programme was not specifically designed to align with and formally contribute to national or industry undertaking(s) and formal counterpart financial contributions are not a requirement. In this respect, the attention given to aid effectiveness principles could have been better attended to. Design was done quickly, in the absence of in-country experience (though with an MFL staff member on the design team), and there was no inception period provided to refine the ambitions, undertakings and partnerships. The evaluation understands that there were foreign policy imperatives of the time that were determinant. Fortunately, local governance committees and technical relationships have been developed and are active and the programme has found favour locally.

The programme is deficient in its strategies for delivering gender, environment, and climate-change impacts. This need not have been costly and not being able to demonstrate outcomes for these cross-cutting issues is an opportunity lost.

The programme has not included a financial services partner and not much attention has been paid to understanding how farmers and coops will finance their

more business-like enterprises. This is a common design failing in technology driven programmes and one that future programming should address.

**Pathways to impact and value-for-money.** There are ambitions for higher level, sectoral outcomes and impact but the pathways to them are not well articulated and there are no mechanisms in place to monitor the processes of change. It is likely that the programme will exit without really being able to measure how it has influenced higher level outcomes for the dairy sector in Zambia.

The stand-alone direct-delivered nature of the ZDTP challenges the effectiveness, efficiency, sustainability, and particularly the value-for-money of the undertaking, but, being able to confirm even modest improvements at higher-outcome and impact level that could credibly be attributed to the programme could change that proposition markedly. Figure 11 illustrates.

**Strategy.** The smallholder and cooperative support strategies developed and being implemented are technically well considered and appropriate, though more attention needed to be given to how the coops and farmers will be able to finance these practices in the future. The programme has understood binding constraints for smallholder dairy farmers and their cooperatives and has adapted and is demonstrating a number of technologies and practices to improve productivity and the business of smallholder dairy farming and primary cooperatives. They have developed a good library of collateral materials to support training and extension, though this remains to be translated into local languages and other media of communications also need to be explored, eg. radio.

The interventions are pragmatic and adoption rates by the farmers and coops supported, are satisfactory. The drought of 2019 and then the Covid-19 pandemic have been disruptive, but demand for the milk is strong and prices have increased considerably. There is interest being shown by other agencies and industry, and some anecdotal evidence of them incorporating ZDTP's practices in their activities.

The theory used to explain how wider adoption will occur is Rogers Diffusion of Innovation Theory, but the evaluation concludes that there is insufficient time allowed for in the programme to establish the critical mass of adopters, demonstrators and the supporting functions required, to project with any surety that adoption at a national level will happen. More time is needed to consolidate the activities and practices and to see them adopted more broadly to bring about real change in the sector. To grow and make more resilient smallholder dairying, other market functions also need to develop, for example: rural contracting services to cultivate, plant harvest and ensile forage crops for silage production; and financial services so farmers can access working capital to pay for these services. There are many similar examples.

**Evidence and its use.** The level of effort made by the ZDTP to measure and report activity and the results for participating farmers and cooperatives is comprehensive,

well structured and of a high standard. This is generating a body of evidence that can be very helpful in supporting policy and investment decision making and through the relationships it has developed with the MFL, the programme is now positioned to make a potentially very valuable contribution to policy reform and programming. This is a window of opportunity that provides a strong argument for an extension of the programme and New Zealand's engagement.

Outcomes for the farmers and their cooperatives are generally positive but are variable and fragile. This also reflects the small-scale of their enterprises, their very low levels of capitalisation, inability to materially influence industry or trade practice, low geographic density of production and distance to market, and the vagaries of weather. Indications are that increasing volumes of this milk are being consumed in markets local to the farmers and cooperatives, rather than being delivered to industry, and that is likely beneficial to local outcomes.

**Learnings and recommendations.** The evaluation's learnings are mostly directed to MFAT and have to do with: improving design for aid effectiveness and socio-economic outcomes; better understanding pathways to impact from the start; using risk-based approaches to support the credibility of implementation strategies and their impact attribution; and, paying more attention to financial services functions for enterprise-based programmes.

There is some **commonality of approach** across the New Zealand Aid Programme's dairy projects implemented in the 2010-present period, notwithstanding that they have been implemented by different suppliers. Across the dairy activity portfolio, the primary focus was on improving smallholder productivity and profitability and (but not in all cases) the functionality of milk collection centres and cooperatives for the farmers supported.

The support to dairy development has included establishing milk quality assurance systems, procedures and capacities for farmers and collection centres. [QCONZ Ltd.](#) have generally been sub-contracted by the MSCs to deliver this support and they have done this innovatively, amongst others developing app based training and support tools for the purpose. The results of improved milk quality usually translate directly and immediately into increased revenues for farmers and their coops. With such strong and direct links to market outcomes, we consider the milk quality assurance work done by the NZ dairy projects to be amongst the most relevant and best delivered, and to have the highest likelihood of being sustained.

There has been a pattern of design relying heavily on training, workshops, expatriate technical assistance, model farms and study tours. The activities were all focussed on demonstrating how better practice could improve dairying outcomes, expecting that having done that, there would be adoption at scale and of a magnitude that would materially improve dairying and dairy industry performance in the recipient country. Across all projects, insufficient attention was paid to

understanding how that systemic change would happen, and what it would require in terms of capabilities, resources and supporting functionalities, and market appetite.

All of the dairy activities were implemented in project mode by management services contractors. None of the projects were contributions to more comprehensive multi-partner undertakings or embedded in implementing national or industry-driven dairy development programmes.

None of the activities applied market systems development approaches or aspired to the [DCED Standard](#) and none of the activities included a significant financial services component or partnership(s) for that. The activities are instead something of a confused amalgam of livelihoods and private sector development approaches.

It is arguable that a deeper analysis by people whose first job was as an international development specialist might have yielded designs that learned from contemporary good practice for agribusiness development, connecting more with local issues, realities and weaknesses rather than seeking to impose “tried and true” formulaic approaches.

The **evaluation concludes** that an extension of the ZDTP is warranted: to close down the field programmes in an orderly manner, if another sponsor cannot be found; to properly assemble and package the evidence and learnings, facilitate the translation of extension material into local language[s]; and, to use the opportunity that it has created to support government’s policy reforms and programming for dairy development.

# 6

## Lessons Learned

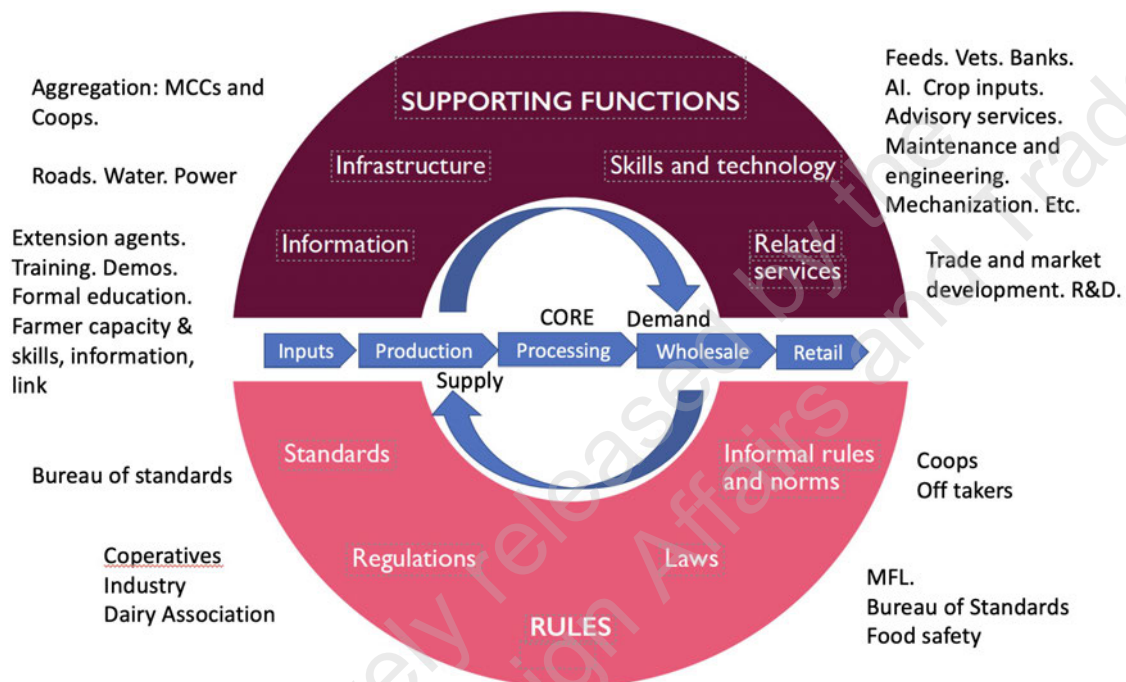
Lessons that can improve relevance, effectiveness, efficiency, and sustainability for NZ's support to dairy development in Zambia, and elsewhere, including those gathered from NZ's other global dairy initiatives, include:

**Lesson 1: Dairy development is complex, takes time and is a complexity of partnerships.** *Ambitions for a single-phase, localized, stand-alone, direct delivered programme like the ZDTP need to be modest and focused. Because they have only limited scope, resources, and time with which to influence or convene change more broadly in the market system, being able to attribute higher-level impacts or systemic change to them is usually difficult and the value-for-money proposition challenging. The project cycle is usually too short to institute sustainable business models at scale or ensure that activities promoted are properly institutionalized and integrated as standard practice.*

- Exceptions to this would most obviously be found with the private sector, where specialist support was given to programmes of investment being driven by the firms or industry, who also carry the risks and rewards associated with that investment.
- Mitigation measures include: making longer term commitments; ensuring strong alignment with, or participation in, Government and the private sectors' policies and investment programmes; making credible and robust business case for the intervention in the local context, as part of the preparation process; and, taking the time to properly understand the local context, where that includes learning from previous interventions

Developing a strong, competitive, sustainable dairy industry requires **decades of continuous, consistent, unambiguous commitment and investment by all stakeholders** along the value chain; producers, service providers, traders, industry and regulators alike. When the premise is to build the industry on smallholder production, the complexity of the undertaking is made even more demanding because of the small volumes of often non-standardised, highly perishable milk that need to be produced, aggregated, transported, processed, manufactured, distributed, and retailed. Multiple and quite differentiated markets exist and for the formal manufacturing industry, fresh locally produced milk is readily substituted with imported milk and ingredients.

Below in Figure 12 is a dairy “**market systems donut**” for Zambia. To note is that for a market to work sustainably, competitively, and equitably, all the elements of the “donut” need to be properly functioning and responsive to the needs of each other; orchestrating this demands good, well informed, public service and investment delivery, and it takes time.



**Figure 12. Zambia dairy market systems donut**

None of the above are reasons for not doing dairy development projects. Rather, they are reminders of the development promise of dairy development done well:

*"Dairy has the power to provide a major pathway out of poverty for individuals, families, and communities by making the necessities of life— food, water, shelter and clothing – accessible and affordable".*

*But*

*"Given the diversity and technical as well as institutional complexities of dairy supply chains, dairy development strategies need to be carefully tailored to specific contexts and must consider efficiency and competitiveness of all actors in the dairy chain".* [FAO, GDP, IFCN. 2018](#)

**Lesson 2: Assembling evidence and learnings from interventions, packaging those to support policy reform, investment decision making and service delivery, needs to be implicit, planned for and resourced.**

*Partnerships with Government that focus on adapting and demonstrating technologies and better practices, with a view to having them adopted more broadly, need to understand the complexity of the output-outcome pathways, managing the processes in a well-informed, planned, manner; where targets and KPIs are set, and resources are allocated for the purpose. Successful changes to public service delivery and investment can generate benefits and impacts at a scale that drastically improves the outcomes of a project like ZDTP whose outputs are otherwise at a small-scale and expensive. Ambitions for policy reform need to be agreed from the outset and owned and directed as a function of governance, throughout the programme's life. Adaptive management is an important feature of this.*

Public policy determines how the Government intends to enable (invest in and regulate) social and economic development and wellbeing and for dairy development in Zambia all parties agree that reforms and investment are required. s6(a)

That situation needs to be avoided in the future.

The MFL have expressed a desire to strengthen their policy and regulatory roles moving the focus away from hands-on management of the industry to the "[enabling environment](#)". None of the policy and regulatory reform work supported by ZDTP has been signed into law yet and a lot remains to be done. Supporting reforms is typically a time-demanding process that requires technical skills as well as a good understanding of the local political economy and earned trust. As the relationships with government mature and evidence and learning from ZDTP accrues, the programme has an increasing amount to offer government's policy management processes and it is evident they are appreciated for this. The process is slow but opportunities to support better policy making by informing it with well researched, evidence-based inputs are to be valued and being able to continue that needs to be a priority for the final years of the ZDTP, and perhaps also the basis of a longer partnership with New Zealand.

**Lesson 3: Choosing the right dairy farm profit and productivity indicators is important to the outcomes and sustainability of a farm-focused programme. First and foremost, those KPIs need to be measures that are important to the farmer.**

KPIs are diagnostic tools allowing farmers to improve their farm productivity and hence their financial performance. They demonstrate how a farm is progressing in achieving its goals. Farmers can use them to identify weaknesses in, as well as set

specific targets for their farms. Farmers are more likely to want to improve their systems if they know by how much they are less productive compared to others of similar herd sizes.

Good KPIs are simple, relevant, aligned, actionable and measurable. They allow the extensionist and farmer to quickly understand how the farm is performing. A good KPI is easy to calculate and is able to be calculated consistently for all farms and at each visit. Measurement does not need to be complex, but it must take place.

The farm level KPIs chosen by the ZDTP could be improved upon. Better options exist for understanding reproduction and herd replacement rates and measures of productivity. [Annex 3](#) presents a discussion of dairy farm profit and productivity indicators.

**Lesson 4: The NZ Aid Programme is committed to the Sustainable Development Goals (SDGs). To make progress against those commitments, activity designs should reference the most relevant SDGs and should show how attainment of the SDGs will be contributed to and how those results will be measured and reported.**

Good dairy development can make [meaningful contributions](#) to SDG1 (Poverty), SDG8 (Jobs), SDG3 (Health), SDG5 (Gender Equity) and SDG2 (Hunger), for example.



**Figure 13. SDGs for dairy development**



There is no mention of the SDGs in the ZDTP ADD and although the results framework measures dairy incomes for the smallholder farmers, it does not try to understand more completely whole-of-farm incomes or household wellbeing. Gender disaggregated data is not reported in the results framework. Whilst the practices promoted by ZDTP result in better outcomes from a greenhouse gas perspective (ie. reduced greenhouse gases per unit of product<sup>21</sup>), environmental risks and climate change risks are not specifically managed or referred to in project training resources.

This is a lost opportunity for NZ's reporting to the international community, and the New Zealand government. Reporting on select SDGs could also support the Government of Zambia to understand better their development progress.

There are risks associated with dairying that can include ESG outcomes being traded off for financial returns to the enterprise. Understanding and mitigating those risks requires active management that needs to be thought into the programme from the outset.

Household economic, health, food security gender equity and environment quality assessments and surveys do not need to be complex undertakings and most countries have well developed capacities to undertake these. For ZDTP, paying more attention to baseline, mid-term, and end-of-project ESG measures could have greatly added to our understanding of the development impact, potentially supporting the case for continuing investments in dairy at a time when criticism about dairying's impact on the climate, water resources and its energy efficiency abounds.

An end-of-project study of the ZDTP's contribution to these SDGs could still be done if resources were made available. There are evaluative techniques for understanding counterfactuals without baselines having been established at the outset, for example. One of the recommendations of this evaluation is that such a study is commissioned.

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<sup>21</sup> Refer to Ledgard S, Falconer S, Carlson B, Wedderburn L and Howley C. 2018. Which reports a potential 38% reduction in greenhouse gas footprint given adoption of project recommended farm practices.

**Lesson 5: Think financial services from the outset. Commerce and business (including farms!) –even at micro level- run on money and finance. Understand and actively attend to financial services needs in all activities that support enterprise development. It won't take care of itself. Imagine your life without money.**

Like most of NZ Aid's agriculture development programmes, the ZDTP wants to support farmers to be more business-like and cooperatives to grow and run their businesses better. But, like the others of its ilk, there is no financial services component in ZDTP, and no financial services activities or results prescribed. Throughout Africa, bankers often don't understand smallholders and if they do, consider them too risky and don't have products to suit. Once projects leave, in the absence of another source of subsidy, if farmers and MSMEs can't finance their activities, they revert to their low input-low risk-low output models.

Projects or programmes shouldn't be encouraged to set up their own credit schemes; they seldom do that well and it defeats the purpose of introducing participants to the financial institutions that can serve them once the project leaves.

Projects like ZDTP are uniquely positioned to help banks to understand the financial services needs of the stakeholders in the value chains being supported, and, to support them to develop savings and loan products. Their support to the farmers and enterprises during the project life can also serve to de-risk credit activities.

**Lesson 6: Think Value for Money from the Outset.** As a rough benchmark, project investments per-farmer beneficiary of US\$50 - \$250 over the whole project life, would be the norm for farmer-centric development projects in Africa. As things presently stand, the ZDTP will spend \$NZ 4,500 for each of the 1,000 farmers who have been trained; or \$NZ 21,500 for each of the 350 milk delivering farmers it supports.

Successful [Market Systems Development](#) or agri-finance or public reform projects have lower beneficiary unit costs and short-sharp isolated interventions usually higher costs.

*Realising systemic change reduces per-beneficiary costs over time but if there is no credible pathway designed for this, it shouldn't just be anticipated as going to happen spontaneously.*

#### **Memes for Better Activity Designs:**

- Take more time for diagnostics, analysis and learning from what has already been tried.

- In unfamiliar or complex environments where not enough is known, use an inception phase to complete the understanding, elaborate the design, make partnerships, and create better programmes.
- Developing, and periodically revisiting a credible theory of change is a strong process.
- Aid money is investment, so think like a (social/impact) banker; credible business models and understand and manage risk.
- Include exit strategies in the design. As a “project island”, without the guarantee of an extension and not being embedded in a national or industry programme; how will activities and capacities sustain, and investments made be maintained?
- Robust designs align with or contribute to Government or industry programmes for dairy development, or co-finance an existing intervention. A one-off project in a new country, is a high-risk strategy
- Robust designs don't trade off aid effectiveness, good practice for (private sector) development and strong ESG elements; all can be accommodated and doing so can strengthen the relevance, effectiveness, efficiency and impact of a programme and its prospects for sustainability.
- Results and learning and frameworks are the basis of the delivery contract and how performance will be measured. They need to be resourced. Build results frameworks against standards and applying best practice, manage them actively and review them regularly.

# 7

## Recommendations

The following are headline recommendations. They are made in the context of what the evaluation understands to be reasonable and actionable suggestions to improve the ZDTP's outcomes and MFAT's future development assistance.

**Extend the programme.** There is a case to be made for an extension, purely on the grounds of a year lost to Covid, but under all circumstances it is important to give the programme the time needed to manage an orderly close-out. The headlines for the extension should be guided by the below and the budget proposal should also reflect this:

- a) Reduce expatriate (and other) **costs** to the absolute minimum required and propose options to use cost savings to win more time for the intervention.
- b) With the programme transitioning from development to maintenance and exit mode, most of the technical development work should be done by now and able to be **maintained and supported by local staff**. This is a good test of how durable the activities and the capacities developed are.
- c) Negotiate with MFL the placement of the Country Manager as a fulltime embedded **policy advisor**. With MFL, develop a workplan (with deliverables and milestones), of technical assistance support to an evidence-based approach to livestock and dairy policy, programmes development and public sector service delivery; informed by the ZDTP and other relevant national and regional learnings and evidence.
- d) MFAT to **engage MPI** with a view to using this period and the presence of the above advisor, to establish a bilateral policy, trade, and investment support relationship. Also, to explore continuing Zambia's relationship with the Global Research Alliance.
- e) To enable the above, **relieve the Country Manager of day-to-day management** and administration duties, for example by handing those over to a senior local staff member or NIRAS, with close remote support from Prime NZ. If there are financial oversight concerns, contract a local audit firm to provide an internal audit function.
- f) Ensure that **credible business or enterprise models** are prepared for the most promising technologies or practices that are commonly being adopted by

farmers and coops. Those models need to be appropriate to the local context, addressing the risk, financing, labour, maintenance and other resource requirements and constraints that prevail. It is unreasonable to expect the adoption of promoted practices and technologies if they don't make sense in the local farming systems and enterprise contexts.

- g) **Communicating the ZDTP.** Assemble the evidence, training and support materials and learning of the programme, packaging this in formats specific to the various users targeted. This may include translations into local languages and using contemporary mixed-media tools for rural communications. Consider radio and television as options. Enable public access. Look for options for dissemination and distribution that include schools, dairy brands and industry partners, other development partners and government agencies. Prepare a costed strategy for this. The evaluation envisages that it will be necessary to contract a local rural development communications partner to support this work.
- h) **Present the programme,** its learnings, legacy, and achievements to the development-partner group for agriculture, with a view to securing continued support to the ZDTP activities and promoted practices.
- i) **Wind-down the field programmes** and cooperative support programmes, ensuring final results are reported.
- j) Commission an **end-of-project study** of the ZDTP's outcomes for smallholder dairy farmer household income and welfare, gender equity, environment, and climate change resilience. Use credible and respected local/regional expertise for competences for this, with a view to being able to publish the study. There may be options for an NZ academic collaboration.

**Other:** Programme extension and business support staff earn several times what they would in government or local employment. It is unrealistic to expect they will be retained by the farmers or their coops, but nevertheless those conversations should be had.

There is reason to be optimistic that some of the most promising and accessible practices promoted will continue to be used; for example, silaging and the milk quality assurance SOPs. Also, that a window of opportunity to work with MFL on policy and regulatory reforms exists. Positive outcomes will rest on a seamless transition into the extension and there is a good amount to be done to re-position the ZDTP for this. Accordingly, implementing these recommendations should commence immediately.

## Annexes





1. References
2. Persons Met
3. Dairy Farm Profit and Productivity Indicators

Proactively released by the  
Ministry of Foreign Affairs and Trade




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**B Documents accessed from the evaluation team Dropbox.****1 General references. Zambia, dairy industry, markets, development etc**

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-  Digital 2021 Zambia (January 2021) v01
-  Overseas Business Risk Zambia - GOV.UK
-  Sida Dairy Association Digital Information System Evaluation

**2 Governance - minutes etc**

-  190704\_Final ToR ZDTP Programme Steering and Technical Committees - endorsed - to share
-  Signed NZ\_Zambia Development Partnership Arrangement
-  Signed ZDTP Partnership Arrangement




## Programme Steering Committee Meetings

- Contains board papers, agenda, previous PSC minutes, presentations, recent ZDTP publications. May 2019, Nov 2019, Jun 2020, Nov 2020, Apr 2021.








## Programme Technical Committee Meetings

- Contains advance reading, presentations, agenda, previous meetings minutes. July 2019, Sept 2019, Nov 2019, June 2020, Sept 2020, Nov 2020, Mar 2021.

**3 Activity Design Documents**


-  Recommended ZDTP Implementation Localities Final
-  Zambian Dairy Transformation Programme - Activity Design Document November 2016
-  Zambian Dairy Transformation Programme - Activity Design Document Revised 24 February 2020


**4 National policy, strategy and programmes**


-  1 Seventh\_National\_Development\_Plan
-  Approved Final 7NDP Implementation Plan - 9\_April\_2018
-  MFL-NLDPolicy-Implementaion Plan
-  MFL-NLDPolicy-Main Document
-  NAES - Publication Version 20161203
-  The 2017-18 Livestock & Aquaculture Census Summary Report Final
-  Vision-2030


**5 Other development partner docs**




 ESLIP design doc

 Documents from DAZ

 Cooperative information from World Vision

 Cooperative assessments by Agriterra

 Cooperative assessments and evaluation reports from Heifer International

## **6 Approved plans and budgets**

Forecast Operating Plans (FOP). 2017-Year One, 2018-Year 2, 2019-Year 3, 2020-Year 4, 2021-Year 5, ZDTP LOV6.

## **7 ZDTP progress reports**


Monthly and quarterly reports. 2017, 2018, 2019, 2020, 2021


## **8 Six month and annual progress reports, 2017, 2018, 2019, 2020, 2021**


Contains: reports; annual benchmarking survey (ABS) report; risk management information; technical papers; TORs ;and; other appended items of relevance to the report.


## **9 Reports from Experts**


 ATS 2 Dairy Farm Management Specialist


 ATS 4 Extension Specialist


 Feed and Fodder Conservation SME


 Gender

 Milk Processing SME

 Milk Quality Specialist

 Monitoring and Evaluation SME

 National Milk Quality Specialist

 TVET Specialist - Year One

Proactively released to the Ministry of Foreign Affairs and Trade







## 10 Study Tour to New

-  01\_Dairy overview - DCANZ (given by Federated Farmers)
-  01\_UFFIP project learnings 11th aug V2
-  01\_ZDTP Study tour welcome
-  02\_The Dairy Industry in New Zealand - March 2020 GUDy - Prime Zambia
-  02\_Zambia - Maori Agribusiness - 16 Mar 2020
-  02\_Zambia Dairy Forages JC
-  03\_OSPRI Presentation Zambian delegation March 2020
-  03\_Zambian delegation, Bob (Mar 10, 2020)
-  04\_Zambian Visit Nitrogen efficiency and CF
-  8 key areas to maximise herd fertility
-  225913 AnimalSc Sheep
-  Best time to mate V2015
-  Bull management - DairyNZ
-  Discretionary entry information SoVS visitors Mar 2020
-  FIL Tail Paint Catalogue - 2020
-  Heat detection FAQ Intl.docx
-  LIC Overview - 2020
-  New Zealand Study Tour - final report
-  Project aLIVE
-  SAE Staff directory
-  Slick Presentation - 2020











### Zealand

#### 11 Technical deliverables, papers, manuals, analysis, training material etc

##### Cooperative assessments

-  Valuation reports
-  180518\_Report on the Loan a Cow Loan Assessment\_to share with MFL
-  MUMBWA VISIT NOTES
-  Review of Zanaco loan product Presentation
-  ToR Chibombo and Liteta loan review
-  ZDTP Cooperative Assessment Report and Implementation Plan Sept 17












##### Milk quality SOPs

-  181015\_Milk supplier agreement
-  190301\_Tank cleaning SOP at Fisenge
-  190305\_SOP1\_Raw milk acceptance draft SOP
-  190305\_SOP2-Milk storage draft SOP for MCCs
-  190305\_SOP4\_Cleaning SOP for MCCs
-  190305\_SOP5\_Environment and security draft SOP
-  190305\_SOP6\_Training of staff at MCCs
-  190305\_SOPs AND KEY DOCUMENTS FOR MILK COLLECTION CENTRES
-  FREEZER SOP DRAFT -LITETA
-  Notes to support roll out of supplier agreements


## 12 Newsletters

48 ZDTP Monthly Newsletters




## 13 Output 2.5 Community Based Training (formerly support to ZCA)

-  22-02-2021 Report - Appendix One - Survey incl Annexes
-  22-02-2021 Report - Appendix One - Survey incl Annexes
-  28-02-2021 App 8 TEVET-Ag - Sustainable Dairy Farmer Training
-  210217\_Community based trg study - to share with PTC
-  Appendix 2 Reports and Publications Reviewed
-  Appendix 4 - Risk Evaluation as an Investment Approach
-  Appendix 5 Schedule of Meetings Held
-  Appendix 7 Demographic Data Underpinning SSDF Numbers and Milk Demand
-  Appendix 8 TEVET-Ag needs foir Institutional Support to SSDF Sector
-  Appendix 9 - ZDTP Field Report Extracts
-  Sustainable model for dairy extension



## 14 Output 2.7 Dairy Value Chain Study (expansion feasibility study)

-  Dairy Value Chain Study - to share

## 15 Output 3.3 School milk

-  MILK FOR SCHOOLS WORKSHOP REPORT
-  School Milk Business Case Final
-  Summary Evalaution Report for Milk for Schools



















## 16 Output 4.1 Policy Work

-  200108\_Legislation review for dairy industry - updated Jan 2020
-  210209\_Draft Nat An Health Pol - comments addressed-clean



## 17 Practical Advice Sheets

-  Business fact sheets
-  Feed fact sheets
-  Health and management fact sheets
-  Milk quality - cooperative focused
-  Milk quality - farmer focused
-  Reproduction fact sheets
-  001\_Fact sheet inventory (201106)











## 18 Team workshops

-  170410\_ZDTP values - draft
-  20190127 Basic Dairy Economics
-  20190202 HERD PROFILE AND EVENTS
-  20190202 PRACTICAL FARM ADVICE-UPDATED CONCENTRATE FEEDING OF DAIRY COWS
-  20190203 Home made dairy meal
-  20190205 TRADITIONAL CONCENTRATE FEEDING
-  20191124 banana leaves and stems
-  20191124 Home made dairy meal mixture
-  20191124 OBSERVATIONS NOVEMBER
-  20191124 PP 3 workshop nov 2019
-  20191124 PP-1 feed manual
-  20191124 PP-2 Workshop Nov 2019
-  EO planning - monthly weekly (Apr 2021)
-  estimation of green silage production for silage and pit size
-  Observations from the field trips with EOs
-  Presentation 1-Kawonga
-  Presentation 2a-Kawonga
-  Presentation 2b excel data sheet


















## 19 Videos capturing or promoting progress

-  Rocky Mountain Farm
-  Video descriptions




## 20 What happens after ZDTP workshops to support transition

-  200128\_Mufulira workshop write up
-  200130\_Fisenge workshop write up
-  200213\_Kwanshama workshop write up
-  200227\_Bamakasi workshop write up
-  200303\_Liteta workshop write up
-  200305\_Chibombo workshop write up
-  201015\_Write up from Bamakasi planning workshop
-  201022\_Write up Kwanshama workshop
-  201113\_Liteta workshop write up
-  201217\_Write up Kwanshama workshop - Dec 20

## 21 Workshops with cooperative Boards and Managers

-  190502\_Write up from managers training
-  190807\_Fisenge workshop write up
-  210224\_Workshop for MCC Managers
-  210324\_Draft reporting template for cooperative
-  Contract Agreement Notes\_Final\_Version
-  Financial\_Management\_Final\_Version
-  GOOD COOPERATIVE GOVERNANCE
-  HR WORKSHOP 180306 write up
-  Importance of Budgeting Presentation
-  LEADERSHIP TRAINING FISENGE
-  Planning Template - Kwanshama example
-  Planning Template
-  SWOT Template
-  Template for meeting minutes
-  Training Manual on Leadership Skills and Governance\_Final\_Version
-  What is strategic planning
-  Workplan Example

## 22 Workshops with MFL

-  191217\_Write up from MFL Mapping Meeting
-  191220\_Write up from research brainstorm meeting
-  200122\_Write up from Livestock Products workshop

## ANNEX 2: PERSONS MET

### **ZDTP staff / Prime Consultants Ltd.**

- Tania Thomson. Programme Country Manager
- Angus Davidson. Programme Director and Technical Specialist
- Jorgen Henriksen. Dairy Farm Management Specialist
- Alan Pearson. Prime Group Chairman and Farm Business Specialist
- Greg Braggins [QCONZ]. Milk Quality Specialist.
- Charles Zimba- Business Support Officer, ZDTP Copperbelt
- Kelvin Mulusa- Extension Manager
- Gilbert Mweemba – Liteta Extension Officer

### **Ministry of Foreign Affairs and Trade (MFAT)**

- Kirk Yates. Lead Adviser. DEVECO
- Paige Kawana. Policy Advisor. SDS.
- Rebecca Williams. Acting High Commissioner. Pretoria.
- Vuyokazi Ngqebe. Aid Manager. High Commission, Pretoria.

### **Ministry of Fisheries and Livestock (MFL) Zambia**

- Dr. Benson Mwenya, MFL, Permanent Secretary
- Dr. Chibwe Kaoma MFL, Director Livestock Development
- Vincent Simoongwe MFL, Chief Livestock Production Officer/Assistant Director

### **Other Government Agencies, Zambia**

- Friday Sampa, Quality Specialist/Analyst, Zambia Bureau of Standards (ZABS)

### **Dairy Industry, Zambia**

- Jeremiah Kasalo Executive Director, Dairy Association of Zambia
- Dil Nawaz Mukadam, Lactalis
- Bartholomew Mbaao, Dairy Processing Manager, Zammilk
- Ismail Baruchi, Dairy Gold.
- Vikas Kumar, Quality Control Manager, Varun

### **Farmers and Cooperative staff participating in ZDTP**

#### Liteta Dairy Cooperative

- Golden Kaahla – Chairperson
- Kennedy Botha – Chairman AI
- Clifford Chisenga – Board Secretary
- Own Chiliboyi – Board Member

Chibombo Dairy Cooperative

- Chilundami Lottie – Board Secretary
- Beauty Nshimbi – Committee Member
- Lweendo Mudenda – Farmer

Bamakasi Dairy Cooperative

- Chiwara Lazarus – Board Secretary

Fisenge Dairy Cooperative

- Mrs M. Mwanakasanga – Chairperson
- Patrick Lunda – MCC Manager
- Ronica Mumba – Board Treasurer
- Mrs Evelyn Malambo - Farmer

Kwanshama Dairy Cooperative

- Carolyn Lubinga – Treasurer
- Simon Mulenga – Board Member/ AI Tech
- Kaonga Wallace – Board Member
- Ngoza Banda Mwaba – Manager
- Elina Tembo – Board Member
- Vanassio Banda – Board Chair
- Chongo Lombe Milk Attendant

Mufulira Dairy Cooperative

- Mrs. A N Mushili – Chairperson
- Gerry Mwiinga – Vice Chair
- Mr Simwiinga - farmer

Proactively released by the  
Ministry of Foreign Affairs and Trade

## ANNEX 3: DAIRY FARM PROFIT AND PRODUCTIVITY INDICATORS

### Dairy Farm Profit and Productivity Indicators

Key performance indicators are measured value that demonstrate how a farm is progressing in achieving its goals.

**Purpose.** They allow the extensionist and farmer to quickly understand how the farm is performing. A good KPI is easy to calculate and is able to be calculated consistently for all farms and at each visit.

#### Good KPIs:

1. Provide objective evidence of progress towards achieving a desired result.
2. Measure what is intended to be measured to help inform better decision making.
3. Offer a comparison that gauges the degree of performance change over time.

It is CRITICAL to remember that for a KPI to be useful it must relate to a target which is important to the farmer.

#### The critical aspects of a good KPI

**Simple.** A KPI should be simple, straightforward and easy to measure. This is particularly important where farmers rarely keep accurate records. It is unwise to create a KPI that relies on an unreasonable level of farmer compliance. Using records that do exist, such as milk supply receipts can be valuable.

Everyone involved in a goal should be able to recognize their role in enacting a KPI. If a goal is clear, staff can make practical decisions that lead to achieving the desired outcome.

**Relevant.** As important as it is for a KPI to be simple, it must also be relevant to the farm and its goals and be shared as important by both the on-farm decision makers and extension/support people.

Relevance ensures the right decision makers are responsible for measuring specific KPIs — increasing the likelihood of a successful outcome.

**Aligned.** KPIs should always trickle down from the overall strategic goals of a farm. As a result, they need to be aligned and not unintentionally undermine each other. This is critical as it relates to the entire business logic regarding what the farm is trying to achieve. See Figure 1. below [Schematic of Dairy Farm System], in which gross profit is the highest level KPI. Achieving profit is a result of what happens in other levels of the farm system, namely: in herd structure, feeding and costs. Therefore, the farm will need to have KPIs in these areas in order to manage, improve and impact profit.

Make sure that KPIs are always supporting the overall strategy of the organization. It may be that profit is not the highest level goal, so KPIs would need to change to reflect this.

**Actionable.** It's no use building farm business KPIs for the sake of it. Decision makers should want to build KPIs that positively affect the farm and the family's livelihood. As such, not only should they be easy to understand, but employees should also know how to achieve an effective outcome. Setting unachievable goals can be a big de-



motivator for employees. The more realistic the goal of a KPI is, the more likely teams are to reach it.

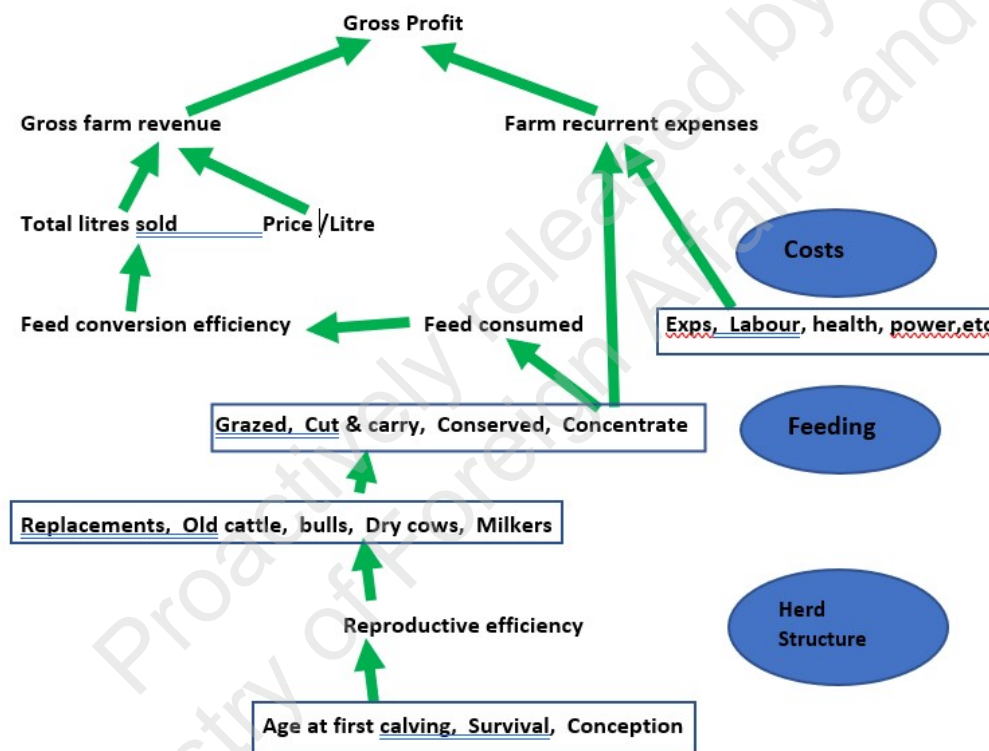
Instead of setting large, complex goals, a farm might want to start small. By setting short-term goals that challenge the farm team but don't overwhelm them, a farmer can not only track the progress of a KPI, but also boost morale and buy-in.

**Measurable.** A KPI should be easy to measure. An effective KPI avoids generalized goals like, "Improvement in milk quality." Instead, an effective KPI should be based on a solid, focused goal that can produce qualitative and quantitative measures. A good example could be to "decrease **mastitis rate** by 20%" within the next six months.

Measurement does not need to be complex, but it must take place.

**The Farm System**

This below schematic illustrates shows the different levels of systems and outcomes in a smallholder dairy farm system.



**Observations on KPIs for ZDTP farms**

*Note: these comments are based on limited discussion with the ZDTP team and limited analysis of data and narrative from the Annual Benchmarking Surveys [ABS] 1-4.*

A rapid scan of some of the data and commentary presented in the ABS indicates that reproduction and herd replacement may be impacting farms in the target co-ops. This does not take any account of possible ongoing issues such as disease outbreaks, handing on of stock due to other commitments or differences in measurement protocols, and the impact of seasonality on the data.

A quick analysis raised these points for discussion:

### 1. Percentage of cows in milk.

[Moran \(2009\)](#) suggests an acceptable target for tropical smallholder dairy is that 60-73% of cows should be in milk. Looking at the data from the 4 annual surveys the immediate observation is that the suggested target is only being achieved by

% cows in milk	2017	2018	2019	2020
<b>Bamakasi</b>		34.0%	50.0%	62.1%
<b>Chibombo</b>	38.1%	24.1%	17.1%	17.6%
<b>Liteta</b>	44.1%	32.7%	28.0%	32.4%
<b>Fisenge</b>	62.1%	55.7%	42.0%	47.3%
<b>Kwanshama</b>	54.7%	62.2%	51.0%	41.1%
<b>Mufulira</b>	51.9%	49.5%	35.5%	43.1%
<b>Average</b>	50.2%	43.0%	37.3%	40.6%

one co-op in one year. The inference here is that calving interval is very long, and reproduction is a problem as too many cows are not in milk because they have been dried off and have not calved again. Calving intervals appear to be considerably longer than those referred to in other ZDTP reports and in the Agresearch Review of greenhouse gas profiles [2018] for Zambia.

### 2. Percentage of the herd in milk.

Moran also suggests an acceptable target for tropical smallholder dairy is that 40-47% of the total herd should be in milk. The reason for this very low number observed in the data [in general] seems to be that farmers keep large numbers of non-

% herd in milk	2017	2018	2019	2020
<b>Bamakasi</b>		14.9%	21.5%	26.3%
<b>Chibombo</b>	12.7%	11.1%	8.5%	9.1%
<b>Liteta</b>	21.9%	16.8%	13.6%	14.4%
<b>Fisenge</b>	32.7%	26.5%	21.0%	20.8%
<b>Kwanshama</b>	27.2%	29.1%	20.9%	20.5%
<b>Mufulira</b>	24.1%	16.5%	13.8%	14.9%
<b>Average</b>	23.7%	19.1%	16.6%	17.7%

productive [from a dairy perspective] animals. These are generally bulls and it is assumed that these are sold at some stage for beef. This raises the question: what business are these farmers in? Do they know how this impacts their livelihoods? Maybe beef is really highly profitable? Most likely the truth is that diverting feed into beef animals is seriously impacting profit from productivity and impacting on both milk production daily and reproductive outcomes.

### 3. Heifer calves as a percentage of cows.

Given that dairy cows can normally be expected to remain in the herd for 4 to 5 lactations, in order to have the capacity to sustainably replace the herd, the number of heifer calves should be at least 20-25% of the number of cows. This is without

heifer calves% cows	2017	2018	2019	2020
<b>Bamakasi</b>		20.4%	9.5%	23.3%
<b>Chibombo</b>	18.3%	13.2%	12.1%	5.0%
<b>Liteta</b>	18.0%	9.6%	7.2%	12.3%
<b>Fisenge</b>	16.4%	17.7%	14.4%	11.9%
<b>Kwanshama</b>	13.3%	14.3%	16.3%	10.9%
<b>Mufulira</b>	2.8%	34.1%	3.3%	14.6%
<b>Average</b>	13.8%	18.2%	10.5%	13.0%

allowing for the opportunity to select better types. Looking at these numbers we can conclude that calf mortality is a major issue. This is born out in the farmer comments in the ABS. Making a practice of measuring this, sharing it with farmers and co-ops, setting targets and making plans to remedy the situation would be very wise. It has been stated in other reports and conversations that dairy cattle are difficult to procure and this KPI is very likely an important reason why.

#### Comment on lactation length and total lactation production as indicators

This is not an in-depth or exhaustive commentary on the farm KPIs used.

*Lactation length* is a very difficult KPI to use effectively. In the author's opinion, there are 2 ways that it should be calculated: either from accurate individual cow records or derived as an explainer of the percentage of cows in milk and calving interval. Relying on farmer advice for this, in the absence of records, is too uncertain. Moreover, lactation length is not a natural event but is decided by the farmer, ie. they dry the cow off. Long lactations are a common strategy for mitigating the impacts of poor conception rates.

*Total per cow lactation*, when it depends on an unreliable estimate of lactation length is of low reliability. Concentrating on average per cow daily production and having large numbers of cows and percentage of the herd in milk will be more effective in terms of driving productivity and profit gains.

Lactation is not constant in terms of daily production and the value of extra days of lactation is minimal. Farmers are better off concentrating on feeding newly calved cows well to attain a higher peak lactation and a lower rate of decline from that peak in order to optimise the lactation. This occurs early, not late in lactation. Encouraging farmers to chase long lactations can also be counterproductive as it may deplete cow body reserves and negatively impact on successive lactation.

Steve Lee  
June, 2021