PO6414: Independent Evaluation of Wealth Creation Development of Rural Markets in Zambia

April 2017

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Acronyms

COMESA	Common Market for Eastern and Southern Africa
DAC	Development Assistance Committee
DFID	Department For International Development
DCED	Donor Committee for Enterprise Development
EQ	Evaluation Question
FAO	Food and Agriculture Organisation
FEWSNET	Famine Early Warning Systems Network
FGD	Focus Group Discussions
FISP	Farm Input Supply Programme
FSDZ	Financial Sector Deepening Zambia
FRA	Food Reserve Agency
GART	Golden Valley Agriculture Research Trust
GBP	Great Britain Pound
GDP	Gross Domestic Product
IAPRI	Indaba Agricultural Policy Research Institute
ILO	International Labour Organisation
KII	Key Informant Interview
M4P	Making Markets Work for the Poor
MoA	Ministry of Agriculture
MBT	Micro Bankers Trust
MCC	Milk Collection Centre
NGO	Non-Governmental Organisation
NWK	NWK Agri-services
OECD	Organisation for Economic Cooperation and Development
PLARD	Programme for Luapula Agriculture and Rural Development
PROFIT	Zambia Production, Finance and Improved Technology Project
RAF	Results Assessment Framework
SADC	Southern Africa Development Community
SAPP	Smallholder Productivity Promotion Programme
ToC	Theory of Change
USD	United States Dollar
VA	Veterinary Assistant
VfM	Value for Money
WCDRM	Wealth Creation Development of Rural Markets Programme
WII	Weather Index Insurance
ZATAC	Zambia Agribusiness Technical Assistance Centre
ZNFU	Zambia National Farmers' Union

Executive Summary

This report presents findings from an independent final evaluation of the Wealth Creation Development of Rural Markets Programme (WCDRM) initiative. The evaluation was a carried out by GDSI UK team of international and Zambian specialists: John Spilsbury, Team Leader; Garry Woller, Senior Evaluator; Danil Samoilenko, Project Director; and a Zambian firm Rural Net Associates, led by Stephen Tembo.

Under WCDRM, the Department for International Development (DFID) provided Musika, a Zambian not for profit organisation, with £4,619,196 to facilitate rural market development. DFID support was provided from 2012/13 to October 2016. Musika used this funding to provide grants and advice to private sector organisations working in agricultural input, output, service, finance and environmental (e.g. solar energy, biofuels) markets.

Zambia is a relatively stable and peaceful lower middle-income country. The Zambian economy is dependent on copper, and the 2015 downturn in world commodity markets depressed the country's economic growth. The economically important agricultural sector includes a well established and growing commercial component alongside a majority of subsistence oriented small-scale farmers. Government agricultural policy is based on two well-established pillars, the Farmer Input Support Programme (FISP) providing farm inputs and the Food Reserve Agency (FRA) providing a market, mainly for maize. During WCDRM implementation the southern Africa region experienced a serious drought. Zambian rains were, however, relatively normal allowing its agricultural sector to benefit from higher regional commodity prices.

WCDRM aimed to reduce rural poverty by integrating farm households into better functioning agricultural markets. The programmes contribution claim shown in its Theory of Change (ToC) was to help private sector companies build their human and physical capacity and develop their strategic alliances and networks. Companies should improve their outreach and build farmers knowledge of their products and services and provide locally available outlets or purchase points for supply of inputs or purchase of outputs. Farmers with better knowledge and locally available markets were expected to change their agricultural practices thereby increasing production and productivity. Other firms were expected to 'crowd in' to supported markets and additional farmers were expected to 'copy' promoted practices. This was expected to contribute to an increase in smallholder's income and reduce poverty.

The purpose of the evaluation was to assess the performance of the WCDRM against its objectives guided by the Development Assistance Committee (DAC) criteria of relevance, efficiency, effectiveness, impact and sustainability. Specific evaluation objectives:

- Inform and contribute to the effective implementation of the Musika programme
- Contribute to the evidence base on what works in Zambia
- Inform the international debate on the value of the M4P approach, now more commonly referred to as Market Systems Development (MSD)
- Inform DFID, the Government of Zambia and other stakeholders of sustainable approaches to developing market systems and which interventions have the greatest impact.

The evaluation used a theory-based approach that aimed to assess whether, why, and how programme interventions produce intended results by testing the cause-and-effect mechanism described in the WCDRM Theory of Change. As part of the theory-based approach, contribution analysis was used to explore the validity of causal links in result chains that underlie the programme's individual interventions. To do this the evaluation used a case study approach. Six case studies were assessed from the twenty-four WCDRM supported interventions at the time of the Independent Evaluations Inception Phase. These were:

- **AgriServe** - Support to vet companies to develop an information-based network for the supply of drugs, veterinary services and AI services in Western Province
- **ATS Agrochemicals** - Support to agrochemical companies to develop information based distribution networks in the smallholder market in Northern Province
- **GroAfrica** - Cassava Biofuel project in Luapula Province
- **Mayfair and Risk Shield** - Support to the development of Weather Index Insurance (WII) products in Central Province
- **Mule-Stus** - Support to seed companies to develop information based distribution networks in the smallholder market in Luapula Province
- **Zammilk** - Support to dairy processors to stimulate the development of the dairy sector in isolated areas in Western Province

The evaluation was based on the collection of qualitative data using structured questionnaires in key informant interviews and focus group discussions. This was supplemented by quantitative data where available. Following an inception phase, baseline data was collected in October 2014, two annual and two bi-annual reviews were performed in 2015 and 2016. Finally end line data was collected in October 2016. Annual reviews and the end line study included reference group validation workshops. These meetings with WCDRM staff, DFID and well-informed observers reviewed and validated data, considered alternative explanations and assessed the plausibility of the contribution story.

Based on the six case studies the evaluation found that WCDRM achieved moderate levels of impact in terms of systemic change, most notably in terms of supply and/or demand side market growth, with potential for this to increase in future. Results suggest that achieving success in producing systemic change in terms of 'crowding in' and / or 'copying' was more challenging. The Weather Index Insurance (WII) and ATS Agrochemicals (ATS) interventions have been the most effective in achieving their intended outcomes, having moved near to the top of their result chains, followed by the Mule-Stus intervention. Zammilk and GroAfrica have limited effectiveness due, respectively, to low milk processing volumes and a short (one month) operation period at the time of end line fieldwork. Both of these interventions have potential to improve effectiveness if trade volumes increase. The AgriServe intervention has been least effective.

Results show the following key contributing factors to success are:

- Having favourable broad market conditions in which the intervention operates
- The intervention being an internal priority for the implementing partner
- The intervention avoiding external programme obstacles i.e. requiring third party approvals or contracts
- Having a critical mass of support providers present in the same market system
- Achieving success in facilitating change in other support providers
- Having a viable business model

The extent of outcome sustainability across the six case studies is mixed and depends on a number of factors. Improving the availability of market related financial data (such as business model break-even analysis) would help strengthen sustainability arguments. Prospects for WII sustainability are promising, particularly if it is integrated into the Farm Input Supply Programme (FISP) e-voucher expansion during the coming growing season (2016 to 2017). Sustainability in the WII market would be strengthened by evidence of increased 'crowding in' by other companies without donor support. The sustainability of the ATS and Mule-Stus interventions depend on the firms' commitment and ability to continue investing their own resources (or securing other donor funding) to expand their rural distribution networks. GroAfrica's sustainability is dependent on one contact with Zambian Breweries. Case study results suggest Zammilk will need to develop a supply side response from milk producers to help achieve sustainable breakeven milk processing volumes.

WCDRM has used a facilitative and adaptive approach as opposed to performing market systems analysis. Case study outputs and components were based on Musika's internal knowledge and understanding of the underlying market in which the intervention operates. Interventions are not based on in-depth market research conducted by Musika.

Private sector implementing partners highly valued Musika WCDRM support as it has helped develop their businesses. Non-supported private sector actors also valued the Musika support in terms of helping to create and grow markets. Most beneficiaries were satisfied with the programme, particularly valuing extension services, having inputs available closer to their farms and new markets for their outputs.

The WCDRM programme provides overall good value for money. A strength of the programme is its ability to leverage investment from the Private Sector. WCDRM is economical in terms of the cost of the resources used and efficient in the use of inputs paying market rates for its procurements.

Case studies show positive results when targeting small-scale farmers. The WII, ATS and Mule-Stus interventions have each achieved notable success in reaching small-scale farmers, often those living in more remote rural areas. End line fieldwork results from the Zammilk and GroAfrica case studies suggest economies of scale and transaction cost benefits may favour larger scale farmers as implementation proceeds.

Evaluation results are mixed when considering gender. Case study results show men are more likely to enjoy intervention benefits due to their dominant role in cash crops. Mainstreaming gender is well recognised as challenging and Musika has increasingly moved to interventions or intervention components that specifically target women.

Drawing on the analysis and findings, it is possible to derive a set of key lessons learned, along with a set of corresponding recommendations, of interest to Musika for programme operations purposes, to DFID/SIDA for future market systems developing programming, and more generally to the broader community of actors working in market systems development. Theses are:

Lesson 1: Market systems development benefits from in-depth market systems analysis to diagnose constraints within targeted market systems and develop appropriate intervention responses.

Recommendation 1.1: Musika should make greater use of market systems analysis.
Recommendation 1.2: DFID/SIDA should consider investing in creating greater capacity to perform market systems analysis, both internally and within the practitioner organisations they support.
Recommendation 1.3: DFID/SIDA should invest in documenting and disseminating information the relative strengths and weaknesses of a matching grant vs. systemic approach to market systems development.
Recommendation 1.4: DFID/SIDA should continue monitoring and disseminating the results of the case study and non-case study interventions.

Lesson 2: Significant investment by private sector partners is required to serve the smallholder farmer.

Recommendation 2.1: Musika should undertake more in-depth financial due diligence of proposed interventions that includes profitability analysis with financial projections. An integral part of this profitability analysis is projecting an intervention's likely outreach (number of farmers served) and what this implies in terms of costs, sales, and profits.

Lesson 3: Market system interventions are more successful in cases where the intervention forms a core part of the private partner's business strategy and expansion plans.

Recommendation 3.1: Target support towards committed private sector partners where the intervention forms a core part of their business strategy and expansion plans.

Lesson 4: Collaboration between market actors (both supported and non-supported) can be vital in helping scale-up the market system interventions and achieve broader-based impact.

Recommendation 4.1: Musika should consider greater use of combined or clustered funding to multiple organisations operating in the same market system.

Lesson 5: Demonstration effects are unlikely to occur organically but should be promoted explicitly through complementary intervention strategies.

Recommendation 5.1: Musika should integrate explicit emphasis on facilitating demonstration effects into market system analysis and market system interventions

Lesson 6: Gender impacts are also unlikely to occur organically but should be promoted explicitly through complementary intervention strategies

Recommendation 6.1: Musika should integrate explicit emphasis on finding market opportunities and developing sound business strategies to target women in its market system analysis and market system interventions while providing support to market actors to implement them

Lesson 7: Collaboration with on-going development programmes can create significant synergies IF they are exploited.

Recommendation 7.1: Musika should seek to link up its on-going input market interventions in Northern Zambia with its technical support to input suppliers as part of the FISP e-voucher pilot/programme.

Lesson 8: The provision of extension services to farmers is a crucial complement to any technical assistance provided to private sector partners.

Recommendation 8.1: Musika should target/prioritise interventions with private sector partners who either have an existing extension network or who are committed to creating one.

Lesson 9: A coordinated approach in which all parties are on board with an intervention prior to its start is critical for an intervention's success.

Recommendation 9.1: Prior to approving any intervention, Musika should secure the formal and (if feasible) written commitment of all parties on whose participation the intervention depends.

Lesson 10: A flexible, adaptable, coordinated approach with committed actors is important.

Recommendation 10.1: Musika should continue to exercise flexibility in adapting its interventions mid-stream if conditions on the ground warrant it. At the same time, DFID/SIDA should continue allowing Musika the flexibility to make appropriate adaptations.

1. Introduction

1.1. Demographic Context

Zambia is a relatively stable and peaceful low to middle-income country with a population of approximately 16.2 million people (World Bank 2015[1]). Population growth is 3% with half the number of people under 16 years of age. Included among Zambia's population are 1.5 million smallholder farming households relying on rain fed agriculture who make up nearly 60% of the country's population and among who female-headed households constitute nearly 24%. Poverty rates among smallholder households are approximately twice that as urban households with the highest poverty rates found among farmers cultivating fewer than 5 ha of land.[2]

Sixty per cent of Zambians live in rural areas where three quarters of the population still live in poverty (DFID 2014[3]). Zambia's UN Human Development Index ranking had grown to 137 out of 186 countries by 2014. This is in line with a decade of annual economic growth averaging 6% (DFID 2014). However, GDP dipped from US$ 27.1 billion in 2014 to US$ 21.2 billion in 2015.[4] This decline is expected to have adversely affected well being and poverty levels in 2016.

1.2. Political Context

General political authority in Zambia is centralised and focused on the presidency. Multi-party elections mean rural voters are important. Poverty reduction strategy is based around aims related to broad based wealth and job creation, economic infrastructure and human resource development. Road infrastructure has improved significantly over the past five years. An urban middle class has emerged over the past ten years, but pro-poor development, especially in rural areas, remains challenging.

The Government, through the Ministry of Gender, is committed to protecting and promoting women's rights, curbing gender-based violence and reducing gender inequalities.[5] While change can be seen in urban centres, especially Lusaka and Copperbelt, traditional gender relations and inequalities remain in many rural areas.

Environmental protection is focused on mining and to a lesser degree water. To ensure transparency in the management of its natural resources, notably its copper resources, Zambia joined the Extractive Industries Transparency Initiative in October 2012.[6]

Zambia is a signatory to major UN and regional treaties protecting human rights. A Bill of

[1] http://data.worldbank.org/country/zambia

[2] Summary Statistics on Zambia's Smallholder Agricultural Sector, derived from Rural Livelihoods Survey (RALS) 2012 and Living Conditions Monitoring Survey (LCMS) 2010

[3] Operational Plan 2011-2016 DFID Zambia Updated December 2014

[4] http://data.worldbank.org/country/zambia

[5] http://www.mgcd.gov.zm

[6] http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Zambia_Country_Profile.pdf

Rights embodied in the current Zambian Constitution provides for the protection of fundamental rights and freedoms. However, the rights pertaining to the improvement of the welfare of the citizenry – such as education, health, housing, employment and social security – are not placed in the Bill of Rights, even though economic, social and cultural rights have been recognized to be important in the realization of political and civil rights. The challenge to progressively realize economic, social and cultural rights is enormous for Zambia, which has inadequate resources to provide enough schools, hospitals, social security, decent shelter and clean water to the majority of the population.[7]

1.3. Economic Context

The Zambian economy is dependent on copper prices, and the 2015 downturn in world commodity markets depressed the country's economic growth. Policy inconsistency, poor budget execution, corruption and reduced power generation have also hindered the economy. The energy crisis resulted in 10-14 hours of load shedding a day (AFDB 2015)[8]. The Zambian kwacha was Africa's worst performing currency during 2015, increasing import prices. This contributed to year-on-year inflation of 23% in March 2016. Monetary policy has seen the government tighten interest rates, which reached an all time high of 15.5 per cent in November of 2015[9]. Fiscal policy has been expansionary with the deficit estimated to exceed 8% of GDP in 2015.[10] Zambia has raised $7 billion from international investors by issuing separate sovereign bonds in September 2012, April 2014, and July 2015, significantly increasing public debt as a share of GDP (CIA 2016[11]). The country's focus on copper means the economy is largely based on sectors that are capital - not job - intensive, while most people still depend on subsistence agriculture (DFID 2014).

Agricultural production is the main occupation of Zambia, occupying about 68% of the labour force and accounting for approximately 8.9% of GDP.[12] While there is a well-established and growing commercial agricultural sector, the majority of farmers are small scale and subsistence based. Maize is the dominant crop with 89% of households growing this crop, up from 86% in 2012.[13] Yields are relatively low i.e. averaging 2.13 MT/Ha for maize (RALS 2015).[14] Commercial input use is low but rising; approximately 25% of farmers use fertilizer, 14% use herbicides and 1.8% use mechanical power (RALS 2015).

During 2016, regional food insecurity led to large exports of food commodities (especially maize) with the government introducing a maize export ban in mid-2016. This ban has promoted informal commodity exports using unusual and unmonitored routes. Traders are holding large volumes of maize in anticipation of exporting to the region once the export ban is lifted. Part of the maize in the hands of the large traders is likely to be sold to the World Food Program (WFP) for humanitarian assistance in neighbouring countries.[15]

[7] http://www.hrc.org.zm/index.php/human-rights
[8] http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Zambia_Country_Profile.pdf
[9] http://www.tradingeconomics.com/zambia/interest-rate
[10] http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Zambia_Country_Profile.pdf
[11] https://www.cia.gov/library/publications/the-world-factbook/geos/za.html
[12] https://www.cia.gov/library/publications/the-world-factbook/geos/za.html
[13] Rural Agricultural Livelihoods Survey, 2015 and 2012
[14] IAPRI Rural Agricultural Livelihoods Survey 2015 Survey Report
[15] http://www.fews.net/southern-africa/zambia

The Government of Zambia has sought to diversify the country's economy away from natural resource extraction with an emphasis on increasing agricultural production both as a means to promote economic growth and to reduce rural poverty by increasing on-farm production and income. Toward this end, two important policy initiatives include the Farmer Input Support Program (FISP) and the Food Reserve Agency (FRA).

The FISP began in 2002 giving smallholder farmers a limited amount of commercial maize seed and inorganic fertiliser. In 2015/16 it was expanded to cover groundnuts, orange maize, common beans and cottonseed. The program piloted an e-voucher system in 2015/2016 to encourage farmers to diversify away from maize and have access to a wider range of inputs involving more private sector agro dealers[16] as well as to address the challenge of targeting that was common under the conventional FISP. The total number of districts covered in 2015 was 13. In the 2016/17 agricultural season, the e-voucher was expanded from 13 to 39 districts covering the country's 10 provinces (with a presence in at least two districts per province). The Ministry of Agriculture (MoA) competitively engaged a total of 492 agro-dealers in 2016. This is expected to significantly widen private sector participation in input supply through agro-dealers.[17] The FRA's mission is to ensure national food security and farmers income by maintaining a sustainable national strategic food reserve.[18] To do so, the FRA purchases maize from farmers at a guaranteed price floor (approximately USD 170 / MT in 2016).

Both FISP and FRA are controversial. The costs of inputs distributed under the FISP and perennial FRA purchases have led to excessive public sector expenditures and cost overruns.[19] In addition, they operate in markets with significant private sector potential and with attendant distortionary effects. Research has found that the FRA maize-buying price has consistently exceeded average wholesale prices. These higher maize prices harm urban consumers and smallholders that are net buyers of maize, while the more stable maize prices brought about by FRA also disproportionately benefit relatively wealthy households.[20] The FRA also faces regular challenges with late disbursement to smallholder farmers.[21] It is thus not surprising that the Indaba Agricultural Policy Research Institute (IAPRI) has found that public spending on the FRA and FISP has had little effect on rural poverty reduction.[22]

Since 2012, FISP distributions to farmers have become less dependable; while simultaneous the government has reduced maize and fertilizer subsidies.[23] Notwithstanding, the government's maize-centric policies have encouraged farmers to grow maize in preference to other crops. In addition, the government's policy of setting a market price for maize through FRA purchases has undermined private sector viability in rural smallholder markets.

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16 http://www.agriculture.gov.zm/index.php?option=com_content&view=article&id=301:fisp-electronic-voucher-system-approved&catid=100:news-events&Itemid=1546

17 E-voucher office, Ministry of Agriculture, 2016

18 http://untappedmarkets.ca/2011/01/the-role-of-the-zambia-food-reserve-agency-fra/comment-page-1/

19 http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Zambia_Country_Profile.pdf

20 Mason, N.M and Myers, R.J, The Effects of the Food Reserve Agency on Maize Market Prices in Zambia Policy Synthesis Food Security Research Project - Zambia December 2011

21 http://untappedmarkets.ca/2011/01/the-role-of-the-zambia-food-reserve-agency-fra/comment-page-1/

22 http://allafrica.com/stories/201501120843.html

23 Modified from: Zambia Economic Brief 81816, Zambia's Job Challenge, Realities on the Ground, the World Bank, October 2013, issue 2.

Consequently, trade between formal private sector actors in agricultural markets and smallholder farmers has been weak.[24]

1.4. Programme Context

Amid the demographic, political and economic conditions described above, Zambia possesses a number of characteristics creating potential to achieve a significant expansion of agricultural production and, thus, an ideal (or at least suitable) setting for an agricultural promotion programme like WCDRM. To begin with, Zambia is endowed with a large land resource base of 42 million hectares of land classified as medium to high potential for agricultural production, of which only 1.5 million hectares is cultivated each year.[25] Overall, the climate is favourable to agriculture. Zambia's climate is classified as mostly tropical, with small parts of territory classified as semi-arid. Average temperatures are between 17.5 and 25.5 C°, while average rainfalls are between 0 and 200 millimetres per month.

Although Zambia is a landlocked country, and its smallholding agricultural is predominantly rain-fed, it is blessed with an abundance of water thanks to its numerous rivers, lakes and underground water resources. The country possesses around 40% of Southern and Central Africa's water resources on its own. This natural advantage has been mitigated to an extent recently owing to the serious drought occurring in the Southern Africa region over the period of this evaluation. FEWSNET reports "the 2015/16 rainy season was among the worst in 30 years in Southern Africa, being the second consecutive season of below average maize production"[26]. Notwithstanding, Zambian rains have remained relatively normal (although not in all cases), particularly in its more northern provinces, allowing its agricultural sector to benefit from higher regional commodity prices.[27]

Zambia is bordered by eight countries and is a member of the Common Market for Eastern and Southern Africa (COMESA) and the Southern Africa Development Community (SADC), which provides it relatively easy access to these regional markets and positions the country as a potential food basket for the region. Finally, Zambia has a growing population, which together with relatively robust economic growth, growing incomes, and increasing urbanization, is contributing to a rising demand for agricultural produce and thus increased opportunities for smallholder farmers.

A number of markets impediments exist, however, that constrain smallholders' access to markets and thus their ability to serve rising demand for agricultural produce in the country. A critical constraint is low on-farm productivity, which is in turn a function of smallholders' limited access to and use of productive inputs (e.g., improved seeds, fertilizers, or herbicides) and agricultural services (e.g., extension, veterinary, or financial services), in addition to weak linkages to markets, including buyers and aggregators.

While there exist within the country a reasonably large and varied number of market actors serving the agricultural sector—including input suppliers, service providers, financial institutions, insurers, etc.—these tend to operate from larger cities (particularly Lusaka) and have weak outreach to more remote rural areas. Even in rural communities where such market actors operate, they tend to cluster in local population hubs with a limited number of retail outlets and non-existent to weak direct distribution channels to the farm gate, and suffer from questionable supply chain quality assurance practices. Working in remote rural

[24] Rural Markets Program DFID Zambia, Business Case, May 2012, DFID

[25] Zambia Development Agency, Agriculture, Livestock and Fisheries: Sector Profile 2011.

[26] http://www.fews.net/southern-africa/regional-market-report/august-2016

[27] Some Zambian Provinces did experience poor rainfall. This led to a Musika supported WII intervention making a large payout due to poor rain.

communities is, moreover, expensive on a per unit basis, and private market actors generally lack either the business models or commitment to invest cost-efficiently in these markets. They tend to prefer working with larger commercial farmers, which offer higher per unit returns and require more familiar and stable business models.

Formal buyers/aggregators (including cooperatives) also operate in more remote rural areas and have forged important market linkages with small producers; however, their overall penetration among the millions of smallholder farmers in the country remains relatively limited. There also exist a number of cooperatives in rural communities, but these tend not to function well and themselves suffer from weak linkages to agricultural input or output markets.

For their part, and owing to their limit linkage to agricultural markets, smallholders face significant transaction costs either sourcing inputs or bringing their products to market. They also lack knowledge of modern farming techniques owing to weak public and private extension services. Moreover, they are also highly vulnerable to adverse political, economic or natural events, such as adverse weather patterns, and are thus in need of risk management and financing options that are generally not available to them, at least at prices and terms they can afford.

There thus exists a gap between the evolving demand for agricultural produce in Zambia and the ability of smallholder farmers to supply it. Meanwhile, the private sector lacks the business models and/or incentives to work with small holder farmers to fill this gap. Filling this gap thus, presumably, requires an intervention by a third party (such as Musika) to work at different levels of the agricultural value chain to innovate business models and restructure the incentive structures of private market actors so as to induce them to forge mutually beneficial market linkages with smallholder farmers.

1.5. Description of the Programme Evaluated

The subject of the end line evaluation report is the Wealth Creation Development of Rural Markets Programme (WCDRM)[28] programme. WCDRM is being implemented by the Zambia non-profit organization Musika with £4,619,196 in funding from the Department for International Development (DFID) from November 2013 to October 2016.

Under WCDRM, Musika's general approach involves stimulating the development of a supportive market environment that provides sustainable opportunities for smallholder farmers to invest in their own production and use markets to graduate out of poverty. Toward this end, Musika works primarily with corporate entities[29] in the following five agricultural sectors that are committed to engaging the rural poor as their clients, suppliers and consumers: inputs, outputs, agricultural services, financial services, and environmental (e.g. solar energy, biofuels) markets. Musika provides its corporate clients with commercially focused technical advice and business support (matching grants) to catalyse and strengthen mutually beneficial commercial relationships between businesses and smallholder farmers. Musika focuses on supporting the development of relationships, such as embedded extension, technology transfer, forward pricing and / or contracts that give both knowledge and confidence to farmers to improve their business. A brief description of Musika's work in its five target markets is provided below.

[28] The programme is sometimes referred to as the Rural Market Development in Zambia Programme (i.e. in its Business Case) or the Development of Agriculture Rural Markets Programme (i.e. in it Project Completion Review).

[29] Musika reports working with 42 different corporate clients as of April 2014

Agricultural Input Markets: In the agricultural retail market component, Musika's work involves facilitating the development of a market in which commercial distribution companies in the seed, fertilizer, agrochemicals and farm equipment sectors see the smallholder sector as a major sales opportunity and invest in management systems, distribution networks and embedded services that are tailored to addressing the needs of that market.

Agricultural Output Markets: Musika's objective within this market is to assist in facilitating the development of a market for grain and other commodities and livestock and livestock products that is transparent and structured, with less risk to both buyers and sellers, and which provides the smallholder and emergent sectors with incentives that provide sufficient confidence to invest over the long term in productivity enhancing technologies that can improve yields, profitability and farm income. Key to generating this confidence is a strong and long/term relationship with buyers that provides assurances regarding purchases and other embedded services to the farmer.

Agricultural Service Markets: Musika is facilitating the development of a services sector in which smallholders have access to a wide range of productivity/enhancing services from commercial and micro/enterprise service providers, which are in turn supported by the corporate sector to access machinery, technical knowledge and after/sales knowledge. The key services targeted under this theme are veterinary, nutrition and genetic services in the livestock industry and mechanized services such as land preparation, spraying, harvesting and haulage.

Agricultural Finance Markets: In this market, Musika works to develop financial products and services that enhance financial access in rural Zambia, with a focus on agriculture and its associated industries, and which supports the other 'pillars' of Musika's operational strategy in the agricultural inputs, outputs and services markets. Following the signing of an MoU, Musika is working closely with the DFID-funded Financial Sector Deepening Zambia (FSDZ) programme to mitigate duplication and conflicting messaging and maximise on leveraging the expertise of both initiatives.

Renewable Energy Markets: Under this intervention, Musika is supporting commercial initiatives that aim to deliver renewable energy sources to rural and urban populations to help mitigate Zambia's chronic 'energy poverty'. Starting initially with support to rural solar power distribution (both at household and community level), the intervention now encompasses biomass for cooking energy as a replacement for unsustainably harvested charcoal. Ultimately it will also include community access to biomassBderived offB grid electricity generation.

WCDRM support to the private sector within its five target markets is delivered through two grant mechanisms: 'risk buy down' and 'challenge funds.' Risk buy down grants are amounts below US$100,000. Funding opportunities are not advertised. In partnership with private company clients or prospective clients, Musika field managers generate and present these ideas as intervention proposals, which are then approved or disapproved by a Grants Committee. Challenge fund investments are grant amounts from USD$80,000 to USD$250,000. Challenge funds are advertised; proposals are invited, scored, ranked and

selected. A breakdown of challenge funds and grant investments is presented in Table 1. Musika supported a total of 76 organisations by the end of 2016.

The WCDRM challenge fund approach is consistent with DCED definitions of 'Matching Grant Scheme's that have clearly defined strategies for sharing the costs based on proposals from businesses. Neither the risk buy down or challenge fund approach, however, is consistent with DCED's definition of systemic approaches or Market System Development programmes that aim for sustainable improvements based on a thorough analysis of market failures and weaknesses.[30]

Table 1: Breakdown of Grant and Challenge Fund Allocations 2014 to 2016

DESCRIPTION	2014 (USD)	2015 (USD)	2016 (USD)	Total (USD)
Total Cost Share / Risk Buy Down	1,144,001	3,600,772	1,734,914	6,479,687
Total Challenge Fund	968,777	376,645	297,843	1,643,265
Total Core Funding	2,112,778	3,977,417	2,032,757	8,122,952

Source: Musika

All financial support is aimed at catalysing private investment in a particular market and reducing risk in making investments in, for instance, a new business model, a new technology or a new geography, and is accompanied by technical support, both at field/regional level and the head office level through human resource capacity building, advisory services, partnership/strategic alliance development, etc.

Programme impact aims to reduce rural poverty through integrating farming households in well-functioning agricultural markets. Expected programme outcomes are to deepen, broaden and strengthen inclusive agricultural markets in key agricultural provinces of Zambia. In this context, deepening of markets means a greater range of products and services will be available to farming households; broadening means markets will cover areas that have hitherto been under-served and un-served, and finally, strengthening means markets will be more viable and sustainable for both buyers and sellers.

The programme outcome level targets are as follows:

1. 250,000 farmers using key agricultural and livestock inputs from improved sources (sales points)
2. 100,000 farmers using improved crop and livestock services
3. 10,000 farming households accessing financial services
4. 95,000 farmers using improved purchasing points for their produce

WCDRM engages smallholder farmers to address poverty. Previous (USAID PROFIT) experience had indicated that poorer and more remote farmers could be reached viably, if firms developed appropriate models that include them. WCDRM intended to encourage firms to move into less well-served areas (poorer) through designing lower cost models. The programme also intended to include more remote, under served provinces, (i.e. Western, Luapula, Northern Province) to address poverty.

[30] DCED Private Sector Development Synthesis Note, Matching Grant Schemes & Systemic Approaches for Private Sector Development: Differences & Complementarities

Collaboration with other DFID programmes was also intended to address poverty and exclusion. In particular synergies were seen with the DFID Financial Sector Deepening Zambia (FSDZ) Programme. FSDZ is a development organisation aiming to improve financial services in less well-served areas. FSDZ co-funds the WCDRM supported WII intervention.

To address gender, the WCDRM Business Case highlights the Making Markets Work for the Poor (M4P) principle of undertaking a detailed market investigation, including who buys what, when, where, how and why. The M4P approach presumably enables market segments to be distinguished and different approaches to each segment taken. Following from this, WCDRM seeks to help private sector firms to better segment the smallholder market and find ways to reach different groups more effectively, such as women. WCDRM further seeks to (i) provide training to firms in the most appropriate strategies for targeting women; (ii) go through internal (to Musika) mini business case assessment for each intervention supported; (iii) actively encourage firms to undertake market research and pilot entry into markets for products and services that meet the needs of both men and women; (iv) disaggregate data and analysis based on sex within the monitoring and evaluation process and (v) closely involve the DFID Social Development Adviser to provide guidance.

WCDRM has been well managed and delivered against the Paris Declaration principles of mutual accountability, results, harmonisation and alignment. DFID has regularly monitored the programme and commissioned this evaluation to ensure accountability and the shift to a results focus. DFID has supported accountability and this evaluation, along with internal monitoring and evaluation (M&E) is helping measure results. Support is also harmonised with that of the Embassy of Sweden to help avoid duplication. By supporting wealth creation, WCDRM objectives are aligned behind those of Government of Zambia. Ownership of the initiative is primarily with the implementing organisation Musika and the private sector.

1.6. Linkage to Other Programmes

During the period of DFID support, the programme has been co-funded by the Embassy of Sweden. The Embassy of Sweden continues to support Musika and has been invited to take part in evaluation meetings and debriefings.

Musika works with over 70 private sector partners that are doing business with smallholders as their suppliers, customers and clients. Private sector organisations have been participants in the evaluation. Six individual firms were selected as case studies for the WCDRM evaluation.

Musika is, to some extent, a continuation of a USAID funded project called PROFIT. PROFIT facilitated private sector provision of inputs and services to smallholders addressing market access. PROFIT developed several models with firms that resulted in 3,000 rural agents consolidating orders from smallholders. At the beginning of DFID funding, it was felt there was still substantial scope for further geographical extension and more efficient models to reach more smallholders, for example through e-vouchers and mobile phone technology and networks. USAID continued support to a PROFIT+ programme that focused on Eastern Province. Given levels of support to Eastern province and DFID's interest in working in remote underserved areas, evaluation case studies were purposely selected to avoid Eastern Province. PROFIT+ was invited to evaluation feedback meetings.

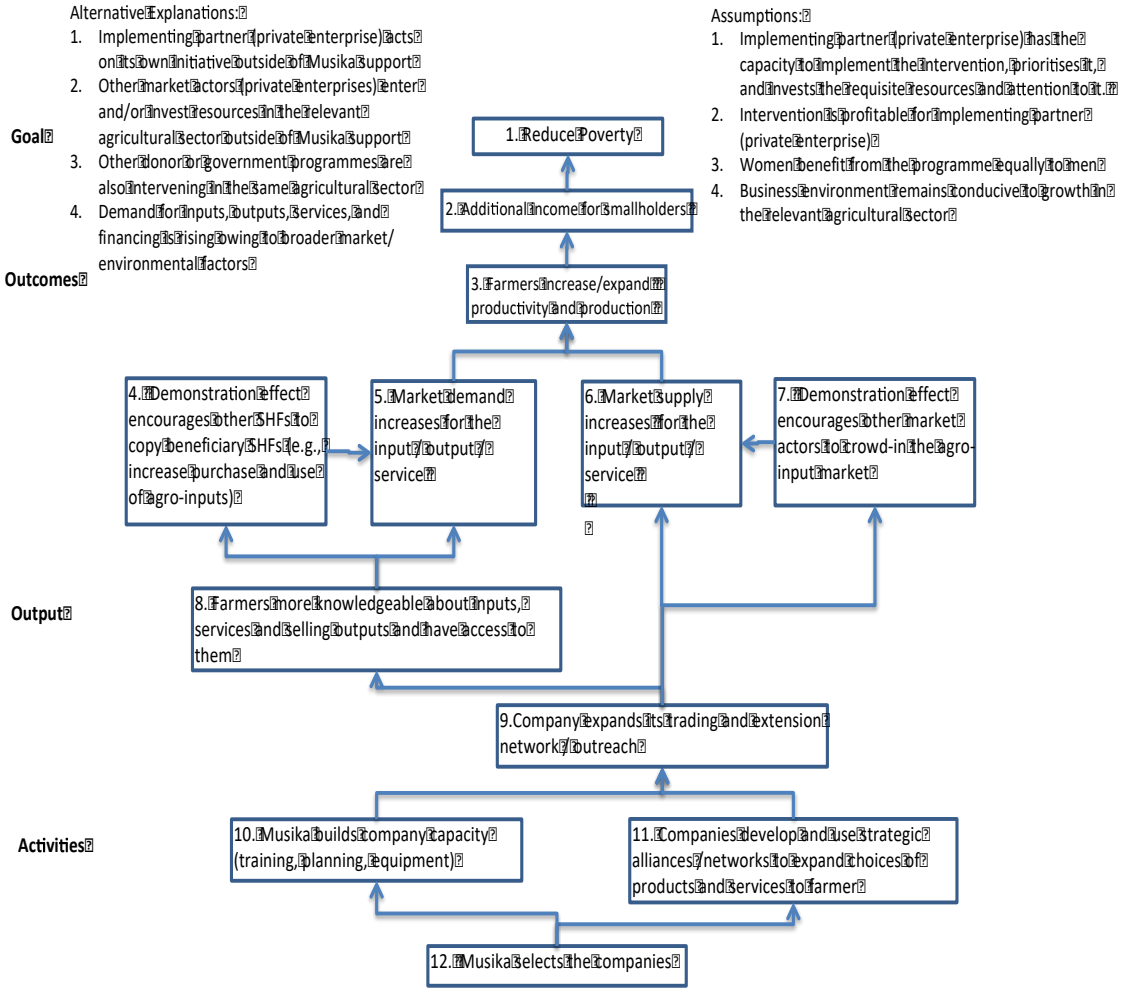
1.7. Programme Logic and Theory of Change

Figure 1 presents the WCDRM Theory of Change (ToC). As this is a programme-level ToC, and thus covers numerous interventions in the five programme target sectors, it is necessarily a highly stylized depiction of the causal logic underlying Musika's general intervention approach (described above). The intervention results chains found in Figures 2-7 provide a more specific and detailed depiction of the underlying intervention causal for each of the six case study interventions.

The intervention logic / contribution claim is that WCDRM supports private sector companies through activities of building the companies' human and physical capacity and supporting strategic alliances and networks. With this support, companies improve their outreach and build smallholder farmer knowledge of their products and services (i.e. demonstrations and information provision) and provide locally available outlets or purchase points for supply of inputs or purchase of outputs, depending on the specific initiative. Farmers with better knowledge and locally available markets are expected to change their agricultural practices thereby increasing production and productivity. Other firms are expected to 'crowd in' to supported markets and additional farmers are expected to 'copy' promoted practices. This is expected to contribute to an increase in smallholder farmer income and poverty reduction.

The Theory of Change outcomes of encouraging 'copying', increasing market demand and supply and 'crowding in' of other market actors (ToC Boxes 4 to 7) are consistent with (i) expected programme outcomes of deepening, broadening and strengthening inclusive agricultural markets and (ii) M4P / market systems development (MSD) terminology.

Figure 1: Theory of Change



Source: Authors finding

2. Purpose, Scope And Objectives of the Evaluation

2.1. Evaluation Purpose and Objectives

The purpose of the evaluation is to assess the performance of WCDRM against its objectives guided by the OECD Development Assistance Committee (DAC) criteria of relevance, efficiency, effectiveness, impact and sustainability.[31] The evaluation also contributes to learning for the M4P approach. The evaluation is, therefore, intended for both learning and accountability purposes.

Given this purpose, the WCDRM evaluation is best characterized as a 'performance evaluation,' which is an evaluation done to identify such things as programme achievements, how it is being implemented, how it is perceived and valued, whether expected results are occurring, and so forth. Performance evaluations differ from 'impact evaluations' in that the latter requires a statistically valid counterfactual and focuses on identifying causal effects and generating evidence to attribute them to programme interventions. In this context, the specific evaluation objectives, as specified in the original Terms of Reference (TOR), are as follows:

- Inform and contribute to the effective implementation of the Musika programme.
- Contribute to the evidence base on what works in Zambia.
- Inform the international debate on the value of the M4P approach, and thereby feed into future policy and funding decisions relating to tackling poverty reduction and achieving the Millennium Development Goals (MDGs).
- Inform DFID, the Government of Zambia and other stakeholders of sustainable approaches to developing market systems and which interventions have the greatest impact.

Consistent with the above evaluation purpose and objectives, the WCDRM evaluation design uses a theory-based approach that aims to assess whether, why, and a sample of six programme interventions (case studies) produced their intended results by evaluating the validity of the causal logic underlying the intervention design (as depicted in the intervention's 'result chain'). A theory-based approach is useful in cases in which the evaluation does not seek to create a counterfactual to determine attribution but instead seeks to establish an evidence-based argument for 'contribution' (how the intervention contributed to the observed changes). By exploring and testing the causal logic within individual intervention result chains, along with their underlying assumptions, while also assessing alternative contributory factors, a theory-based approach increases both the credibility and explanatory strength of the evaluation. Theory-based evaluations are recognized as a sound evaluation approach for complex programmes, such as WCDRM, both

[31] The DAC Evaluation Quality Standards identify the key pillars needed for a quality evaluation process and product. They have been prepared by DAC members in order to define member countries' expectations of evaluation processes, and evaluation products. While the standards are not binding on member countries, they provide a guide to good practice, aim to improve the quality of development intervention evaluations, and promote a harmonised approach to evaluation.

to inform programme management and broader development programming decisions and to assess the changes to which the programme may have contributed.[32]

Within the framework of the theory-based approach, the evaluation uses contribution analysis to explore the validity of causal linkages in the results chains of six case study interventions and to assess alternative contributory factors to observed results in those interventions. Contribution analysis is a framework for assessing the relationship between an intervention and its results where attribution using counterfactual approaches cannot be measured.[33] Contribution analysis is further useful for situations in which several relevant causes may underpin change and/or interventions are only one of several potential contributory factors. (See Section

The evaluation began in March 2014 and is expected to end in early 2017. This timing is justified as the evaluation aimed to encompass and support the full period of DFID support to Musika.

The target audience includes Musika and DFID managers, Embassy of Sweden, fellow practitioners, both nationally and internationally, and the Government of Zambia.

2.2. Evaluation Information Needs and Use

The evaluation has used a theory-based evaluation approach that aims to assess whether, why, and how programme interventions produce the intended results by testing the set of cause-and-effect mechanism described in the WCDRM ToC. As part of the theory-based approach, contribution analysis was used to explore the validity of causal linkages in result chains that underlie the programme's individual interventions. To do this the evaluation used a case study approach assessing six intervention results chains.

Data was collected for each case study intervention related to the primary evaluation questions and disaggregated according to the nodes in the result chain. This data was then used to build a contribution story for each result chain (Annex 7 to 12).

2.3. Aspects of the Intervention not Covered by the Evaluation

The evaluation aims to cover the DAC criteria of impact, effectiveness, sustainability, relevance, efficiency and gender. Giving available resources, the evaluation does not address issues of poverty, human rights, HIV/AIDS, environment, anti-corruption, and power relations.

Geographically, Musika covers all of Zambia. The evaluation focused on Western, Northern, Luapula and Central provinces. Three of the four provinces (with the exception of Central Province) are seen as more remote. DFID was encouraging Musika to work focusing on these more remote areas. Thematically, case studies were selected to cover that range of Musika support to input, output, service and finance markets. While Musika also supports interventions related to the business environment, WCDRM management did not envision

[32] See, for example: Hivos (2009). "Working with a Theory of Change in Complex Change Processes"; Rogers, P. (2008). "Using Programme Theory to Evaluate Complicated and Complex Aspects of Interventions." *Evaluation* 14(1): 29-48; Ruffer T. and Wach E. (2013). "Review of M4P Evaluaiton Methods and Approachs," ITAD..

[33] Mayne J. (2012). "Contribution analysis: Coming of age?" *Evaluation* 18(3): 270–280.

deliverables for these interventions at the evaluation inception phase, so they were not included in the evaluation design.

The issues of human rights and anti-corruption are not covered as part of the evaluation.

3. EVALUATION METHODOLOGY AND DESIGN

3.1. Evaluation Framework, Data Sources and Tools

The WCDRM evaluation investigates 10 primary evaluation questions and 27 associated research hypotheses covering each of the DAC evaluation criteria of impact, effectiveness, sustainability, relevance and efficiency.[34] The evaluation questions represent general topics of inquiry for the evaluation. The research hypotheses in turn drill down to identify specific topics of inquiry that together form the evidence-base for answering their associated evaluation question. The 10 primary evaluation questions are presented in Table 2. Annex 2: The Evaluation Framework lists again each of the 10 primary evaluation questions along with their associated research hypotheses and data sources.

Table 2: Evaluation Questions

Impact
1. Did the program achieve systemic change in the markets in which it intervened?
Effectiveness
2. How effective was the programme as a whole in delivering the promised outcome and impact?
3. How effective were individual interventions in achieving the intended outcome? If some interventions were more successful than others, why?
4. Were these the right combination of interventions?
5. How effective are aspects of the market system analysis approach, such as its facilitative nature, for achieving improved incomes and poverty reduction when compared to the direct delivery approach?
Sustainability
6. To what extent are the outcomes and impacts sustainable? What are the prospects to outlast the programme and how do these prospects vary?
Relevance
7. To what extent are the intervention outputs and components based on analysis of the underlying causes of market failure?
8. How, to what extent and why do beneficiaries and stakeholders value the interventions developed through the programme? What do they recommend to improve the interventions and why?
Efficiency

[34] http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm

9. To what extent to the programme and its interventions delivery value for money?
10. How successful was the targeting of the programme and why? How effective was the programme at targeting women? Was there any difference with regard to the number of men/women reached and why?

The evaluation was based on the collection of qualitative data using structured questionnaires in key informant interviews and focus group discussions. Data collection tools are presented in Annex 4: Data Collection Tools. Data collection instruments were tested and validated during the evaluation's inception phase. Data was collected in an appropriate and respectful manner, taking into account local cultural, ethical and legal concerns. This was ensured through the engagement of local researchers (Rural Net Associates) in data collection teams.

The evaluation methodology was designed with Musika and DFID input. Both partners were involved in regular meetings and feedback events during an iterative design process performed during the evaluation's inception period. The inception period also involved meetings with private sector implementers and farmers. These meetings built the evaluation team's understanding of the intervention and allowed testing and enhancement of data collection tools.

During evaluation implementation, two annual and two bi-annual reviews have been performed, which included progress briefings with Musika and case study implementers. Annual reviews have included reference group validation workshops. These meetings with WCDRM staff, DFID and well-informed observers reviewed and validated data, considered alternative explanations and assessed the plausibility of the contribution story. In this way, the evaluation process has tried to be transparent and ensure its legitimacy. The evaluation has also aimed to maintain confidentiality. This has been done by sharing results from fieldwork without revealing sources of any sensitive material. Secondary data sources have been used during the evaluation, such as management reports and the Musika annual household survey. When referred to, relevant documentation is identified in footnotes, and Annex 3: Bibliography.

The evaluation process provided evaluation-related information to DFID in the form of an inception report, baseline report, two bi-annual reviews, two annual reviews and this draft final evaluation report. All reports aimed to respect DFID 'do not harm' principles. Distribution of the reports was performed by DFID. It is understood that DFID has shared evaluation reports with Musika following document finalisation. A summary of stakeholders consulted during the evaluation is provided in Annex 5: List of Consultees.

The evaluation has been implemented in accordance with Paris Declaration principles. Country ownership has been addressed by working closely with Musika and DFID. It remains to be seen what levels of ownership are attained during final feedback events. To maintain independence, the international development consultancy firm GDSI UK has managed the evaluation under the contract with DFID.

The evaluation has further attempted to use country systems. The baseline drew on the Zambian Rural Livelihoods Assessments (RALS). Annual reviews tried to make full use of Musika household surveys and regular reports. The evaluation has also engaged SIDA, a co-funder of Musika with DFID, in the progress, planning and feedback events. The evaluation

has worked closely with the Musika M&E department but is not seen as contributing to building evaluation capacity within Musika or more broadly within Zambia.

The evaluation team was able to work freely and without interference at all times. Analysis considered the interests of various parties in the evaluation. For example, the evaluation team were cognisant where partners had an interest in obtaining further funding or tried to exaggerate contribution claims in their own interest. This was verified thought triangulation and cross checking with other data sources and the collection of further information to better substantiate the contribution claim.

Where differences of opinion existed or contradictory finding emerged, they were discussed in feedback events. Any unresolved differences of opinion or material / unusual conflicts of interest are discussed in the report.

3.2. Evaluation Design

The WCDRM evaluation design was developed via an extensive consultative process with DFID and a set of external reviewers. It reflects a number of considerations that are explained at-length in the evaluation Inception Report. By way of brief summary, key considerations were as follows.

Budget Considerations: The evaluation operated under budget constraints that limited the scope of the evaluation (e.g. interventions and geographic locations covered) and the number of persons (e.g., input suppliers, service providers, aggregators, farmers, etc.) interviewed. At the time the evaluation design was approved, WCDRM was operating 24 interventions across five sectors. The budget, however, did not allow for a comprehensive coverage of all 24 interventions (which have since grown in number).

Timing Considerations: At the inception phase, work was already well underway in a number of programme interventions making the creation of a clean baseline for a longitudinal assessment of those interventions problematic. Thus the decision was made to focus the evaluation on interventions in the early stages of their implementation phase. Moreover, the timing of the evaluation meant that the baseline was to occur during the rainy season, which both greatly complicated and increased the cost of collecting data directly from farmers.

Programmatic Considerations: At the evaluation inception phase, a number of WCDRM's market interventions overlapped geographically making it even more challenging (given other potentially contributing factors) to separate out the unique contribution of individual interventions to changes in the relevant market systems.

Methodological Considerations: WCDRM uses a facilitation approach, as opposed to a direct delivery approach. An important implication of this approach is that both private firm and farmer participation in the any particular intervention is based entirely on self-selection and occurs on a rolling basis over the course of the evaluation and is, therefore, unknown at the evaluation baseline. Thus finding a sufficient number of farmers within a particular market system who benefited from the intervention by the evaluation end line for the purpose of creating a statistically valid treatment group would have required a very large sample that exceed available budget resources.

As a results of the above considerations, the decision (reached jointly between the evaluation team and DFID) was made to focus the evaluation on a sub-set of interventions

that were relatively early in their planning/implementation phase and that operated in locations and market systems were other major programme interventions were not also operating. The same considerations also contributed to the joint decision to forego a quasi-experimental evaluation design in favour of a theory-based evaluation design (in which the individual intervention results chains constitute the relevant theoretical framework to be evaluated, as opposed to an overall programme ToC) using case studies and contribution analysis as the primary analytical method.

Two additional considerations further contributed to the decision to opt for a theory-based evaluation with contribution analysis. First was the following guideline found in the DECD Results Measurement Standard: **"**Results must be reliable, well-documented, and convincing to a well-informed observer. Conduct as rigorous a study as your budget will allow".[35] In the collective view of the evaluation team and DFID, a theory-based design with contribution analysis offered the most rigorous evaluation design possible taking into account the above considerations. Second, this evaluation design was seen as addressing the primary shortcomings of market system strengthening programme evaluations identified by Ruffer and Wach,[36] namely that such evaluations (1) fail to take into account the systematic nature of market systems programming, (2) are not derived from a clear and coherent conception of the programme logic and theory of change, (3) pay insufficient attention to qualitative approaches, and (4) have poor quality of quantitative data.

An important implication of evaluating a sub-set of interventions, as part of a 'programme evaluation' is that the selected interventions examined as case studies may not be fully representative of the programme. As a result, evaluation findings and conclusions may not be generalizable up to the programme level and thus not able to provide answers to the evaluation questions that are phrased in terms of programme-level results. This issue is addressed in Section 3.5 Methodological Limitations and Clarifications.

3.3. Evaluation Methodology

CONTRIBUTION ANALYSIS

To perform the contribution analysis, the evaluation team drew on the existing contribution analysis literature, including conceptual articles developing the methodology and empirical studies using contribution analysis.[37] The final approach selected for this evaluation is an

[35] Guidelines to the DCED Standard for Performance monitoring: Measuring Changes in Indicators. Adam Kessler with Nabanita Sen, March 2013.

[36] Ruffer, Tim and Elise Wach (2013) "Review of M4P Evaluation Methods and Approaches" ITAD Report Commissioned by the UK Department for International Development

[37] See, for example, the following: Bayne S, Kiptugen D, Lyons T, Wambua W, and Wepundi M. (2014). "Performance Evaluation of USAID/Kenya Mitigation and Civil Society Strengthening Activities. Prepared by Management Systems International for the United States Agency for International Development (USAID); Biggs J, Farrell L, Lawrence G, and Johnson J. (2014). "A practical example of contribution analysis to a public health intervention." *Evaluation* 20(2): 214-229; Delahais, T and Toulemonde J. (2012). "Applying contribution analysis: Lessons from five years of practice." *Evaluation* 18(3): 281-293; Howard M, Roumis D, Nakanyika-Mahoney S, and Toomey D. (2012). "A Global Development Alliance to Combat HIV/AIDS in the Agribusiness and Mining Sectors in Zambia: End of Project Evaluation." Prepared by Social Impact for the United States Agency for International Development (USAID); Kotvoijs B and Shrimpton B. (2007). "Contribution analysis: A new approach to evaluation in international development." *Evaluation Journal of Australasia* 7(1): 27–35; Leeuw, F. (2012). "Linking theory-based evaluation and contribution analysis: Three problems

adaptation of the ideas and approaches found in this literature developed by the evaluation team given the circumstances of the WCDRM evaluation and existing resource constraints.

For the purpose of doing the contribution analysis, the evaluation team revised the results chains for each of the case study interventions. Since the baseline report, the implementation process for the case study interventions diverged in different ways from that depicted in the original results chains; it thus became necessary to update the results chains to better reflect how the interventions had evolved from their initial conception. At the same time, the team sought to simplify the results chains for the purpose of facilitating the contribution analysis, which creates a contribution story for each outcome in the results chain. Finally, and so as to flesh out the results chains more fully and to aid in the contribution analysis, the evaluation team added a set of critical assumptions underlying each results chain along with a set of alternative explanations. To create the revised results chains, the evaluation team consulted with key informants, referenced internal Musika documents, and drew on the findings from its fieldwork conducted during Annual Reviews.

The primary tool for the contribution analysis is the evidence table. For each outcome in the case study intervention results chain, the evaluation team created an evidence table to summarize the evidence related to that outcome. Table 3 shows an example of the evidence table, while the text below describes the type of information found in the table. Note that the contribution analysis approach used here only assesses the outcomes in the intervention result chains, not the outputs as the latter are direct results of programme interventions that are assumed to be largely under the control of the programme.

Table 3: Evidence Table

Box #/Result:

Evidence	**Source**	**Confirming/ Refuting**	**Strength of Evidence**	**Additionality**	**Outcome Contribution**	**Explanation**
Evidence #1						
Evidence #2						
Etc.						

Box #/Result: The number of the outcome box for the relevant outcome in the revised results chain and the result described in the results box. (A results box is the box in the results chain connected to other boxes with arrows.)

Evidence: The evidence for the outcome. As implied in the structure of the evidence table, there can be multiple sources of evidence either confirming or refuting the intended outcome. All relevant pieces of evidence are listed in this column.

and a few solutions." *Evaluation* 18(3): 348-363; Lemire T, Nielsen S and Dybdal L .(2012). "Making contribution analysis work: A practical framework for handling influencing factors and alternative explanations." *Evaluation* 18(3): 294-309; and Mayne J. (2012). "Contribution analysis: Coming of age?" *Evaluation* 18(3): 270–280.

Source: The source for the evidence. This describes the specific source for the evidence, such as the name of the organization represented by a key informant or the types of focus group discussion participants.

Confirming/Refuting: Indicates whether the evidence confirms or refutes the causal logic in the intervention results chain.

Strength of Evidence: Indicates how strong (reliable) the evidence is using the following 4-point scale:

1. Weak: Second-hand information that cannot be verified.
2. Rather Weak: Primary information that draws on (1) anecdotal experience or (2) good faith, informed estimates that possess an unknown margin or error.
3. Rather Strong: Primary information that is unverified (e.g., based on respondents' perceptions or recollection) but that draws on first-hand knowledge.
4. Strong: Primary and secondary information that is verified.

To estimate the contribution of Musika interventions to observed outcomes, the evidence table uses two contribution criteria: *additionality* and *outcome contribution*.

Additionality: This addresses the question as to whether the market actor would have undertaken the activity without Musika support. To assess additionality, the following 4-point scale is used:

1. Non-Influencer: The market actor would have definitely undertaken the activity in the approximately same timeframe.
2. Accelerator: The market actor would have definitely undertaken the activity but on a different timeframe. In this case, Musika support acts as an *accelerator* of the activity.
3. Catalyst: The market actor might have undertaken the activity but on a different timeframe. This also applies in cases in which the market actor would not have undertaken the activity on its own, and its activity is indirectly motivated by Musika support. The term 'indirectly' here refers to a second or third-order effect in which Musika support triggers a chain of events, which ultimate influences that activity of the relevant market actor.
4. Primary Motivator: The market actor would definitely not have undertaken the activity without Musika support.

Outcome Contribution: This addresses the question as to how much the Musika support contributed to the observed outcome. To assess outcome conditionality, the following 4-point scale is used:

1. Non-Contributor: Other factors, other than Musika support, contribute to the observed outcome.
2. Contributor: Musika support is one of other factors of approximately equal or greater importance that contribute to the observe outcome.
3. Strong Contributor: Musika support is one of other factors, albeit a relatively strong factor, that contributes to the observed outcome.

4. Primary Contributor: Musika support is the primary factor contributing to the observed result. This may involve other contributory factors as well, but Musika support is by far the strongest.

Explanation: Any additional explanatory information is included here. For each piece of evidence included in the evidence table, the bottom of the explanation cell should include the reasoning for the additionality and outcome contribution score assigned to the piece of evidence.

CONTRIBUTION STORY

Taking into account all of the information in the evidence table, a contribution story is created for each relevant outcome. The contribution story has three parts, as follows:

1. Contribution Story: A short narrative describing the observed outcome and the factors contributing to the observed outcome.
2. Contribution Ranking: Each of the contributing factors identified in the contribution story is ranked using one of four criteria:
   a. Facilitating Contributor: These factors play a largely facilitative role in that they help establish a conducive environment for the observed outcome.
   b. Contributor: The factors play a contributing role, albeit a less important one relative to other factors, in producing the observed outcome.
   c. Strong Contributor: The factors play a key role in producing the observed outcome
   d. Primary Contributor: The factors play the primary role in producing the observed outcome.
3. Causal Package: The factors playing a facilitating contributor, contributor, strong contributor and primary contributor role in the observed outcome constitute the outcome's 'causal package.' Presumably Musika's intervention is part of the causal package. All factors belong to this causal package are listed here along with their identified role in the causal package.
4. Conclusion: According to Mayne,[38] a factor contributes to an outcome IF (1) the causal package of which it is part is *sufficient* for the outcome to occur and (2) the programme intervention is a *necessary* part of the causal package. Here, the contribution story identifies whether these two conditions hold.

3.4. Sampling strategy

The case study sampling strategy involved the selection of a set of interventions for investigation. This was done with Musika during the inception phase. At that time WCDRM had result chains developed under the following categories: input markets, output markets, service markets and carbon finance and finance markets. The impact evaluation aimed to cover all of these areas[39].

Selection of Interventions for Case Study

[38] Mayne J. (2012). "Contribution analysis: Coming of age?" *Evaluation* 18(3): 270–280.

[39] This excluded the business environment category

Interventions were selected using a Musika list of interventions by results chain category[40]. Two key questions emerged when selecting interventions for the case studies: (i) the number of interventions to select and (ii) which interventions to select.

To select the number of interventions, the evaluation team, working with DFID and Musika, used the following three key criteria:

- Breadth of coverage.
- Depth of coverage.
- Resource availability.

Working with DFID the evaluators calculated the detailed costs of quantitative and qualitative fieldwork and compared these figures to available evaluation budgets. Through discussion of a number of options with DFID it was decided that available resources would allow six case studies from the then twenty-four Musika supported projects to be assessed in depth and permit three remote provinces to be covered. A proposal to increase the evaluation budget and perform more detailed analysis was rejected by DFID.

Next, to select the specific interventions, the evaluation team used the following selection criteria:

- Importance of the intervention to WCDRM as a 'core' intervention.
- Interventions that are relatively new and where significant results may not have already occurred.
- Coverage of all current results chain categories, except business environment.
- De-selection of Eastern Province to avoid overlap with PROFIT+[41].

The criterion 'Importance of the intervention to WCDRM as a 'core' intervention' was selected to focus the evaluation on areas that were felt to be of most usefulness and important to Musika and where it was felt the intervention was innovative and the more interesting lessons could be learnt.

The criterion 'Interventions that are relatively new and where significant results may not have already occurred' was selected as a number of interventions were already producing results. It was felt that performing a contribution analysis would be easier where results were not already presenting themselves.

The criterion 'Coverage of all current results chain categories, except business environment' was selected to ensure broad coverage. Business environment was excluded, as at the time, DFID was more interested in remote initiatives. Business environment initiatives were then based in Lusaka.

The criterion 'De-selection of Eastern Province to avoid overlap with PROFIT+' was selected to simplify the contribution analysis and avoid perceived future difficulties in distinguishing causality between two similar projects.

[40] This list was produced in May 2014 and the definition of categories changed over the course of the evaluation.
[41] A similar USAID Project

The final list of interventions selected for the evaluation case studies is shown in Table 4. Given the above criteria the evaluation team suggest that the selected case studies were representative of the twenty-four interventions supported by Musika at the time of the inception phase as they covered intervention model commonly used by Musika and the main market types supported by the project.

Table 4: List of Evaluation Case Studies

Name	Implementing Partner	Market	Province
Support to seed companies to develop information based distribution networks in the smallholder market.	Initially MRI Syngenta with later adaption and implementation by Mule-Stus	Inputs	Luapula
Support to dairy processors to stimulate the development of the dairy sector in isolated areas	Zammilk	Output Markets	Western
Cassava Biofuel project	GroAfrica	Bioenergy with later adjust to Output market	Luapula
Support to the development of Weather Index Insurance products.	Micro Ensure with later adaption to Mayfair and Risk Shield	Finance Markets	Central
Support to agrochemical companies to develop information based distribution networks in the smallholder market.	ATS Agrochemicals	Input Markets	Northern
Support to vet companies to develop an information-based network for the supply of drugs, veterinary services and AI services	AgriServe	Service Markets	Western

A summary of stakeholders participating in key informant interviews (KIIs) or focus group discussions (FGDs) for each of the six case studies is shown in Table 5.

Consultation with key Zambian Government stakeholder was focused at a provincial, district and community level. Government representatives form a significant number of the stakeholders involved at these levels (See Annex 5: List of Consultees). Selected case studies did not involve national level government.

To assess gender, evaluators conducted FGDs with men and women. In some case studies, it was not possible to include women in the FGDs, as insufficient numbers of female beneficiaries were present. KIIs included separate questions regarding gender. Gender information was assessed separately within the contribution analysis as a gender based assumption was included for each case study / result chain.

Table 5: Stakeholders Covered by the WCDRM Evaluation End line

	Inputs (Mule-Stus)		Inputs (ATS)		Output (Zammilk)		Inputs (AgriServe)		Output (GroAfrica)		Weather Index Insurance		Total	
Stakeholder Group	KII	FGD	KII	FGD	KII	FGD	KII	FGD	KII	FGD	KII	FGD	KII	FGD
Farmers		4 (2 male 2 female)		3 (2 male 1 female)		4 (3 male 1 female)		2		4 (2 male 2 female)				
Community level traders, lead farmers and local agents	1		2		1		3		4					
District level key stakeholders	7		4		5		10		2		1			
Regional level key stakeholders	3		4		5		3		3		1			
National level key stakeholders			2		1		2		1		10			
Total	11	4	12	3	12	4	18	2	10	4	12		75	17

3.5. Methodological Limitations and Clarifications

3.5.1. Limited Generalizability

A primary weakness of the case study method is its limited generalizability owing to the small number of cases being examined relative to the overall population. The six case studies examined for this evaluation are not necessarily fully representative of Musika's entire portfolio of interventions, and thus the related findings and conclusions cannot necessarily be used to assess Musika's overall work under WCDRM. With that said, the six case studies do provide a reasonable cross-section of interventions in the relevant market sectors where WCDRM operates from which it is possible to derive lessons learned applicable more generally across the WCDRM intervention portfolio, and for DFID programming more generally, related to the strengths and weaknesses of Musika's approach to agricultural development and the validity of the theory and assumptions underlying that approach.

It should be noted as well that focusing on a sub-set of programme interventions is reasonably common practice for evaluations of market system strengthening programmes. Similar to WCDRM, such programmes often operate multiple interventions simultaneously and across multiple market systems making a programme-level evaluation with comprehensive coverage of interventions infeasible for budgetary reasons. (This is particularly true of evaluations implementing large-scale farmer surveys.) Thus the decision to focus the WCDRM evaluation on a sub-set of programme interventions falls squarely within prevailing evaluation practice, if not ideal.

3.5.2. Lack of Counterfactual

As discussed above, the evaluation does not attempt to create a counterfactual from which statistically valid conclusions can be reached about attributable programme impacts. Nor is this the purpose of the evaluation. In lieu of a counterfactual, the evaluation employs contribution analysis, which provides both a theoretical framework and set of conceptual methods to generate findings and conclusions that are more likely to be accepted as credible.

At the same time, however, contribution analysis is an emergent practice, and the number of published studies using it is relatively few. Thus although contribution analysis has a good deal of conceptual credibility, it has no set of established 'best practices' that inform its use. To a large extent, researchers who use contribution analysis must work out for themselves how it is to be applied to a specific case with few antecedents to guide them. This was the case here in which the evaluation team adapted the approaches used in the few other cases it was able to find to fit better the context of this evaluation.[42]

While contribution analysis is appropriate in cases where creating a statistically valid counterfactual is not appropriate or feasible, it should not be seen as a substitute for a counterfactual. All else equal, a statistically valid counterfactual is preferable, if more difficult methodologically to achieve. Conclusions reached using contribution analysis are

[42] As an aside, creating a bibliography of published applications of contribution analysis and, from this, distilling a set of best (or sound) practices for applying contribution analysis is a worthy piece of research that DFID may want to consider, if it finds contribution analysis to be of value for the (presumably) numerous evaluations for which creating a statistically valid counterfactual is not appropriate or feasible.

evidence-based conclusions informed by theory, but they lack the level of certitude provided by a valid counterfactual and thus their interpretation must always keep this caveat in mind.

3.5.3. Timing

The time period between the evaluations baseline and end line studies was two years. This time period has been insufficient to observe measurable changes at the farm and farmer household levels. Two of the case studies (Zammilk and GroAfrica), moreover, have been operational for less than one year such that few of the expected changes have occurred to date. Thus, the two-year time period is insufficient to fully determine changes in production, productivity and income. Performing the evaluation over a longer time period may have allowed the market interventions to show greater systemic change. Performing a further ex-post evaluation in one or two years time would allow more insight into levels of systemic change stimulated by the programme.

3.5.4. Lack of Traction with Implementing Partners

Another methodological limitation that is closely related to the timing issue is that focusing on a relatively small number of cases introduces the risk that over the course of the evaluation, and for a variety of reasons, the programme may have difficulty gaining traction with its private sector implementing partners, thus potentially rendering the case study of comparatively less value in terms of measuring such things as impact, effectiveness or sustainability or in generating lessons learned. This happened in the cases of the Zammilk and GroAfrica interventions, which took a long time to gain any traction in the their respective markets due in part to a lack of timely cooperation on the part of the government. While there are lessons to be learned from their experience, these lessons are potentially much less rich than would be the case had more taken place over the course of the evaluation or had some other intervention been selected for the case study. At the same time, these interventions may yet gain traction and generate some positive results, but these results will not be captured by the evaluation, which has since concluded.

3.5.5. Quantitative data

The end line evaluation has relied on qualitative data. It was originally intended to use Musika quantitative data from a Musika Annual Household Survey, which was incorporated into the evaluation baseline study. The methodology for performing the Annual Household Survey, however, changed significantly between the baseline and end line. This poses questions about the validity of comparing variables from the two survey rounds – such as income, production and productivity – as the evaluation could not compare 'like with like'.

3.5.6. Comparative Data

The evaluation has relied on comparative data from the DFID development tracker[43] web site and interaction with the BEAM Exchange.[44] Levels of available independent comparative data have proved low. Despite regular attempts during Annual Reviews and the End line study, the evaluation team has not been able to find independent evaluation reports for other M4P / MSD programmes similar to WCDRM. As a result, comparison has relied on

[43] https://devtracker.dfid.gov.uk

[44] https://beamexchange.org

internal programme documents and DFID Annual Reviews. Improved availability of independent evidence for the effectiveness of market system analysis could have allowed stronger recommendations to be made regarding the use of this approach.

3.5.7. Overcoming Bias

There is a tendency for biases to enter into stakeholder interviews particularly where interviewees have a vested interest in evaluation results. In this light, the evaluation team has sought to control for possible sources of bias through the use of a structured interview process with a wide range of stakeholders to gain as many different perspectives as possible and to determine common themes. These perspectives were then analysed, brought together and presented in evidence tables (Table 3). This involved crosschecking and triangulation of evidence to build a contribution story. The evidence tables aim to balance various perspectives and develop a logical contribution story that provides the best fit the data. Bias was then further addressed through the use of regular feedback sessions with DFID, Musika and relevant experts. These meeting provided an opportunity to discuss, identify and remove any bias in findings.

3.5.8. Departures from the TOR, inception phase and / or original evaluation design

The one notable departure from the original evaluation TOR was to adjust the evaluation questions by expanding them to incorporate a set of research hypotheses related to each question for the purpose of testing the causal linkages between the intervention results chains and then connecting these to the different evaluation methods. Of the evaluation questions found in the TOR, all were carried over into the evaluation with the exception of one question related to impact—"Did the programme deliver a large scale impact that extends far beyond the programme's direct sphere of influence?" — and one question related to effectiveness — "How effective was the programme at delivering increased environmental resilience/adaptability in the areas in which it worked?" In the first case, the evaluation question was replaced by Hypothesis 1.2 – "Programme interventions produce demonstration effects at the support market (e.g., crowding-in) and smallholder farmer (e.g., copying) levels." In the second case, the evaluation question was dropped because it was not believed to be relevant to any of the six evaluation case studies. In the end, the evaluation included 10 general evaluation questions covering the OECD DAC criteria of impact, effectiveness, sustainability, relevance and efficiency accompanied by 27 research hypotheses.

The main departures from the inception phase relate to the reduced levels of quantitative and comparative data available as discussed above. The original evaluation design has further been adjusted with the introduction of evidence tables linked to each case study intervention result chain. This has been done to improve the evidence trail and more clearly link findings to the result chains and the programme ToC.

3.5.9. Disagreements or Comments on the Evaluation Report

Comments on the final evaluation report were received from DFID and EQUALS. These comments have been reflected in the report finalisation process. EQUALS comments and the evaluation teams responses are presented in **Error! Reference source not found.**.

A difference of opinion regarding whether the method used in WCDRM implementation followed that of an M4P / MSD program or if it was a matching grant scheme existed between members of the evaluation team and some Musika managers. This issue is discussed in text addressing the relevant evaluation questions.

4. Analysis

This section presents the analysis of six case studies where evaluation questions are answered under each DAC criteria. Analysis is linked to the results boxes that make up the programme ToC in addition to a summary of contributing factors for each results box that is presented in Annex 6: Contribution Analysis Comparison of Case Studies. The detailed contribution analysis for each case study is presented in Annex 7 to 12.

4.1. Impact

EQ 1: Did the programme achieve systemic change in the markets in which it intervened?

Based on the six case studies, the WCDRM has achieved moderate levels of systemic change with potential for this to increase in future.

Assessment of systemic change focuses on Boxes 4 to 7 at the outcome level of the ToC (Figure 1). An over view of systemic change results for the six case studies is presented in Table 6.

Results show case studies have achieved most progress in achieving either supply or demand side market growth (ToC Boxes 5 and 6). Five of the case studies had grown demand while three of the case studies have increased market supply. For example, the WII intervention has achieved systemic change stimulating growth in the demand and supply of weather index insurance where Musika played an important contributory role (ToC Boxes 5 and 6). Support has motivated or accelerated entry by three organisations that dominate the supply-side of the market: Risk Shield, Focus General Insurance and Mayfair Insurance. A number of other, primarily donor or donor-supported, organisations have since entered the WII market on their own accord, which is also contributing to market development and growth. Perhaps most significantly, and with a strong contribution from Musika's advocacy efforts, the Zambian MoA agreed to integrate WII into the pilot tests of the FISP e-voucher scheme in three districts during 2015-16 with the possibility of significantly scaling up the integration of WII into the e-voucher scheme during the 2016-17 growing season.

The two case studies (ATS and Mule-Stus) show change in market demand and supply (ToC Boxes 5 and 6) that is mostly concentrated on the recipient of support with no examples of wider systemic change emerging by the time of the end line study. The Zammilk initiative has increased demand for milk (ToC Box 5) but had not been in operations sufficiently long enough to show a definite supply side response (ToC Box 6). The GroAfrica cassava initiative had been in operation for one month at the time of end line fieldwork. Its entry into the cassava market as an immediate buyer has caused increased market demand (ToC Box 5). However, as with the Zammilk case study, there has been insufficient implementation time to show longer-term supply side systemic change. There is good potential for both the Zammilk and GroAfrica case studies to contribute to a more significant supply side response (i.e. increased farm milk and cassava production) in the longer term.[45] The AgriServe case study has not achieved its intended outputs and outcomes.

[45] Musika report this as occurring following end line fieldwork.

At the time of end line fieldwork, case studies had not produced clear examples of a demonstration effect leading to 'copying' or 'crowding in' (ToC Boxes 4 and 7) as a result of WCDRM demonstration effects. For example, no non-donor supported insurance companies have entered the WII market in response to Musika's efforts. The only other private sector actor entering this market has been the insurance broker AON, but it did not do so as the result of a demonstration effect, although it would not have entered without Musika's support to the WII industry in general (which catalysed Risk Shield's entrance and accelerated Mayfair's and Focus' entrance). The only other actors entering the WII market are donors, and in these cases, there is no evidence that they did so as the result of any kind of demonstration effect. In the Zammilk case study, ZANACO Bank is intending to implement its national 'loan a cow' initiative in Western Province. Zammilk's presence is essential to loan repayment arrangements within this initiative. The entry of ZANACO is due the presence of Zammilk, which WCDRM has supported, as opposed to a demonstration effect.

A detailed analysis of the factors that have contributed to these outcomes is presented in Annex 6 to 12. These factors are discussed more fully in Section Effectiveness, which looks at the reasons why some interventions were more successful than others.

Table 6: Summary of Results for Systemic Change

Impact	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
EQ 1. Did the programme (case study) achieve systemic change in the markets in which it intervened?	Yes, it played an important role both in the development and growth of the WII market	Yes, forged alliances other org's, which are also benefitting and created strategic partnerships	Not yet, the gains are mostly concentrated on a single agro-dealer	Not yet - material gains have not emerged at the time of end line fieldwork	Not yet, the initiative had been operational for one month and the time of end line fieldwork	No
H 1.1. Markets are expanding in volume and value terms	Yes - accelerated entry by supported organisations, other donor-supported organisations entering market, and WII integrated into the FISP e-voucher pilots	Yes, the agro-input market system is growing due to a number of factors including ATS	Yes, the agro-input market system is growing due to a number of factors including Mule-Stus	No evidence of significant market expansion. Early indications are favourable	GroAfrica has entered the cassava market providing an immediate market expansion	The agro vet market in Western Province has expanded
H 1.2. Demonstration effects occur (e.g., crowding-in and copying)	No evidence of a demonstration effect	No evidence of a demonstration effect	No evidence of a demonstration effect	One example with ZANACO planning to begin loans for dairy cows.	No evidence of a demonstration effect	No
H 1.3. Behaviour changes become embedded	Not yet, early indications are favourable	Not yet, early indications are favourable	Not yet, early indications are favourable	Not yet	Not yet	No

4.2. Effectiveness

EQ 2: How effective was the programme as a whole in delivering the promised outcome and impact?[46]

Results from the six case studies suggest the WCDRM as a whole, has been moderately effective in producing intended outcomes (See Table 8). Three of the case studies have been effective at the time of the end line study. Importantly, the majority of case studies have potential to be more effective over a longer time period. Three case studies (WII, Mule-Stus and ATS) have moved near to the top of their results chains. Two case studies (Zammilk and GroAfrica) have limited effectiveness due, respectively, to low milk processing volumes and a short (one month) operation period at the time of end line fieldwork. Both of these case studies have potential to be increasingly effective in future if volumes traded increase[47]. The AgriServe initiative has been ineffective.

When considering programme effectiveness in addressing income[48] (ToC Box 2), the case studies present some observations regarding farmer's income (See Table 8 H 2.1) and contributing factors (See Annex 6: Contribution Analysis Comparison of Case Studies Box 2). Farmers made a successful claim for WII presenting a 'one off' boost to their income. GroAfrica has paid a premium price of cassava to farmers who happened to have produce available when buying commenced. This is expected to have increased their income at least in the short-term. Neither of these examples shows a systemic change to farmer's income position; however, WCDRM has contributed to these events occurring. At the time of end line fieldwork, the Zammilk intervention had not contributed to a significant or systemic increase in farmer incomes[49]; however; this could change positively when seasonal milk production increases. There is insufficient evidence to determine any change in income

[46] The original Effectiveness section Hypotheses 2.4, 'Impacts and outcomes among male and female beneficiaries are not significantly different', has been moved to the gender section.

[47] Musika reported in late January that since independent evaluation fieldwork (i) GroAfrica has purchased over 800 MT of cassava from over 1,300 farmers and (ii) there has been a dramatic increase in milk collected and processed, from 10,000 litres in the last quarter 2015 to 134,000 litres in the last quarter of 2016. The number of farmers supplying Zammilk has also increased from 25 to 220.

[48] The study recognises that there are a large number and wide variety of potential factors, aside from WCDRM support that affect changes in SHFs' income. As pointed out in Section EVALUATION METHODOLOGY AND DESIGN, the evaluation methodology has not been sufficient to measure whether on-farm or household income has changed. It is, moreover, too early in the intervention cycle to observe any systemic changes in income or poverty that may be occurring as a result of the Musika WII intervention.

[49] The Musika 2016 Annual Household Survey claims '55% of the farmers experienced an increase in their milk sales' presumably leading to increased incomes. This broad claim could not be verified by the Independent evaluation. The Western Province Zammilk milk processing initiative had not generated similar results at the time of end line fieldwork. The difference in performance is suggested as being due to Southern province milk initiatives being further advanced.

or their contributing factors for the ATS or Mule-Stus case studies.[50] The AgriServe initiative has not increased farmer's income.[51]

When analysing ATS and Mule-Stus impact on on-farm yields / production (ToC Box 3) contribution claims are more credible[52], all else equal, than those related to changes household income or poverty status, as the causal effects from input usage to improved yields is more direct and with fewer potentially confounding factors. Thus, to the extent beneficiary farmers are (1) increasing input usage as a result of ATS and / or Mule-Stus outreach and extension efforts and (2) increasing on-farm yields, then it is reasonable to claim some contribution for WCDRM**.** There was no evidence as to whether or how Musika's WII intervention is contributing to increased on-farm yields**.** The Zammilk case study showed no significant increase in milk supply by small-scale farmers. The cassava initiative had not had time to generate a production related supply side response. Both these initiatives have potential to increase production and yields in the longer term. The AgriServe initiative has not increased farmer's production or yields (See Annex 12: Contribution Analysis AgriServe Box 3).

EQ 3 (Part A). How effective were individual interventions in achieving the intended outcome?

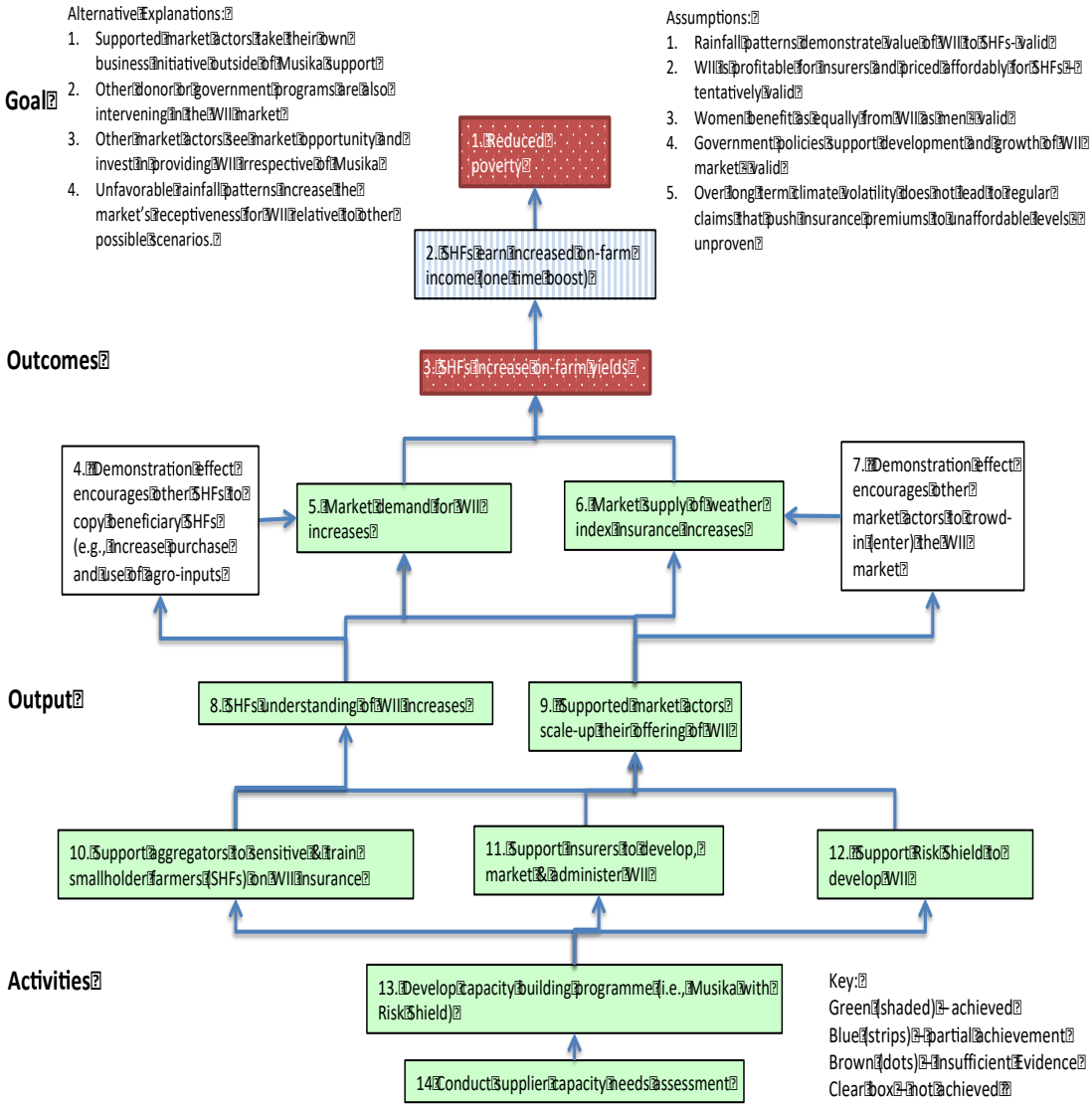
Results chains indicating the effectiveness of each individual intervention are presented in Figure 2 to Figure 7. The figures present the Results Chain that the Contribution Analysis is base upon. Each Results Chain is based on the Musika Result Chain developed for the intervention. The Independent Evaluation team has simplified the chain for the purpose of doing contribution analysis and to reflect on-the-ground experience.

[50] The Musika 2016 Annual Household Survey claims 82.9% of farmers felt that their incomes had increased as a result of improved engagement with agribusinesses. This claim could not be verified by the Independent evaluation.

[51] The Musika 2016 Annual Household Survey claims that 'access to improved livestock service markets led to 72% of the farmers experiencing an improvement in herd health, while 69% and 68% of the farmers had experienced an increase in calving rate and a reduction in mortality rate. This claim could not be verified by the Independent evaluation. The failure of the AgriServe business model suggests similar results have not been achieved in Western Province.

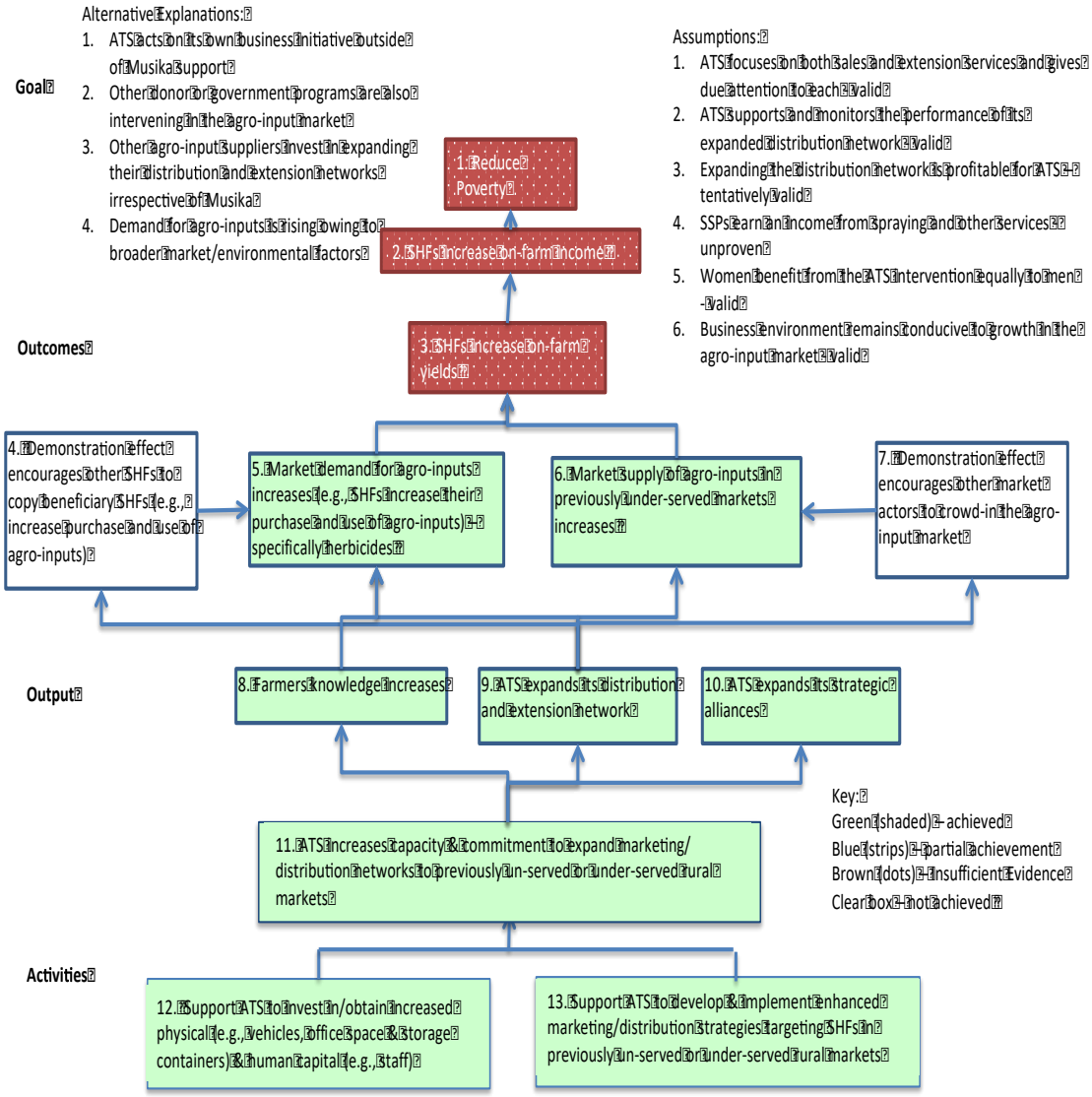
[52] The Musika 2016 Annual Household Survey claims that '51% of maize farmers in the input market that had used hybrid seed had indicated an increase in yields'.

Figure 2: WII Result Chain



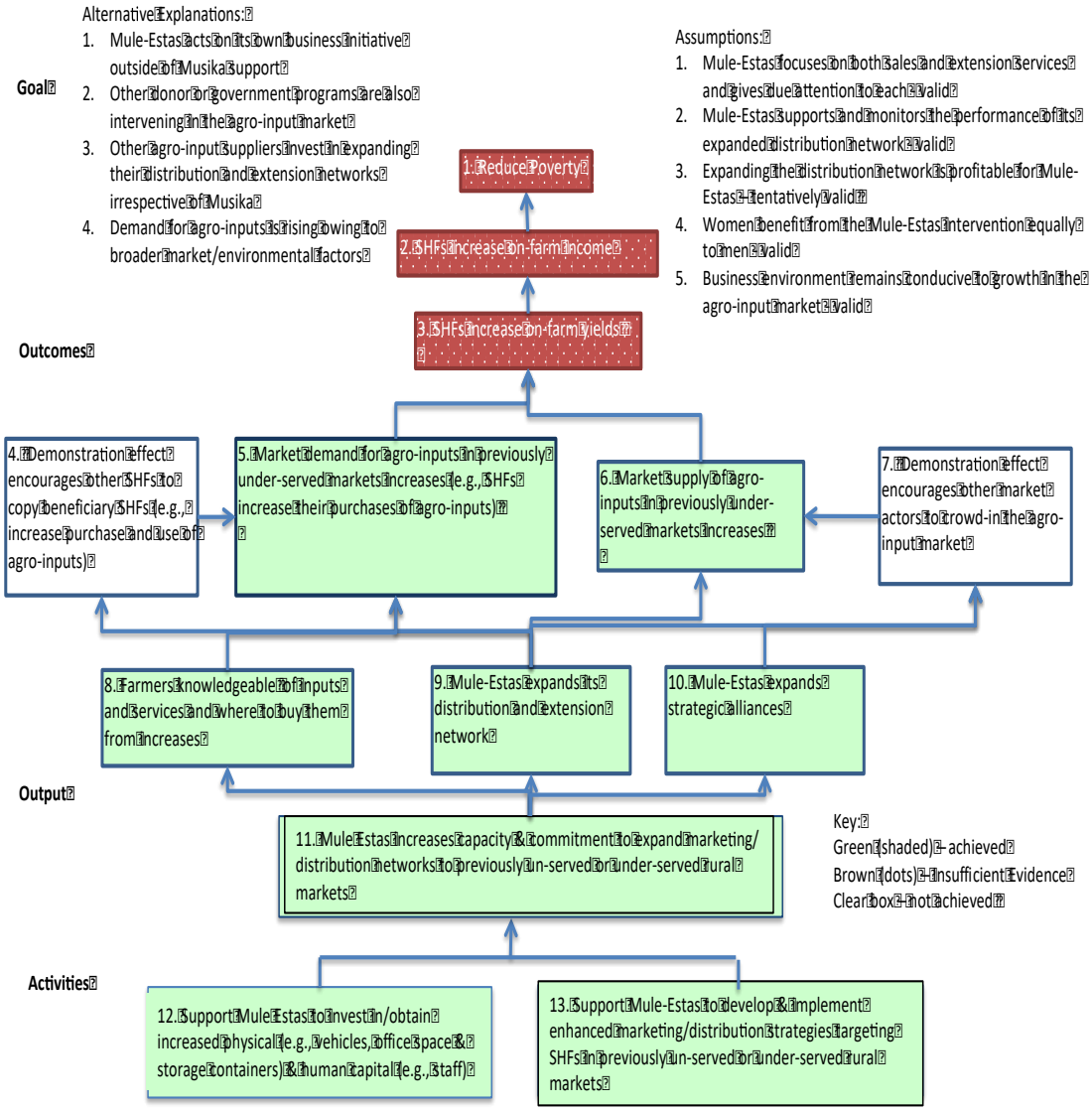
Source: Authors finding

Figure 3: ATS Result Chain



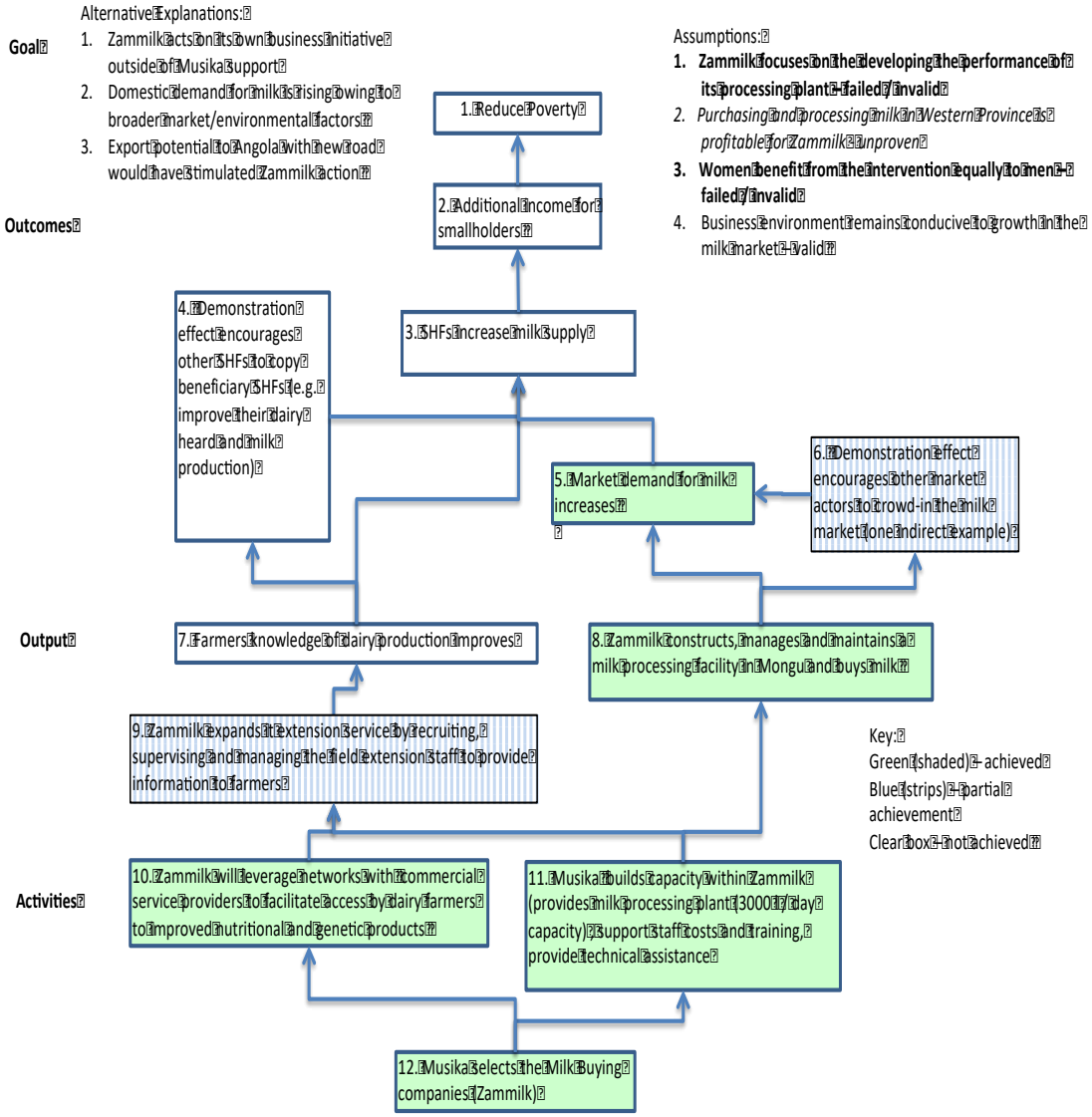
Source: Authors finding

Figure 4: Mule-Stus Result Chain



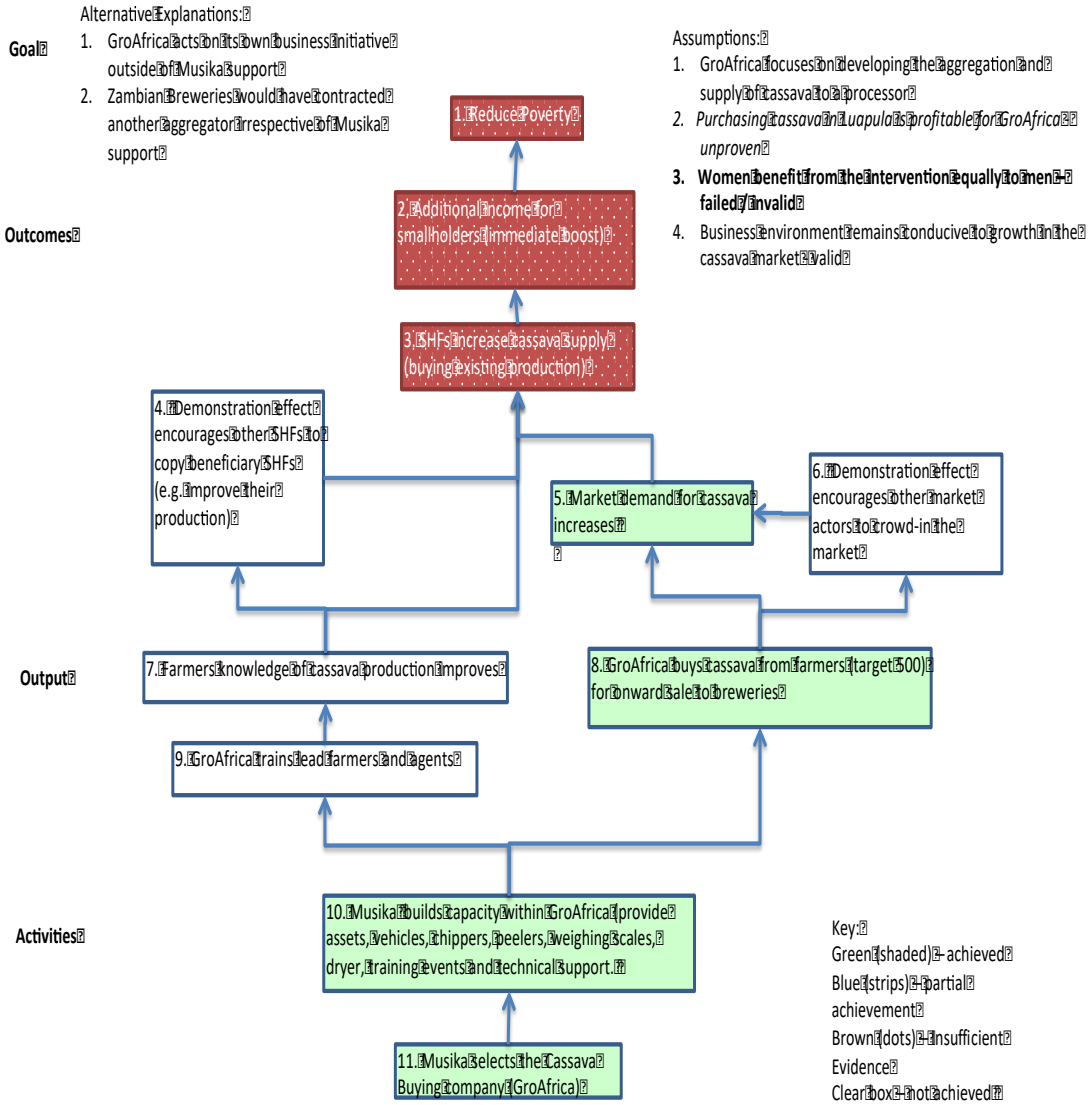
Source: Authors finding

Figure 5: Zammilk Result Chain



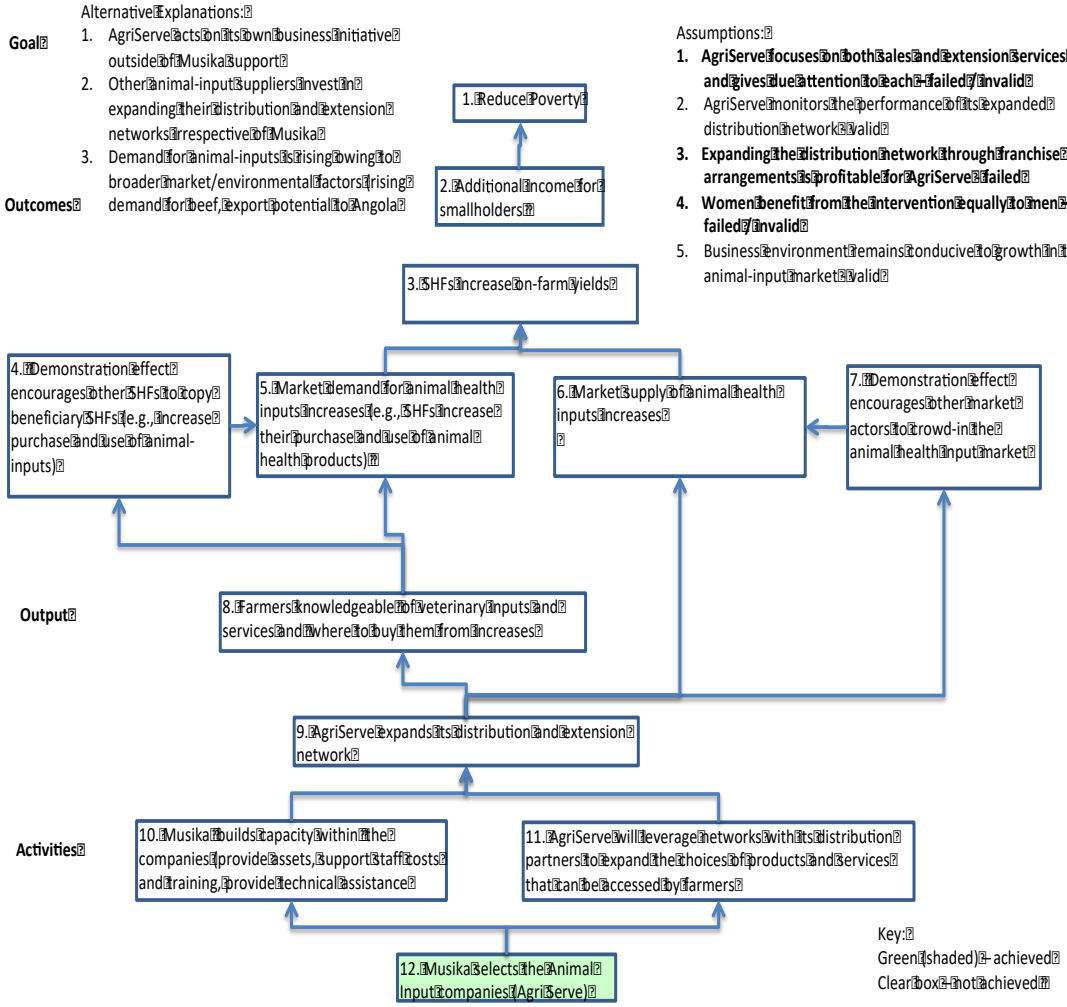
Source: Authors finding

Figure 6: GroAfrica Result Chain



Source: Authors finding

Figure 7: AgriServe Result Chain



Source: Authors finding

Based on the independent evaluations review of the individual result chains, the ATS, Mule-Stus and WII interventions appear to have been the most effective at achieving their intended outcomes (especially ToC Boxes 5 and 6). The AgriServe intervention has been the least effective. Zammilk and GroAfrica effectiveness has been disappointing in terms of the length of time trading has taken place and the volumes achieved. The Mule-Stus and ATS interventions have similar levels of effectiveness. A favourable market environment conducive to the growth in SHF demand for agro-inputs (include the transition to an agriculture-dominant economy; a wealth of natural resources (i.e. rainfall); favourable government policies, (especially FISP) and the presence of other donor-funded agriculture support have been important in causing demand for agro inputs to increase.

During End line evaluation feedback meetings Musika representatives highlighted their perspective that the WII intervention was currently reliant on donor support. These representatives felt the better rains experienced in 2017 would provide a critical test for WII as farmers could reduce use of insurance given the more favourable weather. Musika representatives also felt that ATS and Mule-Stus interventions were 'driving growth' in there respective markets. This perspective was different to independent evaluation findings suggesting the interventions were 'riding growth' in terms of benefiting from other

contributing factors such as a favourable market environment: good rainfall); favourable government policies and the presence of other donor-funded agriculture support.

EQ 3 (Part B): If some interventions were more successful than others, why?

The following analysis explores why some interventions were more successful than others. This analysis is base on the results for hypotheses presented in Table 8, the summary of contributing factors presented in Annex 6: Contribution Analysis Comparison of Case Studies and the assumptions used in each Result Chain (Annex 7 to 12).

A summary of the factors contributing to success for each intervention is presented in Table 7.

Table 7: Factors Contributing to Intervention Success

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
Favourable external / contextual factors	Yes	Yes	Yes	No	Yes	No
Implementing partner's internal priority	Yes	Yes	Yes	No	Yes	No
External programme obstacles	No major obstacles	No major obstacles	No major obstacles	Yes	Yes	No
Critical mass of support providers	Yes	Yes	Yes	No	No	No
Success in facilitating change in other support providers	Yes	Yes	Yes	No	No	No
Business model failure	No	No	No	No	No	Yes

A review of external / contextual factors (Table 8 H 2.3) shows these were highly favourable in the WII, ATS and Mule-Stus interventions (i.e. favourable agricultural market growth and weather). For example poor 2015/16 rainfall resulted in large-scale WII pay out that has boosted the scheme from a farmers perspective, while the ATS and Mule-Stus both benefitted from favourable market and growing conditions. External /contextual conditions for the Zammilk and AgriServe initiatives in Western Province, are suggested as not being so favourable. Western province is generally seen as a more challenging place to work. The general level of private sector activity is as lower, traditional farm practices are stronger and the number of other donor agricultural projects is less compared to Northern, Luapula and Central Provinces.

Both the Zammilk and GroAfrica interventions experienced external programme obstacles in the form of long delays waiting for Gov. approvals (Table 8 H 3.1). These factors contributed to implementation delays and the low levels of effectiveness seen at the time of end line fieldwork.

The implementing partner's internal commitment and own business initiative was found to be an important contributing factor in the more successful case studies. Review of case study contributing factors (Annex 7) shows WII, ATS and Mule-Stus as each having strong

own business initiative / commitment to implementing the case study intervention. This is less evident in Zammilk and AgriServe. The assumption that Zammilk focuses on the developing the performance of its processing plant was invalid (Annex 10). Zammilk reports that its Chisamba milk processing plant near Lusaka was a priority. Similarly the assumption that AgriServe focuses on both sales and extension services and gives due attention to each failed as it had better business opportunities outside of Western Province. Zammilk also reported difficulties accessing internal funding.

Results show that the WII, ATS and Mule-Stus interventions benefited more from a critical mass of support providers compared to the other interventions (Table 8 H 3.2). For example WII included a range of support providers from a Risk Shield, Focus, Mayfair, NWK, ZNFU, and MoA/FISP. ATS, in particular, and Mule-Stus worked with a range of agro input providers and, in the ATS case, commodity traders. This critical mass was less present in the Western Province examples of Zammilk and AgriServe.

The more successful WII, ATS and Mule-Stus interventions show more progress in facilitating intended changes in knowledge, attitudes, and practices, particularly among support providers (Table 8 H 3.3). These interventions have worked with and developed capacity in a wider range of organisations compared to the other case studies. This may be due to these case studies having a longer implementation period. However, they do suggest that working with a wider number of organisations and/or (as in the case of ATS) helping facilitate strategic partnerships among market actors presents a better chance of success.

Table 8: Summary of Results for Programme Effectiveness

Effectiveness	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
EQ 3. How effective were individual interventions in achieving the intended outcome?	Effective moving to near the top of the ToC / Results Chain	Effective moving to near the top of the ToC / Results Chain	Effective moving to near the top of the ToC / Results Chain	Limited effectiveness due to low milk processing volumes.	Limited effectiveness due to limited (one month) operation period.	Ineffective, with no outcome / impact
H 2.1. Adoption of new / improved business models and practices leads to increased on-farm production, sales and income	No evidence of new / improved models or practices	Anecdotal evidence of improved on-farm performance	Anecdotal evidence of improved on-farm performance	Anecdotal evidence of improved sales for a small number of farmers	Increased short term sales / income for existing surplus production	No
H 2.2. Increased on-farm production, sales and income translate into improved household well being	No evidence of any changes	No evidence of any changes	No evidence of any changes	No evidence of any changes	No evidence of any changes	No
H 2.3. External / contextual factors remain favourable. Gov. NGO, or private actors do not undertake market-distorting policies	Yes, poor 2015/16 rainfall resulted in large-scale WII pay outs potentially boosting the scheme	External/ contextual factors have remained highly favourable	External/contextual factors have remained highly favourable	External / contextual factors remained favourable	Non implementation of original biofuel plan was due to stalled Gov. Policy	External / contextual factors remained favourable

Effectiveness	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
H 3.1. No internal / external programme (e.g. budget cuts, corruption) or community level obstacles (e.g. obstructive local level political elites)	None	None	None	Long delay due to obtaining Gov. approval, finding facilities / equipment and access internal funding. Difficulties sourcing milk though existing coops.	Long delays waiting for Gov. to agree purchase of cassava.	None
H 3.2. A critical mass of support providers prove amenable to working with the programme to adapt their current business models.	Yes, Risk Shield, Focus, Mayfair, NWK, ZNFU, and MoA/FISP	Yes, strategic partnerships with suppliers Pioneer, Pannar, Omnia Fertilizer, the commodity aggregator Jedo Commodities and the Vision Fund	Focus on building one distribution network (Mule-Stus). Have forged commercial relationships with suppliers (e.g. MRI, Pannar, ZamSeed, ATS, Pioneer). Musika has also supported other agro-dealers in Luapula agro-input market	Limited, Zammilk works closely with Ultravetis and a sister company (Novatek) is providing feeds. Not yet developed a critical mass of support providers.	Limited, initial implementation is focus on buying cassava through Gov. facilitated producer coops for a processor (Zambian Breweries).	No, failed to develop network of franchised outlets

Effectiveness	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
H 3.3. Interventions facilitate the intended changes in knowledge, attitudes, and practices among support providers and smallholder farmers	Musika facilitated market entry by Risk Shield, Focus, Mayfair, NWK, ZNFU and MAL and facilitated SHF sensitization	Yes, changes in ATS, Pioneer, Seed Co. Jedo, Omnia and Vision Fund, including improved extension and sales services. At the farmer level, improved knowledge of inputs, input usage and increased input demand	Yes, via work with Mule-Stus and other agro dealers	Limited. Zammilk is working with Ultravetis to promote better use of animal health products and AI. Farmer's knowledge, attitudes and practices remain largely traditional	Limited, cooperatives are being used to sensitise farmers and help aggregation. Farmer's knowledge, attitudes and practices remain largely traditional	No

A review of contribution factors (Annex 6) highlights the importance of the supported organizations' own business initiative as contributing factor to intervention effectiveness. This characteristic is present in the more effective WII, ATS and Mule-Stus examples, as well as the less effective GroAfrica intervention. The GroAfrica intervention was primarily constrained as a planned biofuel 'off take' agreement with the Department of Energy, Ministry of Mines, Energy and Water Development did not materialise. Both Zammilk and AgriServe case studies show that these implementers had lower levels of business initiative during implementation. The assumption that these implementers 'focus on both sales and extension services and gave due attention to each' fails in each of these case studies. Zammilk's management priority in 2015 to 2016 was expanding milk-processing capacity at its central Chisamba plant. AgriServe is reported as having stronger business opportunities outside of Western Province that diverted management attention and company resources. It is also noted that the AgriServe intervention failed due to an uncompetitive business model (base on a franchise system), loss of trained staff and slow / insufficient staff replacement.

Evidence from the six case studies shows the value of (i) having a supportive external environment (i.e. weather, government policy, presence of other donor support); (ii) avoiding external and internal obstacles (i.e. government permissions, internal budget cuts); (iii) the implementer showing business initiative and giving sufficient management attention and (iv) WCDRM supporting a viable business model. The results also point to the importance of an intervention having a critical mass of other support providers present and the initiative looking to facilitate intended changes in knowledge, attitudes, and practices among a wider body of support providers. This is more difficult where there are fewer support providers, such as in remote areas of Western Province.

EQ 4. Were these the right combination of interventions?

Results from case studies suggest that WDCRM has generally supported the right combination of interventions (Table 9). It is noted that under WII, WCDRM supports a number of different actors within one intervention. This has successfully helped to build a critical mass within the WII market as discussed above. In addition, the GroAfrica initiative has not been implemented in combination with other WCDRM interventions. It does, however, complement other IITA and ZARI initiatives operating in Luapula. Cassava does not require significant levels of agro inputs (seeds, fertilisers, sprays) and therefore complementarily with the Mule-Stus intervention working in the same province is not foreseen.

With the ATS and Mule-Stus case studies, WCDRM supports other agro-dealers and market actors. This includes work to sensitize and train agro-input dealers to participate in the FSIP e-voucher scheme. This has been a useful complement and appears to have created synergies that contributed to greater change than would have otherwise been possible. It has also put the market in those cases on a path towards greater systemic change. The implementation of the FISP e-voucher scheme in particular is a potentially significant step in further developing and embedding sustainable changes in the agro-input market in Luapula and Northern Province.

The Zammilk, and Ultravetis[53] interventions in Western province are a complementary combination of interventions. The AgriServe initiative should have complemented Zammilk but it broke down before the milk processing plant opened. Therefore, these two interventions did not have the opportunity to complement each other. Zammilk and

[53] The Ulravetis intervention works in the animal health input market system.

Ultravetis have consistently performed farm level extension together during 2016. At the time of end line fieldwork, this combined approach had not yet delivered significant systemic change.

Table 9: Summary of Results for Complementarity

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
EQ 4. Were these the right combination of interventions?	WII has been conceived and implemented largely independent of other WCDRM interventions	Yes, importantly helping to build the capacity of agro-input dealers to participate in the FISP e-voucher scheme	Yes, Musika support to other agro-dealers appears to have created synergies that contributed to greater market change	The Zammilk: Ultravetis: AgriServe combination should have been complementary	GroAfrica is not working with other WCDRM supported initiatives	The AgriServe initiative should have complemented that of Zammilk
H 4.1. There are clear synergies between WCDRM interventions in terms of the market constraints that they address and the impacts that they are achieving.	No clear synergies with other WCDRM interventions	Yes, synergies with training of other agro input dealers to participate in the FISP e-voucher scheme	Yes synergies with agro-dealers. The FISP e-voucher scheme is a potentially significant step in further developing and embedding changes	Yes, there are clear synergies between Zammilk and the Musika supported work of Ultravetis	GroAfrica is not working with other WCDRM supported initiatives.	The AgriServe initiative should have addressed similar market constraints to Zammilk
H 4.2. WCDRM has identified and targeted these synergies; and as a result, the impact of interventions is greater than if they were undertaken in isolation.	No evidence of synergy identification and targeting	Synergies have been created that contributed to greater change than would have otherwise been possible	Synergies have been created that contributed to greater change than would have otherwise been possible	Synergies have been created with Ultravetis. No evidence of significant impact yet	No evidence of synergy identification or targeting	The AgriServe initiative should have complemented that of Zammilk / Ultravetis

EQ 5: How effective are aspects of the market system analysis approach such as its facilitative and adaptive nature for achieving improved incomes and poverty reduction when compared to direct delivery approaches?

H 5.1. Programme interventions have adhered to the principles and practices of the M4P approach (e.g., market systems analysis, facilitation approach, adaptive/flexible implementation, etc.)

With WCDRM funding, Musika has used a facilitative and adaptive approach. Since the beginning of the independent evaluation in 2014, terminology regarding the M4P approach has been adapted. Based on 2015 DCED definitions, the approach used by programme interventions has adhered to the principles and practices of a Matching Grant Scheme / Challenge Fund style approach as opposed to being based on a M4P / Market Systems Analysis[54]. The Musika approach uses partnerships with businesses and builds on business initiative. The design of the individual partnership depends largely on the market knowledge of the proposing business as opposed to Musika doing recorded market analysis. Musika relies on its own internal unwritten understanding of markets, and does not perform its own written *ex-ante* analysis of a market, or sector, and use this to develop strategy. This section discusses WCDRMs facilitative and adaptive approach. Market analysis is considered under Evaluation Question 7.

The facilitative approach used with respect to the WII and ATS interventions is judged to have been effective. By working through, and facilitating the activity (e.g., buying down risk, providing capacity development) of diverse market actors at different levels in the WII market system, the WII intervention has, or is on the verge of, creating and growing a market, which did not previously exist. Similarly, the ATS, and particular the ATS spray service provider (SSP), model has made a significant contribution to the development and growth of the Northern Province agro-input market. It is difficult to conceive that Musika, or any donor-supported organization, could have achieved this under a direct delivery approach.

The Mule-Stus and GroAfrica case studies provide examples of the adaptive nature of the WCDRM approach. The Mule-Stus case study was originally conceived as an MRI Agro initiative supporting (i) an expanded field marketing officer network (extension); (ii) testing a container-based distribution network in un-served markets; and (iii) promoting the adoption of low-cost irrigation technologies. This was adapted to successfully support the growth of agro input supplies in Luapula through expansion of the Mule-Stus agro input distribution network. Although the results stop short of 'systemic change,' the intervention has helped put the market on the path in that direction. GroAfrica was initially conceived to supply a Government 'off take' agreement for bio-ethanol produced from cassava. This was adapted to support GroAfrica to supply dried cassava to Zambian Breweries thereby expanding farm level demand in Luapula during its first month of operation. Again this example has yet to achieve 'systemic change', but this is considered likely as implementation time increases.

The Zammilk and AgriServe interventions evidence little to no effectiveness at the time of end line fieldwork. Notwithstanding, Musika continues to facilitate and support both of these implementers. With Zammilk, Musika continues to support adaption of the original

[54] See http://www.enterprise-development.org/wp-content/uploads/DCED_Synthesis_Note_Matching_grant_schemes_systemic_approaches_Jul15.pdf

milk-processing plant concept. Musika plans to further support construction of Zammilk milk collection facilities closer to farmers that will store milk and supply the processing plant. At the time of end line fieldwork, Musika was also facilitating discussions between Zammilk and milk transporters to address collection.

While the Zammilk case study has yet to achieve 'systemic change', this remains a possible outcome if milk-processing volumes can be profitably increased. The Zammilk intervention did not involve Musika performing any written market systems analysis. As with a Matching Grant styled approach, any market analysis assessing possible milk processing volumes is based on the Private Sector Implementers information (Zammilk). This information was not available at the time of end line fieldwork. Musika continues to support Zammilk address transport and milk supply issues though facilitation and 'trial and error' adaption. Continuing with a 'trial and error' styled facilitative and adaptive approach at the time of end line fieldwork, AgriServe had moved away from the failed original franchise outlet and veterinary assistant model, and Musika was now supporting AgriServe in a new input delivery concept based around community level animal treatment centres. Effectiveness for the new AgriServe concept was unproven at the time of end line fieldwork.

4.3. Sustainability

EQ 6. To what extent are the outcomes and impacts sustainable?
What are the prospects for the outcomes and impacts achieved to outlast the programme and how do these prospects vary?
H 6.1. Static sustainability has been achieved in market systems—assisted support providers continue, innovate and scale-up business models targeted to smallholder farmers.
H 6.2. Dynamic sustainability has been achieved in market systems—non-assisted support providers begin innovating and scaling-up business models targeted to smallholder farmers.
H 6.3. Adoption of improved business models/practices and increased income among support providers and farmers created a positive feedback loop in which the one reinforces the other.

Overview

The extent of outcome sustainability across the six case studies covered in this evaluation is mixed (Table 10). Three of the case studies have good prospects for sustainability. Two other case studies also have good prospects for sustainabilitiy once implementation proceeds further. Improving the availability of market related financial data (such as business model break-even analysis) would help strengthen sustainability arguments.

Prospects for ATS and Mule-Stus outcome sustainability in the agro input market is good assuming these markets continue their strong growth. Prospects for WII sustainability are also good, although a number of risks are present. These include (i) how future weather patterns affect the supply and demand characteristics of the market; (ii) how the various market actors manage basis risk[55]; (iii) the number of insurance companies who ultimately choose to enter the market; and (iv) the number of SHFs working with aggregators. These risks are discussed in more detail below. The Zammilk and GroAfrica case studies have not yet produced significant outcomes. Zammilk has favourable prospects for sustainability if breakeven volumes can be achieved. This will be particularly important in the low milk production dry season (May to October). GroAfrica's cassava aggregation business currently depends on a contract with Zambian Breweries. AgriServe has not produced intended outcomes.

There is a good change of achieving static sustainability[56] in remote agro input markets. Both ATS and Mule-Stus are making own source investments to expand their networks, and, particularly, the SSP model for ATS. If this is successful it bodes well for static sustainability. Musika investment was important to facilitate market expansion but ATS and Mule-Stus are showing initiative to grow on their own. However, it is noted that ATS felt that without Musika support buying down its costs and risks, its presence in Northern Province would adjust to a model of 'shipping up products to be sold through stockists in urban centres'. Mule-Stus may also adjust to this business model when the Musika provided equipment (especially vehicles) need replacement. Western province wholesale agro vets (i.e. Agri Vet) successfully use a model of transporting products to be sold through retail stockists in urban

[55] With WII, satellite data monitors rainfall patterns within a specified geographic radius, and it uses the average rainfall within that radius to determine losses and payouts. However, within the radius, there exist a number of 'micro-climates' in which specific rainfall patterns vary, such that one farmer may receive more or less rain than neighboring farmers. This inconsistency between average satellite rainfall data and on-the-ground experience is known as 'basis risk.'

[56] Defined as the extent to which the changes facilitated by the intervention among support providers and farmers are maintained and scaled-up after programme support is withdrawn.

centres. This approach can be seen as out competing the Musika supported AgriServe distribution model. To assess sustainability of these business models requires better financial analysis (i.e. break even analysis to determine volumes and values required to sustainably cover costs). This data was not available at the time of end line fieldwork. It is also suggested that the Zammilk case study would benefit from such analysis. Milk processing plant break-even volumes were not known at the time of end line fieldwork[57]. Musika continues to support Zammilk to achieve higher levels of milk processing.

The prospects for dynamic sustainability in all six case studies are seen as low. This is consistent with the low levels of 'copying' and 'crowding in' reported in the effectiveness section. No evidence of dynamic sustainability[58] was found in the Zammilk, GroAfrica and AgriServe case studies. In the ATS and Mule-Stus case studies, non-assisted support providers are entering the agro input market system due to their own initiative. Evidence in the WII case study also suggests that the initiative of other non-supported actors is driving change as opposed to this being in response to a demonstration effect created by Musika.

The WII and ATS interventions are showing evidence of positive feed back loops. Here the three Musika-supported organisations are continually interacting (one or more at a time) with other market actors. This is creating the conditions in which joint learning and positive feedback loops can occur. The ATS intervention is also showing evidence of positive feedback loops via the strategic partnerships ATS has forged with Pioneer. Seed Co., Omnia and Jedo.

[57] Musika representatives suggest Zammilk has these figures but is not willing to share them.

[58] Defined as the extent to which non-assisted support providers and farmers crowd-in or copy improved commercial practices.

Table 10: Summary of Results for Sustainability

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
EQ 6. To what extent are the outcomes and impacts sustainable?	Good, with risks	Good with strong growth in broad agro inputs market	Good with strong growth in broad agro inputs market	Low outcomes levels at time of end line survey	Low outcomes levels at time of end line survey	No outcomes
Prospects	Favourable prospects	Favourable prospects	Favourable prospects	Favourable prospects if breakeven volumes can be achieved.	Dependent on Zambian Breweries contract	N/A
6.1. Static sustainability	Yes	Yes, however further donor investment may be required to consolidate and increase gains	Yes, however further donor investment may be required to consolidate and increase gains	Zammilk is attempting to boost volumes with continued Musika support.	N/A the assisted support provider had been operating for one month.	N/A
6.2. Dynamic sustainability	Non-assisted market actors are entering due to their own initiative, although the presence of WCDRM-assisted actors makes their entry possible	Non-assisted support providers are entering due to own initiative	Non-assisted support providers are entering due to own initiative	No evidence found	No evidence found - too early in the implementation cycle	N/A

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
6.3. Adoption of improved business models/practices	Yes	Yes - implemented improved models/practices esp. SSP	Yes - implemented improved models/practices	No evidence found.	No evidence found - too early in the implementation cycle	N/A

4.4. Relevance

EQ 7. To what extent are the intervention outputs and components based on analysis of the underlying causes of market failure?

Intervention outputs and components are based on a main idea provided by the Private Sector that is adapted by Musika, using its internal knowledge and understanding of the underlying market in which the intervention operates. This internal knowledge is supported by available secondary data.

Musika internal knowledge is proven in some areas and based on significant experience. For example, Musika institutional knowledge built during their previous work in the Zambia agro-input markets (e.g., under the USAID-funded PROFIT project) helped inform work in these markets (i.e. ATS and Mule-Stus). In the evaluator's opinion, the agro chemical inputs intervention design was based on a recognised and appropriate 'container based' approach to address a market failure. The approach has been tested and found to work in other less remote parts of Zambia. Similarly, Musika used its experience supporting Parmalat milk processing in Southern Province when assessing similar support for Zammilk.

Levels of secondary data differ across case studies. Prior to Musika's entry into the WII market, other donor activities (e.g., FinMark Trust) had laid the groundwork on which others could build. This groundwork includes a substantial body of documents and experience related to micro insurance and weather index insurance, both in general and in Zambia. Levels of appropriate secondary data are suggested as lower in the remaining case study markets.

H 7.1. Interventions are based on in-depth market analysis and due diligence

The evaluation team has found no evidence of in-depth market analysis that identifies and defines market failures and their underlying causes in written form. As is consistent with a matching grant scheme, the design of the individual WCDRM case study partnerships depend largely on the market knowledge of the proposing business where the public partner (Musika) does not conduct its own market research.[59] DCED (2015) state that 'there seems to be clear scope for incorporating the lessons of systemic approaches into the design of matching grant mechanisms'.[60]

During final evaluation feedback events, Musika representatives suggested that increasing levels of recorded research of market failure would (i) increase costs; (ii) not predict all relevant events; (iii) lead to a deterioration in the 'learning by doing' approach used under WCDRM funding and (iv) reduce their ability to do more things with more players. Musika representatives valued their adaptive and facilitatory approach that made full use of Private Sector and their own knowledge without the use of more formal recorded market analysis.

[59] As defined in http://www.enterprise-development.org/wp-content/uploads/DCED_Synthesis_Note_Matching_grant_schemes_systemic_approaches_Jul15.pdf

[60] As defined in http://www.enterprise-development.org/wp-content/uploads/DCED_Synthesis_Note_Matching_grant_schemes_systemic_approaches_Jul15.pdf

Due diligence involves primarily a review of intervention proposals or concept notes submitted by the private sector partner for funding. This includes review or consideration of supported markets based on Musika's in-house experience. Financial analysis involves Musika staff reviewing the proposed business models according to their experience. This does not include the use of detailed financial analysis tools (i.e. gross and net margin analysis, breakeven analysis, discounted cash flows, internal rates of return, sensitivity analysis).

H 7.2. Results chains accurately reflect the findings of the market analysis and due diligence.

The WCDRM result chains reflect Musika's institutional knowledge supported by available data and are not based on the findings of written market analysis. Similar result chains models are used across all initiatives and are broad based as opposed to containing specific details for each intervention (i.e. AgriServe and Zammilk 2013 Result Chains). While the evaluation finds the results chains to be reasonably accurate, it is unclear if the use of result chains has proved useful to Musika in terms of helping it implement WCDRM.

EQ 8. Part A: How, to what extent and why do beneficiaries and stakeholders value the interventions developed through the programme? (Including H 8.1. Beneficiaries and stakeholders are satisfied with programme interventions and H 8.2. Beneficiaries and stakeholders perceived significant benefits from programme participation).

EQ 8. Part B: What do they recommend to improve the interventions and why? (Including H 8.3 Stakeholders recognise potential improvements to the programme).

Private sector implementing partner's highly valued support as Musika has helped, and continues to help, them develop their businesses. Although AgriServe was disappointed with the failure of its Western Province intervention, it continues to invest in the region with Musika. Non-supported private sector actors operating in WCDRM supported market systems were also generally satisfied and valued the interventions developed through the programme. Zambian Breweries were very satisfied with the programme, with a representative stating, "so far they (Musika) have been fantastic. They have adjusted their programme to fit the private sector outfit". Agro dealers operating in the same markets are Mule-Stus were also appreciative of support. These Luapula based retailers highlighted training as valued, especially training that related to the FISP e-voucher system. Their recommendations for improvements focused on expanding training to more agro dealers, covering a wider range of crops and helping these agro-dealers with transport costs. Musika's work in the WII market was highly visible to all other actors within the Zambian insurance sector, most of whom are watching closely and waiting to see how the market develops before committing to enter the market. They readily acknowledge the critical role Musika is playing in the WII market and appreciate the fact that someone else is willing to take the lead and incur the risk in developing the market. Private sector partner's involved in the AgriServe case study were disappointed with the intervention. One franchisee emphasised the need for 'extension and to go out and push farmers' encouraging AgriServe to enhance its outreach[61]. Another franchisee reported that the franchise failed as it was selling unsuitable products at a high price. Animal health input retailers consistently report smallholder farmers need smaller affordable input containers and that AgriServe needed to change its product mix towards smaller package sizes sold at a lower cost.

[61] One previous franchise is now operating as an AgriServe shop. The current sales agent does not speak the local language and complained that his motorbike was not good enough to visit farmers.

Most beneficiaries also valued and were satisfied with the program. For example, farmers using Mule-Stus inputs in Kaunda Village, Luapula valued the extension service and having inputs available closer to their farms. Recommended improvements for Mule-Stus included more demonstrations, closer local outlets, smaller pack sizes, more detailed training sessions and introduction of storage sheds. GroAfrica's farmers valued the new market for their cassava, the provision of transport and immediate payment. These farmers recommended increasing the buying price, providing support to cooperatives and the supplying cassava cuttings for early maturing varieties at reasonable prices.

Beneficiary perceptions were more mixed in the Zammilk case study. Namushakende farmers felt 'that (Zammilk) is going to help, will push income and allow us to buy animal drugs and pay school fees'. Sefula women's group felt Zammilk 'meets the need for regular income by providing a market'. However, farmers at Tukongote Dairy Cooperative Society Milk Collection Centre emphasized the need for supply side measures to increase milk production. Farmers at Nalolo highlighted the key market challenges in transport and milk collection, while a Mongu farmer felt the quality of extension assistance was low. Farmers suggested addressing supply side issues to increase dairy animals through artificial insemination (AI), use of dairy bulls, zero grazing, training and improvements in the milk collection system (cold storage) and milk testing. Few farmer met during end line fieldwork knew of the AgriServe intervention. Those that did emphasised the importance of addressing animal disease and the need for small pack sizes.

Public sector stakeholders generally valued and were satisfied with the case study interventions. Government representatives in Luapula valued and were satisfied with the GroAfrica initiative as it brought a market for cassava to farmers. These interviewees suggested a need to improve supply of cuttings, provide labour saving machinery and support extension. These stakeholders also valued and were satisfied with the Mule-Stus intervention. Suggested improvements included expanding the program. In the Northern Province, the District Agriculture Coordinator in Kasama was familiar with and highly appreciative of Musika's work training agro-dealers to participate in the FISP e-voucher scheme but was unaware of Musika's work with ATS. Similarly, the District Rural Officer in Mumbwa was not familiar with either the programme's WII intervention or with WII in general. On the other hand, the PIA was well aware of Musika's efforts to build the WII market and saw it as a major contributor, among others, in the emergence of this market.

Western province Government representatives were disappointed the AgriServe intervention had failed but valued the effort. The Mongu PVO felt they 'shared the same dream and worked together well. However he would have appreciated greater feedback and felt AgriServe (and Zammilk) only come to the Ministry if there is a problem'. Government representatives in Western Province requested closer collaboration with Musika and their implementing partners. When considering Zammilk, Government representatives valued the relationship between Zammilk and existing Milk Collection Centres (MCC) and were disappointed the MCCs did not have a market for their milk. The recommended Zammilk focus on improving volumes of milk produced by the smallholder farmers and milk transport.

4.5. Efficiency

9. To what extent do the programme and its interventions deliver value for money?

9.1. Programme interventions produce satisfactory VfM in absolute and relative terms. (VfM compares favourably to the VfM of similar programmes for which DFID has data.)
9.2. WCDRM is economical in terms of the cost of the resources used.
9.3. WCDRM maximises the efficient use of inputs to produce its outputs when compared to other similar interventions.

The WCDRM programme provides overall good value for money. Three of the case studies present good value for money at the time of end line fieldwork. A strength of the programme in value for money terms is its ability to leverage investment from the Private Sector. WCDRM is economical in terms of the cost of the resources used and efficient in the use of inputs paying market rates for its procurements. Value for money is suggested as having improved over the life of the programme as salary costs have generally declined and leverage ratios improved. However, actual to budgeted spend is generally lower than other similar DFID programmes.

At a case study level the initiatives that have progressed furthest at the time of the end line study offer better efficiency and value for money. Delays in the Zammilk and GroAfrica interventions have compromised efficiency and value for money. It is anticipated that this situation will improve as implementation proceeds.

Data presented in Table 11 shows WCDRM staff salaries as a percentage of total expenses for financial years 2013 to 2016. Total salaries have fallen in absolute terms, driven by a reduction in operational staff costs between 2014 and 2016 and by a fall in administrative staff costs in 2016. There has also been a downward trend in salaries as a percentage of total expenses. Total staff costs in 2013 were 48% of total expenses compared to 27% in 2016. This has been largely driven by the deterioration of the Kwatcha. These figures should be compared to other similar M4P projects. Review of the DFID Development Tracker web site did not find comparable statistics.

Table 11: Staff Salaries as a Percentage of Total Expenses

	2013- (USD)	**% Total Expenses**	**2014 - (USD)**	**% Total Expenses**	**2015 - (USD)**	**% Total Expenses**	**2016 - (USD)**	**% Total Expenses**
Salaries (Admin Staff)	579,441	18%	610,969	13%	619,081	10%	425,853	11%
Salaries (Operations Staff)	945,687	30%	1,104,284	23%	793,841	12%	663,015	16%
Total Salaries	1,525,128	48%	1,715,253	35%	1,412,922	22%	1,088,868	27%
TOTAL	3,194,6		4,872,7		6,479,5		4,037,2	

EXPENSES	04		70		13		55	

Source: Musika

Data presented in Table 12 shows Grants[62] and Challenge fund[63] spending (together know as 'core funding') as a percentage of total expenses. Data presented in Table 12 shows absolute amounts of core funding significantly increased between 2013 and 2015 (US$ 905,271 in 2013 to US$2,112,778 in 2014 to US$ 3,977,417 in 2015) and declined in 2016 (US$ 1,734,914)[64]. Levels of core funding also increased as a percentage of total expenditure from 28% in 2013 to 61% in 2015 before declining to 50% in 2016. Increasing percentages of core funding to total expenses suggests improved efficiency.

Use of core funding through challenge funds reduced in 2016 to US$ 297,843 (7% of total expenditure) from US$ 968,000 in 2014 (20% of total expenditure). At the time of the 2016 Annual Review Musika reported the decline in challenge fund use as grantees inability to meet initial milestones. This may have reduced efficiency, as significant grants (each averaging $200,000) were not distributed.

Data presented in Table 13 shows a comparison of planned to actual total expenditure for Musika. Data presented in Table 13 shows that Musika has spent between 72% and 80% of its allocated funds during WCDRM implementation. This may be an indication of a cautious investment approach or challenges finding viable investment opportunities. Based on data presented in Table 14, which is consistent with Independent Evaluation 2016 Annual Review finding, WCDRM percentage of '*actual*' to '*planned*' spend is generally lower than most other similar DFID M4P projects.

Musika claim impressive levels of financial leverage. Data presented in Table 15 estimates the value of private capital directly leveraged by Musika's investments. This significantly increases WCDRM Value for Money compared to a purely donor funded initiative.

Table 16 presents a budgeted example from the Weather Index Insurance case study implemented by Mayfair and Focus Insurance companies. In this example cost sharing is split between Musika, FSDZ[65] and the implementer. This leveraging of private sector investment is seen to increase WCDRM value for money.

Annual review of WCDRM accounts by the Evaluation Team of cost items shows Musika has paid market rates for its procurements.

[62] Grants are called 'Risk buy down'. These are made up of amounts below $80,000 (they are not advertised, Musika field managers generate and present these ideas (Intervention Proposal) that are then decided upon by Musika management.

[63] Challenge fund investments are amounts from $80,000 to $250,000. Challenge funds are advertised; proposals are invited, selected (by Committee), scored, ranked and selected. Selected organisations are subject to due diligence. Challenge fund rounds are irregular with the Musika technical team deciding when a round is performed.

[64] Figures are for combined DIFD and SIDA spending by Musika

[65] Financial Sector Deepening Zambia (FSDZ) is a DFID-funded programme that was established in September 2013 with the sole mandate to increase financial inclusion. http://fsdzambia.org

Table 12: Spending on Grants (Risk Buy Down) and Challenge Funds

DESCRIPTION	2013- (USD)	% Total Expenses	2014 - (USD)	% Total Expenses	2015- (USD)	% Total Expenses	2016- (USD)	% Total Expenses
Total Expenses	3,194,604	100%	4,872,770	100%	6,479,513	100%	4,037,255	100%
Total Cost Share / Risk Buy Down	716,073	22%	1,144,001	23%	3,600,772	56%	1,734,914	43%
Total Challenge Fund	189,198	6%	968,777	20%	376,645	6%	297,843	7%
Total Grants For Industry Association							128,427	3%
Total Technical External Assistance							68,733	2%
		0		0				
Total Core Funding	905,271	28%	2,112,778	43%	3,977,417	61%	2,032,757	50%

Source: Musika

Note: Reasons for variations seen in 2016 data will be discussed with Musika during the consultant's next visit to Lusaka.

Table 13: Comparison of Spend (Budget vs. Actual)

	2013	2014	2015	2016
	US$	US$	US$	US$
Budget	4,381,000	6,127,110	8,580,344	5,615,091
Actual	3,194,604	4,872,770[66]	6,479,513	4,037,255
Actual Spend as a % of Budget	73%	80%	76%	72%

Source: Musika

[66] Musika point out that at the end of the 2014 financial year there was US$ 1,274,595 worth of assets that had been procured but not delivered. This spending would be accounted for when the assets were delivered. If this figure were included in 2014 accounts then there would be no under spending.

Table 14: Comparison of Spend (Budget vs. Actual) across a selection of DFID Projects (2015 to 2016)

	South Agricultural Growth Corridor in Tanzania (SAGCOT)	Wealth Creation Development of Rural Markets Programme Zambia	Nepal Market Development Programme	Northern Uganda: Transforming the Economy through Climate Smart Agribusiness	Agriculture - Farm Input Subsidy Programme Malawi	Private Enterprise Programme Ethiopia	East and Southern Africa Staple Food Markets Programme	Rural and Agriculture Markets Development Programme for Northern Nigeria
Budget	£7,973,854	$5,615,091	£4,745,054	£2,815,851	£3,912,606	£5,675,657	£8,408,987	£5,222,135
Actual	£4,524,891	$4,037,255	£4,299,180	£2,665,648	£3,761,011	£5,552,475	£8,389,835	£5,497,405
Actual as a % of Budget	57%	72%	91%	95%	96%	98%	100%	105%

Source: https://devtracker.dfid.gov.uk/ accept WCDRM data that was supplied by Musika

Table 15: MUSIKA'S Financial Leverage 2015 and 2016

Market Component	Total Musika Support 2015	Private Capital Invested 2015	Leverage Ratio 2015		Total Musika Support 2016	Private Capital Invested 2016	Leverage Ratio 2016	
Input Markets	$840,212	$1,525,100	1:	1.82	$486,988	$810,047	1:	1.66
Output Markets	$1,976,296	$3,743,209	1:	1.89	$1,079,955	$3,473,757	1:	3.22
Service Markets	$906,487	$1,018,300	1:	1.12	$500,516	$1,309,859	1:	2.62
Finance Markets	$252,572	$476,300	1:	1.89	$210,962	$240,619	1:	1.14
Environmental Markets	$261,310	$534,500	1:	2.05	$384,750	$749,262	1:	1.95
Business Environment	$273,692	$481,000	1:	1.76	$309,997	$395,000	1:	1.27
Total	$4,510,570	$7,778,409	1:	1.72	$2,973,168	$6,978,544	1:	2.35

Source: Musika

Table 16: Budget Showing Cost Sharing with Mayfair and Focus Insurance for Weather Index Insurance

Mayfair	Item	Units	Value	Total (one year)	Musika	FSDZ	Mayfair (indicative)
Human Resources	WII Program Consultant (Joseph Kakweza)	6	$2,500	$15,000		$15,000	
	WII Actuary (Agrotosh Mookerjee) - fees	2	$1,825	$3,650		$3,650	
	Actuary: Travel, accomodation and related expenses	2	$1,300	$2,600		$2,600	
	Seasonal marketing staff working at farmer level (3 x 6 months)	18	$500	$9,000	$9,000		
	Mayfair staff costs	10	$3,000	$30,000			$30,000
	Total			**$60,250**	**$9,000**	**$21,250**	**$30,000**
Other	Training events - Mayfair agricultural and claims staff	1	$1,500	$1,500			$1,500
	Training events - lead farmers and agribusiness client staff	6	$500	$3,000	$3,000		
	Marketing/educational collateral (marketing materials etc)	1	$15,000	$15,000	$8,000		$7,000
	Communciation costs	7	$200	$1,400			$1,400
	Local travel costs - car hire	1	$2,000	$2,000		$2,000	
	Other travel costs - local and international, accommodation	1	$5,000	$5,000			$5,000
	Total			**$27,900**	**$11,000**	**$2,000**	**$14,900**
				$88,150	**$20,000**	**$23,250**	**$44,900**
						$88,150	

Focus	Item	Units	Value	Total (one year)	Musika	FSDZ	Focus (indicative)
Human Resources	WII Programme Consultant (Joseph Kakweza)	6	$2,500	$15,000		$15,000	
	WII Actuary (Agrotosh Mookerjee) - fees	2	$1,825	$3,650		$3,650	
	Actuary: Travel, accomodation and related expenses	2	$1,300	$2,600		$2,600	
	Seasonal marketing staff working at farmer level (3 x 6 months)	18	$500	$9,000	$9,000		
	Focus staff costs	10	$3,000	$30,000			$30,000
	Total			**$60,250**	**$9,000**	**$21,250**	**$30,000**
Other	Training events - Focus agricultural and claims staff	1	$1,500	$1,500			$1,500
	Training events - lead farmers and agribusiness client staff	6	$500	$3,000	$3,000		
	Marketing/educational collateral (marketing materials etc)	1	$15,000	$15,000	$8,000		$7,000
	Communciation costs	7	$200	$1,400			$1,400
	Local travel costs - car hire	1	$2,000	$2,000		$2,000	
	Other travel costs - local and international, accommodation	1	$5,000	$5,000			$5,000
	Total			**$27,900**	**$11,000**	**$2,000**	**$14,900**
				$88,150	**$20,000**	**$23,250**	**$44,900**
						$88,150	

Source: Musika

4.6. Gender / Social Inclusion

EQ 10. How successful was the targeting of the programme and why? How effective was the programme at targeting women? Was there any difference with regard to the number of men/women reached and why? Hypothesis 2.4. Impacts and outcomes among male and female beneficiaries are not significantly different.

Independent evaluation results based on the six case studies suggest positive results targeting small-scale farmers. The WII, ATS and Mule-Stus interventions each appear to have successfully targeted small-scale farmers. These include small-scale farmers benefitting from the Zambian National Farmers Union (ZNFU) Lima Credit Scheme or selling to crop aggregators (WII) and small-scale farmers living in remote rural areas in Northern and Luapula Provinces with previously limited access to quality agro-inputs. End line fieldwork results from the Zammilk and GroAfrica case studies do suggest economies of scale and

transaction cost benefits are favouring larger scale farmers as implementation proceeds. The AgriServe initiative is also seen as having had more potential to benefit larger scale farmers (see H 10.1 below).

Independent evaluation results suggest mixed results for targeting women. Benefits are most likely in agricultural input markets where use of chemicals (especially herbicides) replaces female labour, as is the case for the ATS and Mule-Stus interventions. Other case studies suggest males are more likely to directly enjoy intervention impacts and outcomes. Case study results and available Musika data also suggest men are more likely to be reached and benefit from interventions. This is largely due to men's dominant role in case study cash crops. Examples of male dominated cash crops are maize (a key crop for ATS and Mule-Stus inputs) and include beef (AgriServe) and dairy cattle (Zammilk) and cassava (GroAfrica)).

Mule-Stus estimates that about 35% of its client farmers are women. Particular benefits to women (and children) are likely where herbicides are sold (i.e. by ATS and Mule-Stus). Increased use of herbicides (and other agro-inputs) should decrease on-farm labour requirements in areas where women play disproportionately important roles, as in the case of weeding. Women are likely to play a lesser role when increasing amounts of chemical inputs are used. This maybe a benefit in terms of increased female free time, however it may also be seen as a disadvantage if women loose from declining employment.

End line fieldwork observations of the GroAfrica case study suggest men will benefit more from the intervention. This is due to men being more likely to be members of supported cooperatives and having bigger cassava fields selling more cassava than women. Zammilk estimate that 5% of their milk suppliers in Western Province are women and recognize that men will directly benefit more from the processing plant.

Musika reports improvements in the targeting of women as WCDRM has been implemented over time. In December 2015, Musika reported that its 'interventions are reaching out to over 320,000 smallholder farmers from which 22% (over 70,000) are women and 78% (over 249,600) are men. In input markets, Musika is reaching 299,595 smallholder farmers, of which 28% are women and 72% are men, compared to 10% women and 90% in November 2012'.[67]

Independent evaluation results based on the six case studies continue to show mainstreaming gender, as opposed to developing targeting interventions, remains challenging. Musika's Gender Specialist thought this was primarily due to the dominance of maize related markets within WCDRM interventions where male involvement is very high. Case studies show interventions focus on implementation as opposed to addressing gender mainstreaming. Implementers usually claim their work is gender neutral and that, while they do not specifically target women farmers, nor do they do anything that would necessarily exclude this group. To the extent women are involved in cultivating the relevant crops, they are assumed to have access to the same services and inputs as men and are thus as likely to benefit as the men.

Specific targeted interventions are suggested as a more effective method of delivering benefits to women. Musika reported nine specific gender targeted interventions in December 2015. As reported in the Independent Evaluation 2016 Annual Review, ATS is involved in a specific separate initiative with Musika targeting women in Western Province.

[67] Musika's Approaches To Mainstreaming Gender In Agricultural Markets 2015 (page 2 Para 1)

The Mule-Stus intervention includes some direct targeting working with two women groups in Mwense and Kawambwa[68]. The 'Mbuya ya Luna' initiative has encouraged women to supply milk to Zammilk. At the time of end line fieldwork, one female producer group (Sefula) had been formed.

H 10.1. Intervention designs and implementation included well thought out targeting strategies, including strategies to target women.

Intervention design and implementation broadly addresses targeting as opposed to developing and implementing detailed targeting strategies for any particular stakeholder group (e.g., smallholders or women). General intervention design addresses targeting the poor by geographically focusing on poorer areas. WCDRM has supported market expansion in two of the poorest provinces in the country with poverty levels at 82% for Western Province and 81% for Luapula.[69] As discussed above, however, Musika has increasingly developed specific targeted interventions to benefit women as WCDRM implementation has proceeded.

Across the six intervention case studies, targeting strategies are based on helping remote farmers gain access to improved input market and extension services. For example, the WII Poverty Alleviation Logic is:[70]

1. Mayfair / Focus and its agribusiness aggregators sensitise and train farmers on insurance.
2. Farmers invest in weather insurance products.
3. With risk of default covered, farmers increase their investment - plant more crops and invest more in inputs.
4. Yields increase.
5. Gross margin and income increases.

While the above design is logical, it does not give a well thought out explanation of why small / poorer farmers (say < 5 ha) will benefit as opposed to larger producers (>5 ha). The Mule-Stus Intervention proposal also gives a similar logical intervention design but does not specify why smaller / poorer farmers will benefit more than others though improved input markets[71]. In the case of the WII intervention, actual implementation suggests that the targeting strategy is valid in general (e.g., working through aggregators to reach SHFs) but will need to be expanded in the future to incorporate other distribution networks, most likely with further donor support. The targeting strategy for ATS and Mule-Stus also appear to be reaching farmers located in more remote rural areas with extension and sales services and to an extent unduplicated by other agro-input suppliers.

No written targeting strategy was available for the GroAfrica, Zammilk or AgriServe case studies at the time of end line fieldwork. The end line fieldwork suggests that the targeting strategy for GroAfrica should benefit smallholder farmers if they are members of

[68] Intervention Proposal NOR 12-04-2015, Support to MULE-STUS LTD to develop the isolated markets of Luapula.

[69] DFID Project Completion Review August 2016

[70] Intervention Proposal IP-LSK-16-09-15 Support to Mayfair Insurance to develop weather insurance products for the lower end of the agricultural market – in partnership with FSDZ

[71] Intervention Proposal NOR 12-04-2015, Support to MULESTSTUS LTD to develop the isolated markets of Luapula

cooperatives. However, economies of scale are likely to benefit larger scale cassava producers in this output market (and in the Zammilk example) as implementation proceeds. Farmers at Munchini Village report cassava-buying arrangements this way: 'When a farmer has a minimum of 50 x 40kg bags of cassava, GroAfrica went to collect it from their doorstep.' This suggests implementation may increasingly favour larger scale producers. Similarly, Zammilk senior managers report 'larger (scale) retired[72] farmers looking to invest have more potential to supply us'. Smallholder farmers using traditional subsistence approaches present further challenges for milk collection given nomadic livestock movement and the relatively low milk volumes each smaller scale farmer produces. Larger farmers located closer to tarred roads can supply larger quantities of milk and have lower transport / transaction costs from Zammilk's perspective. It is therefore logical of Zammilk to target these suppliers when trying to boost processing volumes.

The gender strategy in the six case study interventions is either unavailable (AgriServe, Zammilk and GroAfrica) or uses a general 'mainstreaming' approach to reach women. Musika has moved to increase specific targeted interventions. The ATS and WII case studies provide a brief gender strategy in their intervention proposals. This strategy is based on providing both men and women with opportunity. For example, the ATS intervention offers an opportunity for both men and women at all levels to access information and knowledge that will help them make informed decisions.[73] WII offers no major effects on gender dynamics through this intervention, as farmers of either sex can use insurance. [74]

H 10.2. Barriers to reaching female beneficiaries were identified and successfully addressed.

In five of the six intervention case studies, no evidence was found that implementers identified or addressed barriers to reaching female beneficiaries. In the Zammilk case study, Zammilk did identify barriers to female involvement that included traditional norms of men tending cattle and women tending smaller livestock but had yet to address these barriers.

H 10.3. The facilitation approach is an effective way to reach women within relevant market systems, although this may require at times innovative adaptations.

Results from the six case studies question the effectiveness of the WCDRM facilitation approach as an effective way to reach women. Implementers and some Musika staff members emphasized the need to focus on successful implementation in challenging remote areas before addressing social equity issues. These stakeholders felt that only once businesses are established can social inclusion be addressed. This approach therefore requires more time to address social inclusion. As reported above, in the shorter term specific targeted interventions are suggested as the best way to achieve gender related objectives.

[72] Meaning retired for professions as opposed to retired from farming.

[73] Intervention Proposal Ref.: IP-NOR-02-09-12 Support to ATS for field extension officer

[74] Intervention Proposal IP-LSK-16-09-15 Support to Mayfair Insurance to develop weather insurance products for the lower end of the agricultural market – in partnership with FSDZ

5. Major Findings

The following section is presented by evaluation question and DAC criteria[75].

Impact

EQ 1: Did the programme achieve systemic change in the markets in which it intervened?

Based on the six case studies, WCDRM has achieved moderate levels of systemic change, most notably in terms of supply or demand side market growth, with potential for this to increase in future. Evidence of and/or potential for systemic market change were particularly strong in the WII, ATS, and Mule-Stus interventions. Results suggest that success in producing systemic change in terms of 'crowding in' and / or 'copying' is more challenging.

Effectiveness

EQ 2: How effective was the programme as a whole in delivering the promised outcome and impact?

Results from the six case studies suggest the WCDRM as a whole, has been moderately effective in producing intended outcomes. WII and ATS stand out as having moved near to the top of their result chain. Importantly, the majority of case studies have potential to be more effective over a longer time period.

EQ 3 (Part A). How effective were individual interventions in achieving the intended outcome? If some interventions were more successful than others, why?

The WII and ATS interventions have been the most effective in achieving their intended outcomes followed by the Mule-Stus intervention. Zammilk and GroAfrica have limited effectiveness due, respectively, to low milk processing volumes and a short (one month) operation period at the time of end line fieldwork. Both of these interventions have potential to be increasingly effective in future if volumes traded increase. The AgriServe intervention has been the least effective.

Results show factors influencing success are:

- Favourable broad market conditions
- Implementing partner's internal priorities
- Lack of external programme obstacles
- Critical mass of support providers
- Success in facilitating change in other support providers
- Having a viable business model

[75] SEQAS / EQUALS Point 7.8 asks this section to 'consider attribution'. The evaluation has been based on a contribution analysis. Unintended and unexpected findings are also requested by SEQAS / EQUALS. None of these have yet been found.

The WII, ATS and Mule-Stus interventions operate in a favourable market environment, interventions are an internal priority and they have not experienced significant external obstacles. They also have a stronger critical mass of other support providers where there has been more success in facilitating change. The key factor limiting GroAfrica effectiveness was an external program obstacle where an expected single contract did not mature. The Zammilk initiative was set in more challenging market environment, it faced external obstacles, and it had other internal priorities. Zammilk also did not develop a critical mass of support providers and had less success in facilitating change in this group. AgriServe's franchise based business model proved uncompetitive.

EQ 4. Were these the right combination of interventions?

Results from case studies suggest that WDCRM has supported the right combination of interventions.

EQ 5: How effective are aspects of the market system analysis approach such as its facilitative and adaptive nature for achieving improved incomes and poverty reduction when compared to direct delivery approaches?

WCDRM has used a facilitative and adaptive approach as opposed to performing market systems analysis. This approach has worked effectively in some case studies but not in others. Opportunity is suggested in performing deeper market system analysis to enhance performance further.

Sustainability

EQ 6. To what extent are the outcomes and impacts sustainable? What are the prospects for the outcomes and impacts achieved to outlast the programme and how do these prospects vary?

The extent of outcome sustainability across the six case studies covered in this evaluation is mixed and depends on a number of factors. Improving the availability of market related financial data (such as business model break-even analysis) would help strengthen sustainability arguments. Prospects for WII sustainability are promising as it is rapidly approaching the breakeven point and is poised for significant growth, particularly if it is integrated into the FISP e-voucher expansion during the coming growing season. Nonetheless, sustainability in the WII market would be strengthened by evidence of increased 'crowding in' by other companies without donor support. The sustainability of the ATS and Mule-Stus interventions depend on the firms' commitment and ability to continue investing their own resources (or securing other donor funding) to expand their rural distribution networks. In ATS' case, the commercial viability of its SSP model, which is promising but by no means certain, will also significantly affect its long-term sustainability. GroAfrica's sustainability is dependent on one contact with Zambian Breweries. Zammilk will need to develop as supply side response from farmers to achieve breakeven volumes. Improving the availability of market related financial data (such as business model break-even analysis) would be a useful programme addition help strengthen sustainability prospects

Relevance

EQ 7. To what extent are the intervention outputs and components based on analysis of the underlying causes of market failure?

Case study outputs and components are based on Musika's internal knowledge and understanding of the underlying market in which the intervention operates. This internal knowledge is supported by available secondary data. As is consistent with a matching grant scheme[76], the design of the individual WCDRM case study interventions depended largely on the market knowledge of the proposing business as opposed to in-depth market research conducted by Musika.

EQ 8. Part A: How, to what extent and why do beneficiaries and stakeholders value the interventions developed through the programme?

Private sector implementing partners highly valued Musika WCDRM support as it has helped develop their businesses. Non-supported private sector actors also valued the Musika support in terms of helping to create and grow markets. Most beneficiaries valued and were satisfied with the program, particularly valuing extension services, having inputs available closer to their farms and new market for their outputs. Finally, public sector stakeholders also generally valued the case study interventions.

Efficiency

9. To what extent do the programme and its interventions deliver value for money?

The WCDRM programme provides overall good value for money. A strength of the programme, in value for money terms, is its ability to leverage investment from the Private Sector. WCDRM is economical in terms of the cost of the resources used and efficient in the use of inputs paying market rates for its procurements. Value for money is suggested as having improved over the life of the programme as salary costs have generally declined and leverage ratios improved. However, actual to budgeted spend is generally lower than other similar DFID programmes.

Gender / Social Inclusion

EQ 10. How successful was the targeting of the programme and why? How effective was the programme at targeting women? Was there any difference with regard to the number of men/women reached and why?

Independent evaluation results based on the six case studies show positive results targeting small-scale farmers. The WII, ATS and Mule-Stus interventions have each achieved notable success in reaching small-scale farmers, often those living in more remote rural areas. In the case of ATS and Mule-Stus, many of these farmers have traditionally had limited access to quality agro-inputs given the prevailing business model of locating agro-shops in more densely populated urban centres coupled with weak distribution networks. The business models adopted by each firm, with assistance from Musika, represent significant innovations that have already significantly increased outreach so small-scale farmers beyond that achievable under the prevailing business model.

End line fieldwork results from the Zammilk and GroAfrica case studies suggest economies of scale and transaction cost benefits are favouring larger scale farmers as implementation

[76] As defined in http://www.enterprise-development.org/wp-content/uploads/DCED_Synthesis_Note_Matching_grant_schemes_systemic_approaches_Jul15.pdf

proceeds. The AgriServe initiative is also seen as having had more potential to benefit larger scale farmers who were more likely to afford its products.

Independent evaluation results based on the six case studies also suggest mixed results for targeting women. Benefits are most likely in agricultural input markets where use of chemicals (especially herbicides) replaces female labour. Other case studies suggest males are more likely to enjoy intervention impacts and outcomes. Case study results and available Musika data also suggest men are more likely to be reached and benefit from interventions. This is largely due to men's dominant role in the cash crops. Examples of male dominated cash crops are maize (a key crop for ATS and Mule-Stus inputs) and include beef (AgriServe) and dairy cattle (Zammilk) and cassava (GroAfrica)) supported by WCDRM. Mainstreaming gender has been challenging and Musika has increasingly moved to interventions or intervention components that specifically target women.

Further, none of the case study interventions adopted targeted strategies specifically aimed at reaching women. Instead, each adopted a gender-neutral targeting approach presuming that, to the extent women participated in cultivating the relevant crops, they stood to benefit equally as men from the intervention.

6. Lessons Learned and Recommendations

Drawing on the analysis and findings presented above, it is possible to derive a set of key lessons learned, along with a set of corresponding recommendations, of interest to Musika for programme operations purposes, to DFID/SIDA for future market systems developing programming, and more generally to the broader community of actors working in market systems development. The lessons learned and recommendations are presented in no particular order of importance. Also, while most of the lessons learned and recommendations are phrased so as to apply more specifically to Musika/WCDRM and DFID/SIDA, they should be understood to have more general relevance to other market systems development programs and other donor agencies.

Lesson 1: Market systems development benefits from in-depth market systems analysis to diagnose constraints within targeted market systems and develop appropriate intervention responses.

Musika uses a matching grant approach to facilitate market systems improvement under WCDRM; notwithstanding that such an approach is inconsistent with DCED's definition of 'systemic approaches' to market system development. Characteristic of Musika's approach is a lack of systemic market systems analysis, rather the design of the individual WCDRM case study interventions depended largely on the market knowledge of the proposing private sector partner backed by Musika's internal knowledge of the underlying market and further supported by available secondary data.

While this approach does not appear to have hampered the performance of the ATS Agro and WII interventions, it arguably proved problematic for the MRI Agro, AgriServe, Grow Africa, and Zambeef interventions, each of which encountered significant problems getting traction within their respective markets. (MRI Agro ultimately quit the intervention because, among other reasons, it deemed Luapula to be an unsuitable market for the intervention strategy.) It is not unreasonable to conclude that a more in-depth market systems analysis in each of these cases might have alerted Musika to the potential pitfalls with each intervention and/or results in a different intervention strategy.

According to Musika, the benefits of a matching grant scheme included increased efficiency in terms of leverage, lower staff costs, greater private sector buy-in, and increased market coverage. On the other hand, the evaluation case studies suggest that the benefits of market systems analysis include better informed investment decisions, greater influence over implementation, enhanced small scale farmer targeted interventions and the potential for introducing new ideas and innovations.

Recommendation 1.1: Musika should make greater use of market systems analysis.

It is recommended that Musika strengthen its use of market systems analysis as the basis for identifying and designing market interventions. This recommendation follows DCED (2015) advice that 'there seems to be clear scope for incorporating the lessons of systemic

approaches into the design of matching grant mechanisms'. [77] Integral to this recommendation is Musika should consider increasing its use of formal primary research on a case-by-case basis, as opposed to informal, unrecorded review reliant on its own knowledge and secondary data. In other words, market research should be used to fill gaps in Musika's own knowledge. While the potential disadvantages of such an approach identified by Musika are acknowledged, the potential benefits of greater market systems analysis should also be acknowledged.

Recommendation 1.2: DFID/SIDA should consider investing in creating greater capacity to perform market systems analysis, both internally and within the practitioner organisations they support.

In the case of Musika, for example, moving from an approached focused on facilitation and adaption to one involving detailed market systems analysis will require significant capacity enhancement. In Musika's case, and more generally, this will mean investment in existing staff, engaging new staff or increased use of consultants. Investing in increased due diligence capacity is expected to increase the cost base and will thus require allocated funding for that purpose.

In making this recommendation, it should be noted that a potential trade off is that, were Musika and successive programmes to lead the generation of new business models through publicly supported research, it may in turn lower the levels of finance that the private sector is willing to contribute to conducting its own market research.

Recommendation 1.3: DFID/SIDA should invest in documenting and disseminating information the relative strengths and weaknesses of a matching grant vs. systemic approach to market systems development.

The relative strengths and weaknesses of a matching grant vs. a systemic, as well as strategies for integrating the two approaches, are not well documented thus the statement by the DCED (quoted above) that 'there seems to be clear scope for incorporating the lessons of systemic approaches into the design of matching grant mechanisms'. [78] Were DFID/SIDA to support a detailed examination of the matching grant approach, along with its advantages and disadvantages relative to the market systems development approach, this would be of potentially significant value to donors and practitioners alike working to improve market systems to the benefit of the poor either in determining which approach to use or in determining how to integrate the two approaches.

DFID/SIDA should continue efforts, moreover, to making independent evaluation reports more widely available so as to improve learning within the broader market system development community and, among other things, allow better-informed comparison of approaches i.e. matching grants vs. market system analysis. DFID's Development Tracker and BEAM Exchange are moves in the right direction, however it is still difficult to make comparison between market-oriented programmes and programmes based on independent information.

Second, in each of the six interventions examined for this evaluation, there was no evidence that the intervention had led to broader demonstration effects, whether in the form of

[77] Insert footnote.
[78] Ibid.

market actors crowding in the relevant market systems or of non-assisted farmers copying the on-farm practices of assisted farmers.

Recommendation 1.4: DFID/SIDA should continue monitoring and disseminating the results of the case study and non-case study interventions.

As this evaluation only covered six of WCDM's now 76 market interventions (albeit six of the 24 interventions existing at the evaluation's Inception Phase), it is recommended that DFID/SIDA continue to monitor the results of the case study interventions, in addition to non-case study interventions, and perform a further ex post independent evaluation in two to three years time so as to gain further insight into the impact, effectiveness and sustainability arising from WCDRM funding. The additional information derived from implementing this recommendation is expected to prove beneficial in updating the learning related to Lesson Learned #1 and other lessons learned described below.

The Zammilk and GroAfrica interventions are at an early stage of implementation and may yet generate positive results. Meanwhile, the WII, ATS and Mule-Stus interventions have shown success to date with potential to show even more success thus potentially offering valuable evidence and lessons with more time. For example, the ATS spray service provider model has significant potential but also poses a number of risks that may affect its success or long-term sustainability. At the same time, the WII intervention appears poised for achieving 'massive scale' should conditions break favourably. These initiatives should be closely monitored internally. An ex post independent evaluation would be able to collect enhanced evidence to inform learning about M4P / Market System Development styled approaches compared to what was available at the time of this evaluations end line study.

Lesson 2: Significant investment by private sector partners is required to serve the smallholder farmer.

The case studies demonstrate that it requires a good deal of upfront investment for private sector partners to serve the smallholder farmer market. Investment can include the establishment of offices, storage depots, vehicles, including trucks and motorbikes, and staff. At the same time (and as noted above), the returns in terms of per-unit profit are small. While businesses may see the smallholder market as attractive in theory, results suggest that most are not willing to take the risk of investment. This could also explain the absence of 'crowding in' in the cases studies. Even if other firms see success, they are still likely to be dissuaded by high upfront costs and the on-going costs involved in maintaining a distribution network in remote areas.

Recommendation 2.1: Musika should undertake more in-depth financial due diligence of proposed interventions that includes profitability analysis with financial projections. An integral part of this profitability analysis is projecting an intervention's likely outreach (number of farmers served) and what this implies in terms of costs, sales, and profits.

Placing more emphasis on financial due diligence should help Musika avoid or minimize some of the challenges seen in case studies related to business viability (i.e. AgriServe's business model, supply of milk to Zammilk and business model sustainability of Mule-Stus), while identifying interventions, and intervention strategies, more likely to generate the scale required for long-term financial viability. Good examples of the latter include the WII intervention and the spray service provider model under the ATS Agro intervention, both of which are innovative business models with potential to achieve significant scale in heretofore-underserved markets. Moreover, the ability to demonstrate the financial

viability of a particular business model (profitability and sustainability) is seen as a key contributor to creating a broader demonstration effect in terms of motivating other actors to enter the market.

Lesson 3: Market system interventions are more successful in cases where the intervention forms a core part of the private partner's business strategy and expansion plans.

Case studies show interventions are more likely to succeed where the private sector partner is committed to the idea and is willing to invest the requisite time and resources to make it work. In those cases where these conditions existed, the interventions formed a core part of the partner's business strategy and expansion plans. This also protects against distractions or shifts in priorities that occur as a result of external or internal events. (An example of the latter was MRI Agro, which abandoned its programme intervention in Luapula province partly as a result of internal disruptions caused by its acquisition by Syngenta. As documented in the Annual Review, Interviews with MRI management after the fact revealed that MRI was not really committed to the intervention in any case having concluded that Luapula was the inappropriate market to undertake such an intervention.)

Recommendation 3.1: Target support towards committed private sector partners where the intervention forms a core part of their business strategy and expansion plans.

The ATS Agro, WII and MuleStus interventions provided good case studies of how this works. Common threads among these three interventions were that the supported organisations (Risk Shield, Mayfair, Focus, ATS Agro and MuleStus) saw the intervention as forming a core part of their business growth strategy and, consequently, a high level of commitment among the owners/senior managers of the supported organisations toward the intervention. This is perhaps best demonstrated by the fact that each of these supported organisations invested its own resources, outside of Musika support, to maintain and expand the intervention.

Lesson 4: Collaboration between market actors (both supported and non-supported) can be vital in helping scale-up the market system interventions and achieve broader-based impact.

The case study results show that working with a critical mass of organisations linked together is more likely to create a systemic effect than working with a single organisation. For example, the ATS Agro and WII interventions two of the most successful interventions studied for this evaluation. One characteristic the two interventions share is the collaboration of multiple market actors within the relevant market system via joint partnerships, mutually beneficial commercial relationships or other forms of collaboration, both with and without direct Musika assistance. The Zammilk intervention, moreover, is moving towards more engagement with other businesses (transporters) to address milk supply issues. These results highlight the potential benefits to be had by explicitly facilitating greater collaboration between different market actors operating at the same (horizontal) or different (vertical) levels of the value chain.

Recommendation 4.1: Musika should consider greater use of combined or clustered funding to multiple organisations operating in the same market system.

One way to facilitate this type of horizontal and vertical cooperation is for Musika to fund multiple organisations operating within a given market system with the explicit aim of

enhancing levels of collaboration between these organisations. This could be done by either providing a grant to multiple organisations within a market system or providing a range of grants to different partners and then providing them with coordinated technical support.

Lesson 5: Demonstration effects are unlikely to occur organically but should be promoted explicitly through complementary intervention strategies.

Two years or so into their intervention cycles, none of the case study interventions showed evidence of creating any kind of a demonstration effect, whether in the form of other actors entering the relevant market system (crowding-in) or in the form of non-supported farmers adopting the on-farm practices of supported farmers (copying). In cases where the relevant markets were expanding, this was due either to own-source investments by supported private sector partners or by other market actors entering on their own initiative. There were also examples of private actors entering into strategic alliances (e.g., ATS Agro intervention), but again, this was due largely to the initiative of the supported private sector partners as opposed to spontaneous actions taken by other market actors in response to the programme interventions.

The prospects for demonstration effects are also affected by market dynamics (e.g., cost vs. return trade offs), which condition market actors to be very hesitant to invest resources into entering or expanding their presence in remote rural markets. Demonstration effects also assume that other market actors and farmers are aware of the programme market interventions and perceive them to be successful.

Recommendation 5.1: Musika should integrate explicit emphasis on facilitating demonstration effects into market system analysis and market system interventions

The above considerations highlight the need for market system interventions to integrate explicit strategies for facilitating demonstration effects. These include, for example, emphasizing the potential for generating demonstration effects as a part of the programme's market system analysis, devising strategies for linking market actors and farmers with their relevant market counterparts, and integrating publicity/dissemination strategies into programme market system interventions.

Lesson 6: Gender impacts are also unlikely to occur organically but should be promoted explicitly through complementary intervention strategies

Gender benefits are unlikely to occur organically. Mainstreaming gender into WCDRM has proved challenging as men tend to dominate cash crops and commercial agricultural firms are unlikely to invest money focusing on women or worry about gender issues.

The contribution analysis consistently found that supported private sector partners were neutral with regards to the impact of their interventions on women relative to men. As a rule, private sector partners took no specific efforts to target women but neither did they consciously seek to exclude women or favour men. While there was potential in some interventions to benefit women relative to men (i.e. expanding distribution and sales of herbicides, which benefitted women disproportionately given their primary role in weeding fields), this was a fortuitous happenstance of the intervention rather than a planned benefit. At the same time, the market actors interviewed for the evaluation are oriented overwhelmingly toward earning a financial return from their market activities, and they are largely unaware of market opportunities that might exist by explicitly targeting women.

Recommendation 6.1: Musika should integrate explicit emphasis on finding market opportunities and developing sound business strategies to target women in its market system analysis and market system interventions while providing support to market actors to implement them

If a sound business case could be made to target women in some way, and the appropriate support provided, the indications are that the market actors would be willing to do so. Musika appears on the path of implementing this recommendation as seen in its increasing trend to fund specific gender targeted interventions.

Lesson 7: Collaboration with on-going development programmes can create significant synergies IF they are exploited.

This lesson learned is not unique; a recurring theme in development practice is the importance of collaboration across programmes working in the same or similar space. Yet, at the same time it is, in the evaluation team's experience, this remains a largely unfulfilled ideal that occurs much less frequently than not. The case studies identified two examples in which coordination across programmes appeared to be yielding, or potentially yielding, important benefits and another example in which potential benefits of coordination went largely unexploited.

The two examples of successful coordination both occurred in the WII intervention. One was the highly successful integration of WII into the Government of Zambia's FISP e-voucher programme (in which Musika played a critical contributory role). The second was Musika's coordination/division of labour with the DFID-funded FSDZ programme, which is playing a key role facilitating the Technical Advisory Group (TAG), which is working with the Zambian Pensions and Insurance Authority (PIA) to reform the micro insurance (and WII) enabling environment.

The example of less successful coordination also involves the FISP e-voucher pilot. As described in the contribution analysis, Musika is working with the government to develop the capacity of input suppliers to participate in the e-voucher programme, yet there have been no attempts by Musika to link its technical support under FISP to its on-going input market interventions in Luapula or Northern province.

Recommendation 7.1: Musika should seek to link up its on-going input market interventions in the North with its technical support to input suppliers as part of the FISP e-voucher pilot/programme.

The expansion of the e-voucher pilot/programme offers a potentially significant opportunity for Musika to scale up its input market support in the North (and potentially elsewhere in the country) by linking input suppliers together formally as part of a formal programme intervention strategy together to exploit the expected increased demand for privately supplied inputs and to extend distribution channels to remote rural areas via financially viable business models.

Lesson 8: The provision of extension services to farmers is a crucial complement to any technical assistance provided to private sector partners.

Case study results show the importance of having an existing extension system in place serving the targeted smallholder farmers, or if one is not already in place, the partner must be being strongly committed to invest in one. The more successful interventions (WII, ATS and Mulestus) had grantees with or willing to invest in extension services (WII extension was

through aggregators). The less successful interventions (Zammilk and AgriServe) either lacked extension or struggled to build it. Implementation has shown extension networks are not easily established, and increased attention is required to this area where it does not exist.

Recommendation 8.1: Musika should target/prioritise interventions with private sector partners who either have an existing extension network or who are committed to creating one.

As part of this recommendation, Musika should include technical assistance intended specifically to help the partner develop and/or strengthen its extension network and possibly also provide financing to buy down the costs of setting up and/or strengthen the extension network.

Lesson 9: A coordinated approach in which all parties are on board with an intervention prior to its start is critical for an intervention's success.

Case study results show the need to have all parties fully on board at the start of an initiative. In the GroAfrica initiative, for example, Musika assumed that the Government of Zambia would buy cassava, but this turned out not to be the case. Similarly with Zammilk, Musika assumed that existing dairy cooperatives would supply milk, but again this did not occur.

Recommendation 9.1: Prior to approving any intervention, Musika should secure the formal and (if feasible) written commitment of all parties on whose participation the intervention depends.

In the cases cited above, the use of more formal, stronger agreements with the Government of Zambia and dairy cooperatives could have strengthened initiatives. Without it, however, the intervention was almost destined to underperform.

Lesson 10: A flexible, adaptable, coordinated approach with committed actors is important.

Results from the case studies highlight the importance of flexibility, adaptability and partner commitment. In the case of the Mule-Stus intervention, flexibility allowed Musika to switch support from MRI Agro and develop a successful intervention with a committed partner (MuleStus). In the GroAfrica case study, flexibility again allowed a change in end buyer to Zambian Breweries that allowed a committed actor (GroAfrica) to develop its initiative. Musika was also a successful partnership builder in the case of the ATS Agro intervention, helping facilitate market system linkages. Linking weather index insurance investment with Government policies (FISP) and other donor programmes has also increased chances of long-term success. Results suggest this is something that Musika should do more actively in terms of looking to link organizations together in partnerships and coordinated approaches.

Recommendation 10.1: Musika should continue to exercise flexibility in adapting its interventions mid-stream if conditions on the ground warrant it. At the same time, DFID/SIDA should continue allowing Musika the flexibility to make appropriate adaptations.

Mid-stream adaptations may be necessary for a variety of reasons, including changing situations on the ground or even initial misspecification of the market problem and/or

solution. Whatever the cause, the need to make mid-stream adaptations should be seen as an expected/normal part of the intervention implementation cycle and not as a programmatic failure, and the willingness and ability of the programme and donor to make the necessary adaptations should be viewed as a programmatic strength.

7. Communication Plan

To promote learning among development practitioners it is proposed that Independent Evaluation results, recommendations and learning outcomes are presented at the following events in Zambia:

- Agricultural Sector Advisory Group (SAG) – a quarterly meeting of Development Partners.
- Ministry of Agriculture Technical Working Group Meeting with representatives from all major Ministry Departments and Development Partners.
- University of Zambia **(**UNZA) Seminar with the School of Agricultural Science Department of Economics.

The following products will also be produced to better communicate evaluation findings:

1. Policy Summary (4 pages) - this will summarise the key results, lessons and recommendations of the evaluation in a format that is useful for decision makers.
2. Case Study Summaries (2 pages each) – these will present key results, lessons and recommendations for each case study.
3. Contributions Analysis approach (4 pages) – a summary of how the contribution analysis approach was developed for the WCDRM evaluation and the lessons that were learnt from this experience. The summary will target an evaluation audience.
4. Infographic that presents all information on one side of A5

All of this information will be made available in one place (i.e. the Musika website) for ease of access. The above work will replace the research paper activity within the evaluation budget.

It is also hoped that communication of evaluation will help promote accountability. Communication of results is seen as increasing transparency. Transparency and accountability need each other and can be mutually reinforcing.[79] The process of sharing information to explain, clarify and justify actions (transparency) is hoped to increase the responsibility (accountability) of those implementing those same actions.

[79] http://www.transparency-initiative.org/about/definitions

Annex 1: Original TORs

Rural Market Development in Zambia

Independent Evaluation of Wealth Creation Development of Rural Markets in Zambia – MUSIKA INDEPENDENT EVALUATION

TERMS OF REFERENCE

1. Introduction

The Department for International Development (DFID's) mission is to help eradicate poverty in the world's poorest countries and this is underpinned by our set of values:

- Ambition and determination to eliminate poverty
- Ability to work effectively with others
- Desire to listen, learn and be creative
- Diversity and the need to balance work and private life
- Professionalism and knowledge

DFID is seeking to work with Service Providers (SP) who embrace the DFID supplier protocol and in addition demonstrate Corporate Social Responsibility (CSR) by taking account of economic, social and environmental factors in an ethical and responsible manner, complying with International Labour Organisation (ILO) standards on labour, social and human rights matters.

Value for Money (VfM) is important for all DFID programmes and as such, in all our activities, we will seek to maximise the impact of DFID's spend on programmes and encourage innovative ideas from our partners and suppliers to help us to deliver Value for Money.

The DFID Zambia programme supports initiatives to directly assist the poor to access sustainable livelihood opportunities whilst also helping to diversify the economy and improve the broader investment climate for pro-poor growth in the country.

As part of its wealth creation programme DFID supports Musika a non-profit making locally registered organisation. Musika applies a making markets work for the poor approach (M4P) to agricultural markets. The organisation works within agricultural input, service and output markets to ensure that they work better for the benefit of smallholder farmers.

2. The Objective

DFID will appoint a Supplier to undertake an independent evaluation of the Musika programme. The contract will be for a duration of 3 years starting in February 2014. Although the first wave of M4P programmes have been in place for over five years, thorough evaluation of the M4P approach has not been undertaken[80]. The objective of the Musika evaluation is to:

- Inform and contribute to the effective implementation of the Musika programme;
- Contribute to the evidence base on what works in Zambia;
- Inform the international debate on the value of the M4P approach, and thereby feed into future policy and funding decisions relating to tackling poverty reduction and achieving the MDGs;
- Inform DFID and Government of Zambia and other stakeholders of sustainable approaches to developing market systems and which interventions have the greatest impact.

3. The Recipient

The recipients of the services are DFID Zambia.

4. The Scope of Work

A synthesis paper on evaluating the impact of M4P programmes[81] highlights a number of challenges in evaluating impact accurately. M4P aims to catalyse change, inducing spill-over effects to indirectly scale up change. This poses a challenge as external factors have an increasing influence on scale and nature of change further up the results chain. There are also challenges with attribution and establishment of a counterfactual. M4P programmes facilitate the behaviour of market players who in turn incentivise 'others' to behave differently. With this approach, the distinction between groups that are "treated" and "untreated" is not always clear, and it is difficult to distinguish which target groups are actually driving change across the results chains. This makes it difficult to find a robust control for comparison. Further, the iterative nature of M4P, with its entrepreneurial approach to pursuing (and discarding) avenues of intervention, mean that too rigid an assessment of results against targets set at the beginning may not provide a meaningful idea of what has been achieved.

Despite these limitations, it may be possible to use quasi-experimental approaches to evaluate individual components of an M4P programme within an overall mixed methods design.

Theory driven-approach

Because of the nature of the programme – which aims to play a catalytic role by engaging in a number of interventions many of which may be quite nimble in nature – DFID Zambia

[80] DFID Nigeria is in the process of undertaking an independent evaluation of their M4P programme in the north.

[81] Evaluating the Impact of M4P programmes, Synthesis Paper, M4P Hub Team, September 2012

would favour a conceptual framework, which follows a theory-driven approach. We anticipate the evaluation will be guided by the following five principles:

- Diagnosing the strategic framework and the programme's theory of change through a review of the log frame's vertical logic (including results chains of the various selected markets);
- Understanding the context through a thorough review of documents and discussions with different stakeholders;
- Anticipating heterogeneity through a differentiated analysis of the outcomes across places and markets in Zambia;
- Rigorously analysing the facts (through understanding who actually benefits from the programme, how, why and to what extent); and
- Using a mixed methods approach (through integrating the methods and tools used for collecting and analysing quantitative and qualitative data).

Theory-driven evaluations do not imply any specific methodological approach, and DFID Zambia would like to commission an evaluation, which can tell us about the impact of the programme as robustly as possible. This means choosing from a menu of methodological options, according to the evaluation questions and the feasibility of collecting different types of data in the context of this programme. However, it also means thinking as robustly as possible about causality and attribution. A theory-driven evaluation that aims to unpack the causal mechanisms is inherently concerned with questions of causality – since it involves thinking about alternative explanations for the outcomes observed. These questions are important when considering a programme that aims to achieve its impacts in a catalytic fashion.

Mixed methods approach

It is expected that a mixed methods approach combining quantitative and qualitative data gathering and analysis techniques will be appropriate to respond to the evaluation questions. Quantitative data may be derived from a range of sources including project monitoring and research work (see next paragraph) and primary and secondary data sources. Qualitative data may be derived from sources such as interviews and focus groups. The Service Provider will take primary responsibility for collating additional data gathering if required. The framework used to analyse both quantitative and qualitative data should be rigorous and sufficiently robust in order to attribute the impact or contribution to impact of the programme.

Bidders must clearly state the specific evaluation methodology and approach that they intend to use in order to address the evaluation questions outlined above. This approach will be refined during the inception phase but the proposal must state the proposed data gathering activities that will be undertaken and the analytical frameworks that will be used to analyse the data gathered. The evaluation methodology must be of sufficient rigour to contribute to the evidence base and academic debate on the effectiveness of the M4P approach as a delivery model.

The programme will follow guidance and results measurement from the Donor Committee for Enterprise Development (DCED), of which DFID is a leading member. The DCED[82] standard on results measurement comprises sets of control points and compliance criteria in eight areas to ensure the quality of how results chains are constructed, how indicators are established, how attribution can be assessed, how results information is used, and set minimum standards for the operation of a results measurement system.

The Musika programme plans to undertake a DCED compliance audit[83] in March 2014 (using an approved DCED Evaluator[84]). This is expected to increase the extent to which the evaluation can rely on internally generated monitoring data and will facilitate the Service Provider in identifying areas where other primary data and evaluation work are required.

Evaluation Questions

In March 2009, DFID developed a new evaluation policy. One significant addition to the policy was the inclusion of evaluation criteria that build upon the Development Assistance Committee (DAC) criteria for evaluation. It is expected that the evaluation questions will be guided by these evaluation criteria (relevance, efficiency, effectiveness, impact and sustainability).

The additional criteria of coverage and inclusivity are also relevant here, particularly in considering whether there was any difference in levels of support to men and women and whether there were any differential impacts on men and women as a result of the programme. Given the importance of climate change resilience in many of the geographical areas where the programme works, the evaluation should also address the impact the programme has had on environmental sustainability and climate change resilience. The final list of evaluation questions will be agreed during the inception phase of the Service Provider's assignment. However, it is anticipated that the evaluation *may* address the following questions (these include a mix of impact (I) and process (P)-focused questions):

Impact

Did the programme achieve systemic change in the markets in which it intervened? (I)
Did the programme deliver a large-scale impact that extends far beyond the programme's sphere of direct influence? (I)

Effectiveness

How effective was the programme as a whole in delivering the promised outcome and impact? (I)

How effective were individual interventions in achieving the intended outcome? If some interventions were more successful than others, why? Were these the right combination of interventions? (I)

[82] This is a process management standard and designed in much the same way as standards approved by the International Standards Organisation (ISO)

[83] For a programme to be formally compliant with DECD, it must pass an external audit undertaken by an auditor certified by the DCED.

[84] DECD Audit consultants can be recruited via DECD.

How effective are aspects of the market system analysis approach such as its facilitative, adaptive nature and its rigorous up front market analysis for achieving improved incomes and poverty reduction when compared to direct delivery approaches? (P)

How effective was the programme at delivering increased environmental resilience/adaptability in the areas in which it worked? (I)

Sustainability

To what extent are the outcomes and impacts sustainable? What are the prospects for the outcomes and impacts achieved to outlast the programme and how do these prospects vary? (I)

Relevance

To what extent are the intervention outputs and components based on analysis of the underlying causes of market failure? How appropriate were the results chains developed? (P)

How, to what extent and why do beneficiaries and stakeholders value the interventions developed through the programme? What do they recommend to improve the interventions and why? (P)

Efficiency

To what extent do the programme and its interventions deliver value for money? How could value for money be improved in the programme and costs contained without affecting delivery? (I)

How successful was the targeting of the programme and why? How effective was the programme at targeting women. Was there any difference with regard to the number of men/women reached and why? (P)

DECD audit guidelines, which will help answer, the process evaluation questions can be found at http://enterprise-development.org/page/audits

Inception Phase (3 months February to April 2013)

During the inception phase the Service Provider will conduct an initial diagnostic review (1) and develop an evaluation design for the programme (2).

(3) The Service Provider will also undertake a brief review of the current progress of the programme.

Deliverable (1). The initial diagnostic review should assess the coherence and 'evaluability' of programme's outcomes and results chain developed by Musika. This should build on the work undertaken towards the DCED audit of the programme and should analyse the extent to which the programme's interventions have been formed on the back of a clear diagnosis of the reasons they are failing; to what extent there is a clear vision of their future improved state; the coherence and adequacy of the interventions in enabling these systems to effectively function; and the assumptions made about how the poor will benefit from such changes in market behaviours and performance. The Service Provider is expected to

coordinate very closely with the Musika programme. The Service Provider should also liaise with the programme's DCED contact point.

Deliverable (2) The Evaluation Design should be developed based on the initial diagnostic review and in consultation with Musika and other stakeholders. The Service Provider will develop the evaluation questions, design methodologies for answering them, a process for data collection, delivery of evaluation reports and continued inclusiveness and consultation with stakeholders. The Service Provider will clearly specify the data collection and research that will be conducted by Musika and the data collection and research that will be undertaken by the Service Provider. The primary responsibility for collating additional data will rest with the Service Provider.

(3) The Service Provider will also undertake a brief review of the current progress of the programme, through a survey?

Deliverable (3). The Service Provider will also design and communicate the results of a baseline survey that focuses on outcomes, outputs and their respective assumptions by the end of the inception period.

The baseline (survey) report should present baseline findings on the evaluation questions agreed during the inception phase (deliverable 2), as well as recommendations for refining evaluation questions and future rounds of data collection.

Deliverable (4). Further, the Service Provider will need to deliver a dissemination strategy during the inception phase. The evaluation approach will be agreed with DFID managers at the end of the inception period.

Implementation Phase (May 2014 to January 2017)

Annual progress reports/visit to the programme to check the quality and relevance of data being collated and assess any possible changes to the evaluation design to respond to any changes in programme implementation (geographical and sectorial) will be made. These visits will take place in January each year to coincide with the Musika reporting period. The Service Provider will take part in the annual DFID review of the programme as part of this process and lead on the completion of the DFID annual review report in 2015 and 2016. DFID will bring in additional technical experts to supplement the Service Providers personnel if deemed appropriate.

A final programme evaluation that balances the changes among market systems together with an assessment of what the consequences of these have meant for improved access to and use of services and products among poor people will be produced.

Findings will need to be communicated throughout the evaluation, through producing a range of evidence outputs (for example, through articles in peer-reviewed journals to policy notes and articles for the media) and disseminating findings (e.g. of the process reviews and Final Evaluation) through meetings, events and so forth in Zambia and abroad as appropriate. The findings should also be communicated in an article in a peer-reviewed evaluation journal. It will be essential that the evaluation findings are commissioned, collected, disseminated and communicated in ways appropriate to the audience. Musika,

the Government of Zambia and other stakeholders will need to be engaged at different stages in the evaluation to influence current economic policy making. This evaluation should also show how the M4P process and model can be improved, and how costs can be contained.

The Service Provider will need to ensure that the evaluation reports (baseline report, annual reviews and the final evaluation report) encourage and facilitate within-programme learning and course-correction. Musika is responsible for collecting all baselines and internal monitoring data for the programme and the Service Provider will only augment where there is a need to do so

An Evaluation Advisory Group (EAG) will be established to guide the implementation of the evaluation. The EAG will comprise the Service Provider, DFID Zambia staff, representative from the Swedish embassy in Lusaka, DFID evaluation lead for private sector development programmes, and possibly selected stakeholders from civil society. Membership of the group will be finalised during the inception phase in consultation with Musika programme. Throughout the programme, the Service Provider will be required to convene and attend occasional meetings, including the Musika EAG meetings and advise on the performance of Musika.

The Service Provider will also undertake additional relevant tasks as agreed with DFID managers.

5. The Timeframe

The contract will last for 3 years and will be split into two phases. The inception phase will be for three months and the implementation phase for the remaining 33 month period of the contract. Progression to the implementation stage is dependent upon DFID's approval of the inception report and satisfactory performance of the supplier. There will be scope to extend the contract by a further two years provided there is a continued requirement and satisfactory performance of the supplier, should a fuller understanding of the long-term sustainability of interventions be required.

6. Outputs and Reporting

The following key outputs are expected to be delivered under the Evaluation contract. All reports should contain actionable recommendations where appropriate. The final evaluation report should include an executive summary, detailed methodology, key findings, recommendations and conclusions and be presented in a publishable format to be agreed with DFID.

Output	Delivery date
Inception report, Rapid programme review, Evaluation Framework and baseline surveys[85] -	April 2014

[85] Note primary responsibility for conducting internal monitoring is with Musika with the Service Provider augmenting where necessary

The inception report should include the proposed structure of the process and evaluation, as well as a dissemination strategy of findings. Consideration should be given to risks of implementing the evaluation and how these will be mitigated. The evaluation framework should include the evaluation questions , data sources, analytical approaches and methodologies to be employed, relevant theories of change and ways of working with other key stakeholders, a communications and knowledge management plan and dissemination strategy. The baseline report should present baseline findings on the evaluation questions agreed during the inception phase, as well as recommendations for refining evaluation questions and future rounds of data collection. The report should also include a rapid assessment of current programme progress.	
Progress reports – 6 monthly progress reports should reflect progress, barriers to implementation and a review of the risks associated with the evaluation. DFID Annual reviews in 2015 and 2016.	Semi-Annually
Final report A summary of the Final Evaluation and dissemination plan (to be signed off by DFID) to ensure the information gleaned reaches the intended audiences. The final evaluation report should answer the evaluation questions and address, but not be limited to, the following: (i) what are the short-term and long-term effects of the programme; (ii) the conclusions e.g. about its sustainability, effectiveness etc. (iii) Lessons learned. The report should contain an executive summary and recommendations. Finding should be disaggregated by men/women and different income groups. An accessible communication tool to inform policy makers (this may include presentation workshops for government partners, civil society and other donors).	January 2017

The EAG will provide a defined quality control function and will be responsible for providing feedback on the main outputs of the evaluation as well as providing advice on its direction and implementation. Final responsibility for signing off on the main outputs will be the responsibility of DFID Zambia. Final reports will require sign-off by DFID, Sweden and the EAG before they can be published. Reports will then be published as quickly as possible through the DFID website and potentially through other avenues such as peer-reviewed journals as appropriate.

7. Bid Requirement

Bidders should submit methodological proposals to undertake the evaluation in a robust and cost-effective way. This should include:

a. A consideration of the most appropriate approach. Based on the nature of the M4P programming highlighted above, DFID anticipates an evaluation that uses a theory based approach to set the conceptual framework and a mixed methods approach to obtain evidence. A range of evaluation methods and rigorous analytical techniques to attribute impact or contribution to impact should be used. The evaluation should combine impact and process questions to reach a robust, holistic view as to the success of the programme. The approach should also integrate Development Assistance Committee (DAC) criteria for best practice in an evaluation. However, we have not ruled out others. Bidders are invited to submit feasible strategies.
b. Demonstration of an awareness of the basic concepts central to the DCED audit that is due to take place, and how this will be integrated into the evaluation.

The Service Provider should demonstrate how it would manage the evaluation effectively, in order to deliver both value for money and robust results. Evaluation bids should cover additional costs of conducting baselines (only if required) and dissemination and all other cost related to design. Proposals should highlight strategies to achieve value for money in delivery of the evaluation.

The Service Provider should also demonstrate how they will ensure a strong collaboration with Musika so that, should the design of the evaluation have implications for the approach the implementers take, these can be addressed in close collaboration with the implementers. The proposal should also highlight how the Service Provider will work with Musika to collect and quality assure appropriate data.

The Service Provider should show how it will disseminate evaluation findings and uptake of results by target. The bid should spell out elements of the dissemination strategy.

Service Providers should present how they propose to determine attribution as part of their proposals and, if successful, in more detail in their evaluation plan.

Bids presented should adhere to strict page limits. Technical bids no longer than 25 pages with both sides used and commercial bids at 20 pages with both sides used.

8. Skills and qualifications of evaluation team

The evaluation team must demonstrate strong capacity to conduct an evaluation of this type. It is expected that at least one member of the team must be able to demonstrate strong credentials in private sector development with solid experience in developing economies. It is desirable that the team possesses technical knowledge of the programme approach (M4P) with reference to developing countries. It is expected that the team put forward will comprise a small core team of international and national evaluators with plans for a survey team and support researchers (and we will welcome bids that include local staff in their proposals together with indication of how the capacity of these staff will be built).

There should be a designated team leader. The team leader will be expected to fulfil the following duties:

- Co-ordinating and monitoring the performance of the various activities of the evaluation, taking action to strengthen any weak elements of the programme and reinforce strong ones;
- Liaising between different components of the project, particularly about strategic and directional issues, and trouble-shooting when required;
- Reporting to DFID/Sweden;
- Providing intellectual leadership to enhance the quality and direction of evaluation;
- Engaging users and policy-makers with the evaluation; representing the Programme in public debate and other media.

9. Duty of Care

The Supplier is responsible for the safety and well-being of their personnel and third parties affected by their activities detailed in this TOR. They will also be responsible for the provision of suitable security arrangements for their domestic and business property.

The Supplier is responsible for ensuring appropriate safety and security briefings for all of their short-term personnel delivering work as defined in these TOR and ensuring, where appropriate that their long-term personnel register and receive briefing as outlined above. Travel advice is also available on the FCO website and the supplier must ensure they (and their personnel) are up to date with the latest position.

10. DFID Co-ordination

Overall coordination of the programme will rest with the DFID Zambia Private Sector Development Adviser. The Programme Manager in DFID Zambia will be responsible for financial and administrative issues arising. DFID Zambia advisors on gender and results will also provide guidance during the inception and implementation phases. DFID Zambia will ensure that the external provider has access to all relevant DFID/Sweden/Musika project documents.

The evaluation will cover the full project period and end in January 2017. It will be let through the DFID Global Evaluation Framework Agreement (GEFA).

After the contract is awarded, the contract will be overseen in DFID Zambia by the Programme Manager with technical support from the Private Sector Development Advisor

The initial contract will be let for a period of 3 years (February 2014 to January 2017). Progression from one year to the next will be subject to the satisfactory performance of the Service Provider, the continuing requirement for the services and agreement on work plans, Key Performance Indicators (KPIs), outputs and budgets for the following period.

The Service Provider will ensure effective management of the contract and will meet in person or via telecom with DFID Zambia/Sweden at least every 6 months when not in country to follow up on progress and review work plans and KPIs. The frequency of meetings will be more regular during the inception phase, and 6 monthly progress reports will be submitted. In addition, there will be EAG meetings to sign-off key milestones in the evaluation (e.g. inception phase report including methodological approach, and final evaluation reports) as well as to guide the evaluation at critical points. The evaluation will

cover the costs of generating, analysing and quality assuring data, producing reports, and disseminating the results of the evaluation to all the key stakeholders.

11. Background

DFID Zambia's Operational Plan for 2011-2015 highlights the need for targeted support to address rural poverty. Zambia has experienced significant growth in the last decade with little significant change in poverty especially in rural areas.[i] Poverty levels now stand at around 60% nationally and 78% in rural areas and have been relatively static for a number of years.

The largest proportion of Zambian farmers is smallholders. Most households have a diversified income base, but the majority earn the bulk of their income from field crops[ii]. Most smallholders have extremely low productivity and crop yields, reducing income earning potential. Crop diversification across the country is weak.

At present there are significant market failures that impact on smallholder farmers. To grow, sell and earn more, smallholder farmers need access to quality seed, fertiliser and other farm inputs. Commercial input supply companies mostly do not serve smallholders in rural areas because the transaction costs are too high. There are also limited linkages between smallholders and buyers/processors of agricultural produce.

Musika is a non-profit making locally registered organisation that builds on successful work undertaken through the USAID funded PROFIT programme. Musika applies a making markets work for the poor approach (M4P) to agricultural markets. The organisation works within agricultural input, service and output markets to ensure that they work better for the benefit of smallholder farmers. Musika works with the suppliers of fertilisers, seeds and other farm inputs and services to supply smallholder farmers with the products and services they need to increase their productivity and yields. They also help suppliers build up networks of agents to create demand, aggregate orders and teach farmers how to best use these inputs.

The programme impact is: To reduce rural poverty through integrating farming households in well-functioning agricultural markets.

The programme outcome is: To deepen, broaden and strengthen inclusive agricultural markets in key agricultural provinces of Zambia.

In this context deepening of markets means a greater range of products and services will be available to farming households; broadening means markets will cover areas that have hitherto been under-served and un-served; and finally, strengthening means markets will be more viable and sustainable for both buyers and sellers.

The outcome level targets for the Musika programme are:

- 250,000 farmers using key agricultural and livestock inputs from *improved sources (sales points)*
- *100,000 farmers using improved crop and livestock services*
- *10,000 farming households accessing financial services*
- *95,000 farmers using improved purchasing points for their produce*

The programme is funded by DFID and Sweden and has been operational since November 2011. DFID has funded Musika since October 2012 and will do so for a four year period until October 2016. The Musika Business Plan implementation period runs to the end of 2016.

The M4P Approach and desired impacts

A Making Markets Work for the Poor (M4P) Approach[86] is being used to implement the programme. M4P is characterised by the following attributes:

Facilitative role: M4P programmes aim to adopt a facilitative role, acting as a catalyst to stimulate, but not displace, market functions or players, thereby 'crowding in' market players and activity. Achieving this requires a rigorous analysis of complex social, political or economic systems to ensure that programme designers think about the incentives and interests that encourage individuals to undertake particular roles or functions in systems. Transforming complex systems sustainably is often about finding subtle, innovative and enduring ways to respond to and change incentives or challenge particular interests, rather than directly orchestrating shifts in behaviour en masse.

Adaptive in nature: The dynamic and unpredictable nature of market systems means that programmes need to be flexible and presents a strong case for an experimental and adaptive approach.

Desired Impacts:

Systemic change is defined as transformations in the structure or dynamics of a system that leads to impacts on the material conditions or behaviours of large numbers of people. M4P focuses on systemic action: understanding where market systems are failing to serve the needs of the poor, and acting to correct those failings. The approach takes account of interrelationships in the market system and targets interventions at critical weaknesses in the system.

Sustainability: M4P seeks sustainable change from the outset - delivering sustainable outcomes by better aligning key market functions and players with the incentives and capacities to work more effectively. Sustainability is not just about maintaining the *status quo* achieved by a project intervention without continued external support. It is also about the long-term integrity of dynamic processes, the resilience of the system to shocks and stresses, and the capacity to evolve or innovate in response to an inevitably changing external environment. This dynamic dimension to sustainability is very important because it suggests that underpinning the outward or superficial performance of any 'sustainable' system are a variety of critical but often less visible institutions and functions.

Large-scale: M4P programmes are designed to achieve large-scale change, benefitting large numbers of poor people beyond the programme's direct sphere of interaction. Interventions explicitly envisage mechanisms for replicating, extending or multiplying results so that, at least potentially, they could reach very large numbers of beneficiaries. It is not that every intervention has to directly reach the large scale, but rather that the envisaged route to large-scale impact is credible. Whatever scaling up logic is envisaged should be explicit in the design of programmes and interventions

[86] http://www.m4phub.org/what-is-m4p/introduction.aspx)

Additional documentation
Musika Business Plan
Musika Revised Log frame
Rural Market Development Business Case

Annex 2: The Evaluation Framework

Evaluation Questions	Hypotheses	Data Source
Impact		
1. Did the programme achieve systemic change in the markets in which it intervened?	1.1. Markets in which smallholder farmers participate are expanding in terms of the volume and value of commercial transactions.	KIIs FGDs Performance monitoring data Secondary data
	1.2. Programme interventions produce demonstration effects at the support market (e.g., crowding-in) and smallholder farmer (e.g., copying) levels.	KIIs FGDs
	1.3. Behaviour changes facilitated by programme interventions at the support market and farmer levels become embedded within the relevant market system.	KIIs FGDs
Effectiveness		
2. How effective was the programme as a whole in delivering the promised outcome and impact?	2.1. Adoption of new/improved business models and practices leads to increased on-farm production, sales and income.	KIIs FGDs Performance monitoring data Secondary data

	2.2. Increased on-farm production, sales and income translates into improved household well being.	KIIs FGDs Performance monitoring data Secondary data
	2.3. External/contextual factors remain favourable throughout the intervention cycle. This means, for example, that no shocks occur; government policies do not change adversely; or government, NGO, or private actors do not undertake market-distorting policies.	KIIs FGDs Secondary data
	2.4. Impacts and outcomes among male and female beneficiaries are not significantly different.	KIIs FGDs Disaggregated performance monitoring data
3. How effective were individual interventions in achieving the intended outcome? If some interventions were more successful than others, why?	3.1. No programme (e.g. budget cuts, corruption) or community level obstacles (e.g. obstructive local level political elites) arise that prevent an intervention from being implemented as intended. These may be internal and / or external to the programme.	KIIs Process evaluation
	3.2. A critical mass of support providers prove amenable to working with the programme to adapt their current business models.	KIIs Process evaluation

	3.3. Interventions facilitate the intended changes in knowledge, attitudes, and practices among support providers and smallholder farmers.	KIIs FGDs
4. Were these the right combination of interventions?	4.1. There are clear synergies between WCDRM interventions in terms of the market constraints that they are addressing and the impacts that they are achieving.	KIIs FGDs Process evaluation
	4.2. WCDRM has identified and targeted these synergies; and as a result, the impact of interventions is greater than if they were undertaken in isolation.	Process evaluation Synthesis of evaluation findings
5. How effective are aspects of the market system analysis approach such as its facilitative and adaptive nature for achieving improved incomes and poverty reduction when compared to direct delivery approaches?	5.1. Programme interventions have adhered to the principles and practices of the M4P approach (e.g., market systems analysis, facilitation approach, adaptive/flexible implementation, etc.).	Process evaluation Synthesis of evaluation findings compared to/benchmarked against evaluation findings of direct delivery programmes.87
Sustainability		
6. To what extent are the outcomes and impacts sustainable? What are the prospects for the outcomes and impacts achieved to outlast the programme and how do these prospects vary?	6.1. Static sustainability has been achieved in market systems—assisted support providers continue, innovate and scale-up business models targeted to smallholder farmers.	KIIs FGDs
	6.2. Dynamic sustainability has been achieved in market systems—non-assisted support providers begin innovating and scaling-up business models	KIIs FGDs

[87] Information from direct delivery programs will be required to inform desk research. Analysis is challenged as no set of benchmark indicators exist for comparison, as is the case with VfM comparisons.

	targeted to smallholder farmers.	
	6.3. Adoption of improved business models/practices and increased income among support providers and farmers created a positive feedback loop in which the one reinforces the other.	KIIs FGDs
Relevance		
7. To what extent are the intervention outputs and components based on analysis of the underlying causes of market failure?	7.1. Interventions are based on in-depth market analysis and due diligence.	KIIs Process evaluation
	7.2. Results chains accurately reflect the findings of the market analysis and due diligence.	KIIs Process evaluation
8. How, to what extent and why do beneficiaries and stakeholders value the interventions developed through the programme? What do they recommend to improve the interventions and why?88	8.1. Beneficiaries and stakeholders are satisfied with programme interventions.	KIIs FGDs
	8.2. Beneficiaries and stakeholders perceived significant benefits from programme participation.	KIIs FGDs
	8.3 Stakeholders recognise potential improvements to the programme.	KIIs Validation / verification events
Efficiency		
9. To what extent do the programme and its interventions deliver value for money?	9.1. Programme interventions produce satisfactory VfM in absolute and relative terms. (VfM compares favourably to the VfM of similar programmes for which DFID has data).	Programme accounting system Performance monitoring data. Comparison: (i) between WCDRM

[88] Farmers are not anticipated as being sufficiently familiar with the programme to recommend improvements given that is uses a facilitation approach.

	9.2. WCDRM is economical in terms of the cost of the resources used.	interventions and (ii) with comparator programmes.
	9.3. WCDRM maximises the efficient use of inputs to produce its outputs when compared to other similar interventions.	
10. How successful was the targeting of the programme and why? How effective was the programme at targeting women? Was there any difference with regard to the number of men/women reached and why?	10.1. Intervention designs and implementation included well thought out targeting strategies, including strategies to target women.	KIIs Process evaluation
	10.2. Barriers to reaching female beneficiaries were identified and successfully addressed.	KIIs Process evaluation
	10.3. The facilitation approach is an effective way to reach women within relevant market systems, although this may require at times innovative adaptations.	KIIs FGDs Process evaluation Disaggregated performance monitoring data.

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Annex 4: Data Collection Tools

Key Informant Interview: Result Chain Actors and Observers

AIM	To ADDRESS EVALUATION QUESTIONS on Impact (EQ1), Effectiveness (EQ2, EQ3.3 and EQ4), Relevance (EQ8) and Inclusion (EQ10) related to a specific Musika Intervention
Introduction	Present the aim to learn about WCDRM as part of an evaluation. Provide assurance that information provided during the discussion is confidential.
Contact Information	1. Name 2. Position 3. Address / Telephone 4. Type of business or organisation
Introduction to Musika Activities	5. Ask the interviewee to describe the Musika Supported Result Chain that they participate in or observe (i.e. seed inputs, vet services) 6. What are smallholder farmers' practices in relation to the result chain? Have they changed? If so, how and why? (EQ 3.3) 7. Who were the main relevant market actors? 8. What were the main relevant markets (crops / livestock / inputs / outputs) trade flows and linkages? 9. What support did you received from Musika? 10. What outputs has the Musika support produced over the last 24 months?
Impact and Systemic Change in the Markets (EQ1)	11. Has the market expanded or contracted in terms of volume and value? By how much? (EQ1.1) 12. What has changed in this business / market / market chain? Include direct and indirect changes in the last 24 months (probe support markets (crowding in), changes in small holder behaviour (i.e. copying)), enterprises copying what Musika has been supporting? Probe / find details (how many businesses / what were they called)? (EQ1.2) 13. Do you see any behaviour changes facilitated by programme interventions? Probe, what are these, how they have changed? (EQ1.3) 14. What changes have happened (indirect impacts) as a result of program activities? What are these? 15. What contributed to these changes? Rank each change and its causes.

Effectiveness Issues (EQ 2 to 4)	16. What changes are happening in terms of on-farm production, sales and income (probe % levels of change) (EQ2.1) 17. Did changes in on-farm production, sales and income lead to improved income for farmers (farm household well-being - i.e. food security, asset acquisition, housing)? Why? Probe? (EQ2.2) 18. What other factors contributed to change (i.e. weather, govt policy, others factors)? How, Probe reasons. (EQ2.3) 19. Did the program have any budget cuts or other challenges that influenced implementation? What were these? (EQ3.1) 20. Have other support providers changed what they were doing because of Musika? For example: • Have business models changed to engage small farmers? • What services are being provided to smallholder farmers (i.e. additional information)? • What change happened to the performance of businesses (e.g., sales and income) as a result? • What are these changes and how are they helping (EQ3.2, EQ3.3) 21. Are there any other Musika Interventions in this district? Are Musika interventions consistent with the impact they are trying to achieve? How? Why (EQ4.1) 22. Did interventions address market constraints / challenges that smallholder farmers and traders faced? Why? (EQ4.1) 23. Did program areas compliment each other? If so, how? Give examples? (EQ4.1) 24. Were there other agriculture support interventions apart from the ones being promoted by Musika? If so, which ones were they? Did they complement or compete with Musika? (EQ4.1)
Relevance (Q8)	25. Are you satisfied with the programme? Why? Please describe your experience with the programme and the quality of assistance? (EQ8.1) 26. Do you think other beneficiaries and stakeholders are satisfied with the intervention? Probe reasons why? (EQ 8.1) 27. What are the main benefits from the programme? (EQ 8.2) 28. If the program was repeated, what potential improvements could be made to the programme? (EQ 8.3)
Inclusion (Q10)	29. Are impacts and outcomes among male and female beneficiaries different? How? Why? (EQ2.4) 30. Does the program have well thought out interventions and strategies that target women? Describe these? (EQ10.1) 31. Were barriers identified to the inclusion of women? Have these been addressed? How? Describe. (EQ10.2) 32. Has anything changed regarding how women are treated as clients / or employees? Describe? (EQ10.3) 33. Were there differences in the way the program worked with men compared to women? (EQ10.3), Describe?

Leverage (Only for Case Study Business Leaders)	34. How has Musika support leveraged your own investments? 35. How much more money have you invested because of Musika support?

Focus Group Discussion - Community / Farmer Level[89]

AIM	To ADDRESS EVALUATION QUESTIONS on Impact (EQ1), Effectiveness (EQ2, EQ3.3 and EQ4), Relevance (EQ8) and Inclusion (EQ10) related to a specific Musika Intervention
Introduction	Thank participants for coming. Present the aim to learn about WCDRM as part of an evaluation. Provide assurances that information provided during the discussion is confidential. Confirm that you have appropriate participants that are involved in the specific intervention
Community Information	1. Name of community 2. Location / District / Province 3. Number of Male and Female Participants
Introduction to Musika Supported Activities (define current situation)	4. Describe the support that you have received from Musika and / or its partners (i.e. seed inputs, milk purchases, vet services) 5. What are the main markets that the Musika support helps? (Describe) 6. What parts of your farm practice is it affecting? (Probe how farm practices are affected) 7. Who are the main businesses /organizations (relevant market actors) affected? (Probe) 8. What are the main markets / crops / livestock / inputs / outputs / trade flows affected? (Probe)

[89] The current checklist is a broad representation of what will be asked. When performing interviews the relevant specific term will be used. For example, where the checklist refers to Musika supported activities, specific support providers will be referred to during implementation. Questions will be specifically tailored to appropriate support providers and the result chains they operate in.

The order of questions used follows the structure of Evaluations Questions. This is done to help reviewers' follow how each Evaluation Question will be addressed during data collection. In practice the order of questions may be adjusted to allow a logical and more natural flow to the discussion. Only questions relevant to the focus group will be asked. This will require some subjective judgment on the part of the interviewee.

Impact and Systemic Change in the Markets (EQ1)	9. How do you use the relevant crop / livestock / input / service? (EQ1.1) 10. What are your farm practices in relation to this result chain intervention (probe for Knowledge, Attitudes, Behaviours i.e. adoption of new practices, change in labour use) (EQ1.1, EQ 2.1, EQ2.2 and EQ3.3) 11. What is contributing to any change? (EQ1.1) 12. Are farmers in this market (from Qs 5, 7 and 8 above) producing and buying / selling more? (EQ1.1 and EQ2.1) 13. Is the broad market expanding or contracting (in terms of quantities / volume and in money terms / value)? By how much? (EQ1.1) 14. When looking at buyers and sellers, what has changed? (i.e. in the result chain) Include all direct and indirect changes, probe support markets (crowding in) and changes in small holder behaviour (i.e. copying)). Probe what the changes are. (EQ1.2, EQ3.3) 15. What has contributed to these changes? Rank each change and its causes. (EQ1)
Effectiveness Issues (EQ 2 to 4)	16. Has your income increased or decreased (probe % change) (EQ2.1 builds on production and sales questions from EQ1 avoid overlap) 17. Have changes in on-farm production, sales and income translated into improved household well-being (i.e. food security, asset acquisition, housing? Why? Probe? (EQ2.2) 18. What factors have contributed to this change (i.e. weather, govt policy, others factors)? How, Probe reasons. (EQ2.3) 19. How have other smallholder farmers' knowledge, attitudes, and practices changed? Why? (EQ1.1 and EQ 3.3) 20. What other Musika supported interventions are here (See Q4 above)? If there is more than one, have they complemented each other? How? (EQ4) 21. Are there other agriculture support interventions apart from the ones being promoted by Musika / its implementing partner / service provider? If so, which ones are they? Have they complemented or competed with Musika? (EQ4), how?
Relevance (Q8)	22. Do you think the specific type of assistance received was designed to meet smallholder farmer's main needs and key market challenges? Why? (EQ8.1 and 8.2) 23. What do you like best about the specific type of assistance received? Why? (EQ8.2) 24. What potential improvements would you suggest to a future program? (EQ8.3)
Inclusion (Q10)	25. Are impacts and outcomes among male and female beneficiaries different? How? Why? (EQ2.4) (only for existing interventions) 26. How did the intervention include women? Describe (EQ 10.1) 27. Were there differences in the way the support / assistance / program worked with men compared to women?

Annex 5: List of Consultees

ADSEK	Proprietor
Agriserve	Director
Agriserve	Western Province Representative
Agriserve	Sales Agent, Mongu, Western Province
Agriserve	Livestock Technician, Senanga
Agro dealer Kalu Agro Vet	Shop Assistant, Mongu
Agro dealer KamboAgri Vet Shop in Mongu	Owner, Mongu
Agro dealer Limpo Agrivet,	Shop Manager, Mongu
Agro dealer Patman's Business Solutions	Shop Assistant, Senanga
Agro dealer shop,	Owner, Senanga
Agro dealer, Novatek Animal Feed	Shop Assistant, Mongu
Agrochemicals	Regional Manager
AON Risk Solutions	Manager - Agriculture
ATS Agrochemicals	Managing Director
ATS Agrochemicals	Sales Agent, Mbala
ATS Agrochemicals	Spray Service Provider, Chombela Area
Chisabi Cooperative Society	Vice Chairperson
Chisabi Cooperative Society	Secretary
Chisembe Village	Village Headman
DFID	M&E Advisor
Farmer	Dairy Farmer
FOCUS General	Agronomist
Frenda Enterprises	Proprietor
FSDZambia	Technical Advisor/Project Manager-Insurance
GroAfrica	Managing Director
Hopeways Farms and Genral Dealers	Proprietor
Jedo Commodities	Director Agro
Manager, Agriculture and Agents	African Grey Insurance Limited
Manyika Development Company	Managing Director
Mayfair Insurance	Manager, Agricultural Specialities
Mininstry Of Agriculture	Senior Tech. Officer
Mininstry Of Agriculture	Ag. Snr. Marketing Devt. Officer
Mininstry Of Agriculture	Camp Extension Officer
Mininstry Of Agriculture	Provincial Agric. Coordinator
Mininstry Of Agriculture	Land Husbandry Oficcer
Mininstry Of Agriculture	Senior Agric. Officer (Mansa)
Mininstry Of Agriculture	Camp Extension Officer (Kawambwa)
Mininstry Of Agriculture	Camp Extension Officer
Mininstry Of Agriculture (FISP)	M&E Officer
Ministry of Commerce Trade and Industry	District Cooperative Development Officer

Ministry of Commerce Trade and Industry	Cooperatives Inspector
Ministry of Agriculture	District Agricultural Coordinator, Kasama
Ministry of Agriculture	District Agricultural Coordinator, Mumbwa
Ministry of Fisheries & Livestock,	District Livestock Officer, Senanga District
Ministry of Fisheries and Livestock	Provincial Veterinary Officer
Ministry of Fisheries and Livestock	District Veterinary Officer, Mongu District
Ministry of Fisheries and Livestock	Provincial Senior Livestock Production Officer
Mongu Dairy Cooperative (Modaco)	Chairman
MuleStus Agro Services and General Dealers Limited	Proprietor
Mumocha Agro Dealers	Director
Musakabantu Cooperative Society	Secretary
Mushinge Village	Headman
Mushinge Village	Headman
Musika	Regional Manager Western
Musika	Livestock Manager
Musika	Manager, Finance and Service Market
Musika	Operations Manager
Mutepuka Cooperative Society	Chairman
Mutepuka Cooperative Society	Vice Chairman
Namushakende Dairy Cooperative	Farmer
Namushakende Dairy Cooperative	Farmer
Nasla Halal Beef Company Ltd	Owner, Senanga, Western Province
NWK Agriservices	Chief Agriculture Services Officer
NWK Agriservices	Regional Agriculture Manager, Mumbwa
Pioneer Seed	Sales Agent, Luwingu
Programme Against Malnutrition	Plant Manger
Risk Shield Consultants Limited	Managing Director and Actuary
SeedCo	Sales Agent, Mbala
Sudzam Hardware and General Dealers	Manager, Mongu Store
Syngenta	Sales Officer
Zambia Agric. Research Institute	Farm Manager
Zambia Pensions and Insurance Authority	Deputy Registrar
Zambia State Insurance Cooperation – General	Director Branch Operations
Zambian Breweries	Agric. Manager
Zammilk	Regional Manager
Zammilk	Microbiologist, Mongu
Zammilk	Milk Plant Manager, Mongu
ZANACO	Bank Manager
ZNFU	Regional Manager

Focus Group Discussions: Luapula Province

Group	Location	Participants
Lukangaba Cooperative	Mansa	Females (10)
Lukangaba Cooperative	Mansa	Males (8)
Madimba Farmer Group	Mansa	Females (3)
Madimba Farmer Group	Mansa	Males (8)
Musakabantu Cooperative	Mansa	Females (8)
Musakabantu Cooperative	Mansa	Males (12)
Natwange Women's Club	Kawambwa	Females (15)
Natwange Women's Club	Kawambwa	Males (2)

Focus Group Discussions: Northern Province

Group	Location	Participants
Chombela Farmer Group 1	Chombela	Male (7)
Chombela Farmer Group 2	Chombela	Female (7)
Mambwe Farmer Group	Mambwe	Male (10)

Focus Group Discussions: Western Province

Group	Location	Participants
Tukongote Dairy Coop	Mongu	Male (12)
Namushakende Dairy Coop	Namushakende	Male (2)
Muoyo/Nalolo Dairy Coop	Muoyo	Male (3)
Sefula Dairy Women's Group	Sefula	Female (10)
Nasla Farmer Group 1	Senanga	Male (15)
Nasla Farmer Group 2	Senanga	Male (15)

Annex 6: Contribution Analysis Comparison of Case Studies

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
Box 2: Income						
Causal Package						
Primary Contributor		Insufficient Evidence to determine any change in income or its contributing factors	Insufficient Evidence to determine any change in income or its contributing factors	At the time of endline fieldwork the Zammilk project had not contributed to a significant increase in farmer incomes.	Zambian Breweries increased demand for cassava	Intervention failure
Strong Contributor	Musika WII intervention; Supported organizations' own business initiative					
Contributor	Other donor WII interventions				GroAfrica's drive and determination to bring markets for cassava to Luapula	
Facilitating Contributor	Favorable market environment conducive to the growth of the WII market in Zambia				Musika support to GroAfrica	
Sufficiency	Yes, in terms of a one off boost, No, in terms of systemic change	N/A	N/A	No	Yes	No
Necessity	Yes, for the one off income boost	N/A	N/A	No	Yes	No

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
Box 3: Farm Prod						
Causal Package	N/A					
Primary Contributor	Insufficient Evidence to determine any change in on farm production or its contributing factors			No significant increase in milk supply by small-scale farmers.	There has been insufficient time to produce the desired outcome.	Intervention failure
Strong Contributor						
Contributor		ATS own business initiative and the Musika ATS Agro intervention	Mule-Stus own business initiative and Musika Mule-Stus intervention			
Facilitating Contributor						
Sufficiency	N/A	No - might change after the following production season	Yes	No - might change in / after the following high milk production season	No - might change in next cassava planting period	No
Necessity	N/A	Yes	Yes	No - might change in / after the following high milk production season	No - might change in next cassava planting period	No

Box 4: Copying						
Causal Package						
Primary Contributor				No demonstration effect at the time of endline fieldwork	No demonstration effect at the time of endline fieldwork	Intervention failure
Strong Contributor	Musika supported organizations' own business initiative					

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
Contributor	Donor supply-side WII interventions	Favorable market environment conducive to the growth in SHF demand for agro-inputs	Favorable market environment conducive to the growth in SHF demand for agro-inputs, Collective outreach and marketing efforts by other agro-input dealers			
Facilitating Contributor	Favorable market environment conducive to the growth of the WII market in Zambia					
Sufficiency	No	No	No	No	No	No
Necessity	No	No	No	No	No	No

Box 5: Market Demand						
Causal Package						
Primary Contributor				Musika support to Zammilk	Zambian Breweries increased demand for cassava	Intervention failure
Strong Contributor	Musika WII intervention, Supported organizations' own business initiative	Musika ATS intervention	Favorable market environment conducive to the growth in SHF demand for agro-		GroAfrica's drive and determination to bring markets for cassava to Luapula	

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
			inputs			
Contributor	Other market actors demand-side support	ATS business initiative Favorable market environment conducive to the growth in SHF demand for agro-inputs.	Musika Mule-Stus intervention; Mule-Stus' own business initiative	Zammilks interest in securing milk.	Contributor: Musika support to GroAfrica	
Facilitating Contributor	Favorable market environment conducive to the growth of the WII market in Zambia					
Sufficiency	Yes	Yes	Yes	Yes	Yes	No
Necessity	Yes	Yes	Yes	Yes	Yes	No

Box 6: Market Supply				Same as farmers increasing production for Output market		
Causal Package						
Primary Contributor				No significant increase in milk supply by small-scale farmers.	There has been insufficient time to produce the desired outcome.	Intervention failure
Strong Contributor	Musika WII intervention, Supported organizations' own business initiative	ATS' own business initiative	Mule-Stus' own business initiative			

	WII	ATS	Mule-Stus	Zammilk	GroAfrica	AgriServe
Contributor	Other donor WII interventions	Musika support	Musika support; Environmental conditions transforming Luapula into an agricultural production center			
Facilitating Contributor	Favorable market environment conducive to the growth of the WII market in Zambia	Environmental conditions, which are having the effect of transforming Luapula into a potential agricultural production center				
Sufficiency	Yes	Yes	Yes	No - might change in / after the following high milk production season	No - might change in next cassava planting period	No
Necessity	Yes	Yes	Yes	No - might change in / after the following high milk production season	No - might change in next cassava planting period	No

Box 7: Crowding In						
Causal Package		The evidence does not allow a parsing out of relatively more or less important factors driving entry and growth in the		No evidence of a demonstration effect - ZANACO was entering the dairy related market system due to	No - insufficient implementation time to cause a demonstration effect	Intervention failure
Primary Contributor	Supported organizations' own business initiative					
Strong Contributor	Donor supply-side WII interventions		Favourable external factors			

	WII	**ATS**	**Mule-Stus**	**Zammilk**	**GroAfrica**	**AgriServe**
Contributor	Musika WII intervention	Northern Province agro-input market. Several factors in the broader environment appear to be contributing to this outcome.		Zammilks presence.		
Facilitating Contributor	Favourable market environment conducive to the growth of the WII market in Zambia					
Sufficiency	No	No	No	No	No	No
Necessity	No	No	No	No	No	No

Annex 7: Contribution Analysis WII

CONTRIBUTION ANALYSIS OF THE MUSIKA WEATHER INDEX INSURANCE INTERVENTION

Outcome 1: Reduced poverty

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's WII intervention is contributing to reduced poverty among SHFs.	N/A	R	1	1	1	The evaluation methods were not appropriate to measure changes in SHF poverty levels. It is, moreover, too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of the Musika WII intervention. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether the poverty status among affected SHFs has changed since the beginning of the Musika WII intervention. In addition, there are a large number and wide variety of other potential factors, aside from the Musika WII intervention, that affect changes in SHFs' poverty status. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in SHF poverty status relative to the Musika WII intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 2: Smallholder farmers increase income

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
To the extent that SHFs receive payouts under a WII scheme, this constitutes a de factor increase in on-farm income equal to the amount of the payout.	Musika Risk Shield Focus Mayfair AON NWK ZNFU SHFs	C	4	3	3	WII payouts represent a lump sum cash infusion to participating SHFs representing a direct increase to their on-farm and household income. The payouts, however, tend to be small and thus are not likely to make a significant contribution to improving overall on-farm or household income. ***Additionality**: Without Musika's WWI intervention, other donor programmes may have entered the market to provide WII to the beneficiary farmers (e.g., FSDZ), although this cannot be known for certain. At the very least, Musika's WII intervention catalyzed the development of the market thus the SHFs' participation in it.* ***Outcome Contribution**: The payout received by the beneficiary SHFs would not have occurred without the growth of the WWI market, for which the Musika WII was an important contributor along with the business and other initiative of Musika supported organizations and other donor programmes.*
There is no evidence as to whether or how Musika's WII intervention is contributing to increased on-farm or household income among SHFs aside from any WWI payout received.	Musika Risk Shield Focus Mayfair AON NWK ZNFU DACO ZNFU SHFs	C	1	1	1	The evaluation methods were not appropriate to measure changes in on-farm or household income occurring as a result of SHF's participation in WII schemes outside of any WII received. It is, moreover, too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of the Musika WII intervention. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

There is no evidence that the Musika WII intervention has contributed to a widespread improvement in SHFS on-farm or household income, a finding that would be difficult for the evaluation methodology to measure in any case, both due to the evaluation timeframe and data collection methods. What impact did occur here was limited to the size of the payout farmers received under their WII schemes. This impact, however, was typically small in the range of X-X, which is unlikely to have much impact on a household's overall income or general wellbeing. For those SHFs who did receive a payout, Musika support to Risk Shield, Focus and Mayfair played a strong contributory role, both in SHFs' decision to enlist in the WII and in the value of the payout they received, along with the business initiative undertaken by these Musika-supported organizations and the WII interventions undertaken by other donor organizations. The weather patterns that made WII a more attractive investment for SHFs played a facilitating contributory role.

Causal Package

Strong Contributor: Musika WII intervention; Supported organizations' own business initiative

Contributor: Other donor WII interventions

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was (1) insufficient to produce the outcome in terms of a systemic improvement in SHF income but (2) sufficient to produce a one-time cash infusion to SHFs to compensate for crop damage resulting from poor rainfall

The Musika WII intervention was a (1) likely unnecessary component of the causal package and (2) likely necessary component of the causal package

Outcome 3: Smallholder farmers increase on-farm yields

Evidence	Source	Confirming / Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's WII intervention is contributing to increased on-farm yields	Musika NWK SHFs	C	1	1	1	In theory, participation in a WII scheme will reduce the perceived risk to cultivating covered crops thereby increasing the land under cultivation for covered crops, and/or increasing investment in productivity-enhancing technologies or practices for covered crops. Recent payments under the WII scheme for the 2015-16 growing season, however, have occurred too recently to observe how they affect future on-farm yields or, more generally, performance. During the DFID Annual Review fieldwork (March 2016), SHFs participating in WWI schemes during the 2014-15 growing season did note improved on-farm performance resulting from their participation; however, these anecdotes could not be confirmed by other

						sources. During the endline fieldwork, key informants at Musika and NWK cited anecdotes claiming to demonstrate a link between participation in a WII scheme and improve on-farm yields/performance. Again, however, the evaluation team was unable to confirm with SHFs whether participation in the WII contributed to any improvements in on-farm performance more generally. *Additionality: There is no additionality.* *Outcome Contribution: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether farm yields among affected SHFs has changed since the beginning of the Musika WII intervention. While anecdotal evidence suggests SHFs participating in WII improve their farm performance this could not be crosschecked.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 4: Demonstration effect encourages other SHFs to copy practices adopted by beneficiary SHFs

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The number of SHFs participating in WII schemes has been growing each year since of Musika's WWI intervention. This growth, however, appears to be the result of supply-side initiatives as opposed to independent demand-side initiative taken by SHFs.	Musika Risk Shield Focus Mayfair NWK FSDZ Manyika	R	3	1	1	To date, the growth in the WII market has been driven entirely, or almost entirely, by supply-side interventions by donor-assisted organizations. While SHFs do exhibit a strong demand for WII once they are exposed to it by the relevant supplier organizations, there is no evidence that SHFs are independently taking initiative to demand WII from suppliers based on their observations of other SHFs who have participated in WII schemes. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

The number of farmers participating in a WII scheme has increased each year the beginning of the Musika WII intervention and is poised to grow even more rapidly in the future. This growth, however, appears to be the result of supply-side initiatives implemented on their own by Musika-supported organizations and by other donor organizations, as opposed to independent demand-side initiative taken by SHFs and motivated by their observations of other SHFs who have participated in WII schemes, abetted by a number of external factors conducive to the growth of the WII market in Zambia. These other factors include (1) demand-side market interventions by other market actors (principally donor organizations), (2) adverse rainfall patterns and (3) the PIA ruling allowing WII to be bundled with a credit-life insurance policy.

Causal Package

Strong Contributor: Musika supported organizations' own business initiative

Contributor: Donor supply-side WII interventions

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was (1) sufficient to generate increased demand for WII by SHFS but (2) insufficient to produce a copying effect among non-beneficiary SHFs

The Musika WII intervention was a (1) likely necessary component of the causal package and (2) likely unnecessary component of the causal package

Outcome 5. Market demand for weather index insurance increases (e.g., SHFs increase their purchases of weather index insurance)

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Insurance has relatively little tradition or history in Zambia. For example, a FinScope survey done by FinMark Trust in 2009 found that 42% of Zambians have no insurance.	Musika Risk Shield Focus Mayfair ZISC African Grey NWK ZNFU AON PIA FSDZ	N	4	1	1	This finding identifies an existing market constraint. Knowledge of and access to insurance is very low in Zambia, and this is particularly the case among SHFs, who are likely to have had little to no exposure to insurance prior to Musika's WII intervention. Thus the intervention starts from a very low base with substantial potential to increase over time. The Insurance Association of Zambia, for example aims to increase insurance coverage to over 6 million people by 2019. ***Additionality**: These market constraints precede Musika's involvement in the WII market.* ***Outcome Contribution**: These market constraints precede Musika's involvement in the WII market.*
SHFs require a great deal of sensitization to understand how WII, or insurance in general, operates. In particular, they have difficulty understanding how payouts work (e.g., they receive payouts only when rainfall is bad and not as a matter of course for participating in the WII scheme). In addition, they are initially skeptical about WII, as there are, apparently, a number of financial	Musika Risk Shield Focus Mayfair ZISC African Grey NWK ZNFU	R	3	1	1	Satellite data monitors rainfall patterns within a specified geographic radius, and it uses the average rainfall within that radius to determine losses and payouts. However, within the radius, there exist a number of 'micro-climates' in which specific rainfall patterns vary, such that one farmer may receive more or less rain than neighboring farmers. This inconsistency between average satellite rainfall data and on-the-ground experience is known as 'basis risk.' (Government weather monitoring stations are too scarce, too unreliable, and cover too large an area to be useful for WII.) Managing this basis risk, including how it affects farmers' (and aggregators') perceptions of the WII product, remains one of the most challenging aspects of WII. This in turn emphases the importance of (1) SHF sensitization efforts to overcome pre-existing market perceptions and educate SHFs about how WII works and (2) getting the payout

scams that operate in rural areas counting many SHFs as their victims	FSDZ					structure correct from a design and implementation perspective. To this point, Mayfair has dealt with basis risk by making 'symbolic' payouts to the SHFs even if not justified by the satellite data, but it is not clear whether this practice is sustainable. That the WII intervention is taking place during a drought period, which increases the likelihood that farmers receive payouts, probably helps SHFs understand and appreciate better how WII works. It remains to be seen, however, whether and to what extent their appreciation for WII continues during growing seasons in which rainfall patterns are more favorable and no payouts are made. ***Additionality**: These market conditions precede Musika's involvement in the WII market, thus no contribution is assigned.* ***Outcome Contribution**: These market conditions precede Musika's involvement in the WII market, thus no contribution is assigned.*
Of those SHFs who are given the option to purchase WII as part of the input supply scheme with aggregators or in conjunction with the FISP e-voucher pilot, a significant share opt to purchase the insurance.	Musika Risk Shield Focus Mayfair NWK ZNFU	C	3	3	3	This outcome indicates that once SHFs are exposed to WII and have a better understanding of how it works, the demand for WII is reasonably high. ***Additionality**: SHF sensitization efforts were supported both (1) directly by Musika via its financial and other support to WII market first movers Risk Shield, Focus, Mayfair and the Zambian Ministry of Agriculture and Livestock (MAL) via the FISP e-voucher pilot and (2) indirectly via the latters' work with aggregators, such as NWK and ZNFU. While Musika accelerated Focus' and Mayfair' entry into the WII market, it was a primary motivator in Risk Shield's and the MAL's entry into the market* ***Outcome Contribution**: Musika contributed directly to farmer sensitization efforts contributing training to both organizations and farmers, providing sensitization/marketing resources and helping with sensitization logistic, while the capacity building it provided insurance companies and aggregators has helped them manage basis risk more effectively. Musika played an important contributory role in SHF sensitization efforts undertaken by its supported organizations. Overall, Musika support, including support in farmer sensitization and training related to basis risk management, was a strong contributor in shaping SHF demand for WII for WII schemes falling under its SOW with supported organizations a contributory role for WII schemes implemented by supported organizations outside Musika support.*

Contribution Story

Zambia as a whole has little history or experience with insurance, less with agricultural insurance, and none with WII. Effective demand for WII among SHFs was essentially zero at the beginning of the Musika WII intervention, although latent demand for WII was undeniably higher to an unknown degree judging by the subsequent uptake of WII by SHFs once exposed to it. Notwithstanding, owing to SHFs' lack of familiarity with insurance in general and WII in particular (and how either of them work, especially payouts), and given their reported suspicion of potential financial scams, it requires a great deal of sensitization work to educate SHFS about WII and generate demand for it. Generating and

then sustaining SHF demand is complicated by the existence of basis risk, in which average rainfall patterns are monitored by satellite data, and thus loss and payout determination, may not match the SHF's (and their aggregators') experience on the ground. If basis risk is not managed carefully, it may result in farmer (and aggregator) disillusionment with WII and thus affect SHFs' long-term demand for it.

Musika has played both a key direct and indirect role in sensitizing SHFs and building market demand for WII. It directly accelerated Focus' and Mayfair's entry into the WII market accompanied by direct farmer sensitization/marketing support in the form of training, marketing resources and logistic support. Musika also played a direct role as a primary motivator for Risk Shield to enter the WII market and for MAL to integrate WII into the FISP e-voucher scheme and then again directly supporting Risk Shield to market its WII to SHFs.

Other factors influencing the growth in market demand for WII include (1) the business initiative exercised by the three supported market actors independent of any support received by Musika, (2) demand-side market interventions by other market actors (principally donor organizations), and (3) adverse rainfall patterns. Notably, however, all of these other factors are building on a base that was established by Musika's work in the market. Supported market actors are building on the sensitization/marketing efforts originally begun with Musika help, demand-side interventions by other donor organizations are building directly on the supply of technical capacity and WII initially facilitated by Musika (and without there may not have been any WII to satisfy growing market demand, at least at this point in time), and the adverse rainfall patterns fortuitously (or not, depending on whether one is a farmer or WII provider) coincide with the emergence of the WII market. (FSDZ claims that in the absence of Musika, it would have assumed Musika's role, but this is by no means certain and thus counts only as a speculative counterfactual.)

Causal Package

Strong Contributor: Musika WII intervention, Supported organizations' own business initiative

Contributor: Other market actors demand-side support

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika WII intervention was a likely necessary component of the causal package

Outcome 6: Market supply of weather index insurance increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There was no WII insurance in Zambia prior to 2013 when Musika began working with MicroEnsure, later Risk Shield, Focus General and Mayfair.	Musika Risk Shield Focus Mayfair NWK ZNFU AON PIA FSDZ	N	4	1	1	Other forms of microinsurance were offered in the market prior to 2013, including multi-peril (indemnity) agricultural insurance (e.g., African Grey and ZISC) credit life insurance (e.g., MFIs), and simple life (funeral) insurance (e.g., Airtel to mobile phone subscribers). However, prior to 2013, no market actor was either offering WII or in the process of developing WII products. In addition, prior to 2013 there were a number of donor and other organizations investigating/promoting microinsurance in Zambia. For example, in 2009 the Centre for Financial Regulation and Inclusion (CENFRI) conducted a technical diagnostic on microinsurance; FinMark Trust conducted a FinScope survey on financial inclusion in Zambia; and FinMark Trust and ILO assisted the PIA to create the Technical Advisory Group (TAG), which is a multi-stakeholder group tasked with looking at the development of microinsurance within Zambia. Nonetheless, prior to 2013 no organization was actively and specifically promoting WII nor working to develop WII products. Moreover, knowledge about WII was generally lacking within the country among primary market actors, including regulators (PIA), insurance companies, aggregators, etc. ***Additionality**: These market conditions precede Musika's involvement in the WII market, thus there is no additionality.* ***Outcome Contribution**: These market conditions precede Musika's involvement in the WII market, thus there is no outcome contribution.*
WII offers clear advantages to insurance companies over multi-peril indemnity insurance, which make it a relatively attractive option to reach large numbers of SHFs.	Musika Risk Shield Focus Mayfair	C	4	1	1	The biggest challenge to scaling-up multi-peril indemnity agricultural insurance is the cost, which requires field verification for each insured farmer. WII offers a low-cost alternative as payments are triggered and determined by satellite rain data. Although experience to date indicates that WII must also be paired with some form of sampling-based field verification, this still costs substantially less thus potentially allowing insurance companies to scale-up much

	ZSIC African Grey					more extensively than they could under a multi-peril insurance scheme. ***Additionality**: These market conditions precede Musika's involvement in the WII market, thus there is no additionality.* ***Outcome Contribution**: These market conditions precede Musika's involvement in the WII market, thus there is no outcome contribution.*
Early innovators in WII were all assisted/facilitated by Musika to enter the market, including MicroEnsure, Risk Shield (successor to MicroEnsure), Focus General, Mayfair, NWK, ZNFU, and FISP.	Musika Risk Shield Focus Mayfair NWK ZNFU AON FSDZ	C	4	3	3	WII is seen as a risky product offering a relatively small per unit premium and large co-variant risk. Also, comparatively little is known about WII, including how to develop and price it appropriately. For these reasons, insurance companies are not inclined to invest their own resources in developing and offering WII products. Thus, without donor support, the Zambian WII market would not, in all likelihood, exist. In lieu of other donors, Musika played this critical donor role. Musika's intervention was well timed and essential to the development of the WII market. Musika provided financing, capacity development, logistical support and other assistance to each of the early innovators within the Zambian WII market. Risk Shield's (MicroEnsure's) involvement in WII market was primarily motivated by the initial Musika grant. After MicroEnsure decided to leave Zambia, Musika's assistance was instrumental in allowing Risk Shield to remain and set up its operations in country. According to Risk Shield, ""MicroEnsure and Risk Shield's work in WII definitely resulted from contract with the programme. Without the programme, WII would not have launched, nor would it be near where it is. In this case, it was the donor that drove the motivation." Nonetheless, with a number of other donor programmes working in Zambia on microinsurance (including FSDZ), it is not clear that MicroEnsure/Risk Shield would not have received support from one of these other programmes. Both Focus and Mayfair were aware of WII prior to their work with Musika. In both cases, members of their management teams had previous exposure to WII in other countries and were interested in pursuing it in Zambia. Musika provided both a well-timed opportunity to pursue their interest in WII. Again, it is not clear that they would not have been provided an opportunity by another programme at some point in the future. Still, both say that Musika's help was instrumental in helping them develop and launch their WII products, which they could not have done on their own. Prior to Musika's intervention in the WII market, aggregators were not offering, nor were they aware of, WII. Those that were offering crop insurance (e.g., ZNFU) were offering multi-peril indemnity insurance. Their introduction to WII came via Risk Shield and/or the insurance companies and thus indirectly from Musika. In lieu of Musika, it is possible that other donor programmes would have stepped in at some

						point to play this role, particularly given the growing donor interest in WII in Zambia. For example, FSDZ claims that, in the absence of Musika, it would have stepped into the role currently being played by Musika to motivate, catalyze and accelerate entry into the Zambian WII market. This may be true, but also it may not be true. In any case, we cannot know whether it is true or, if true, what form this assistance would have taken and what contribution it would have made. One or more of the other donor organizations currently involved in the Zambian WII market (e.g., WFP, ILO, IFC, FAO) may have played a similar role to Musika as well, but this can only be speculated. To date, none of these other donor organizations appear to have facilitated market entry to the same degree as Musika and are working through organizations (particularly Risk, Shield, Focus and Mayfair) that were motivated or accelerated by Musika, although they have brought with them into the market additional market actors, principally aggregators. In addition to the above, one broker, AON, has also entered the WII market on its own volition outside of Musika assistance, although by virtue of its commercial relationship with NWK, it is benefitting indirectly from Musika support. (AON is receiving capacity building assistance from the IFC.) Finally, via own-marketing efforts by Musika-supported market actors – Risk Shield, Focus and Mayfair – a number of other crop aggregators have entered, or are poised to enter, the WII market, including One Acre Fund, Pioneer Seed, Seed Co and Monsanto. Continental Ginneries, Alliance, Syngenta, Wings of Change, Victor Series, Manyika (with contributions from ILO and MRI Seeds) and YAPASA (with contributions from ILO and FAO). ***Additionality**: Risk Shield attributes Musika support directly with its entry in the Zambian WII market via Musika's initial support to MicroEnsure and sub-subsequent support to Risk Shield. While both Focus and Mayfair say that they would have entered the WII market regardless, Musika support accelerated their entry into the market. Overall, Musika was, at the very least, a critical catalyst for the creation of the Zambian WII market and the entry of market first movers.* ***Outcome Contribution**: The supply of WII in Zambian would not have grown without donor support, including, critically, support from Musika (assisted by FSDZ) to market first movers Risk Shield, Focus, and Mayfair. While other donors have since entered the market and play important contributory role, Musika arguably continues to play the strongest donor role, as seen, for example, in that organizations supported by Musika – Risk Shield, Focus and Mayfair – continue to dominate the supply side of the market.*
Since Musika's begin its WII market intervention, the number of new actors	Musika Risk Shield	C	3	1	3	Other donor organizations entering the WII market include the International Labour Office (ILO), World Food Programme (WFP), International Finance Corporation (IFC), Food and

entering and active in the market has grown considerably, many as a result of their own-marketing efforts by Musika-supported organizations and many on their own without any Musika support.	Focus Mayfair NWK ZNFU AON FSDZ					Agriculture Organization (FAO), and Green Acre Fund. Each of these donors, moreover, has established relationships with crop aggregators to offer a WII scheme, although typically involving Risk Shield, Focus or Mayfair. In addition to the above, one broker, AON, has also entered the WII market on its own volition outside of Musika assistance, although by virtue of its commercial relationship with NWK, it is benefitting indirectly from Musika support. (AON is receiving capacity building assistance from the IFC.) Finally, via own-marketing efforts by Musika-supported market actors – Risk Shield, Focus and Mayfair – a number of other crop aggregators have entered, or are poised to enter, the WII market, including One Acre Fund, Pioneer Seed, Seed Co and Monsanto. Continental Ginneries, Alliance, Syngenta, Wings of Change, Victor Series, Manyika (with contributions from ILO and MRI Seeds) and YAPASA (with contributions from ILO and FAO). ***Additionality**: The other donor organizations and AON would have likely entered the WII market regardless of Musika's involvement.* ***Outcome Contribution**: Entry into the WII market by other donor organizations would not be possible without an existing core of organizations providing product development/actuary services and WII insurance products. The fact that all (or most) of these other donor initiatives are working with one of the Musika-supported organizations indicates that Musika has played an important contributory role in this outcome.*
Insurers offering WII have been able to scale-up WII coverage significantly since beginning their collaboration with Musika. Risk Shield estimates that, market-wide, the number of WII customers is nearing the breakeven point with potential to exceed breakeven during 2016-17.	Musika Risk Shield Focus Mayfair NWK ZNFU	C	3	2	3	Risk Shield estimates that the market requires a premium value of $700,000 and coverage of 100,000 SHFs, divided between 2-3 insurance companies, to pass the breakeven point. During 2015-16, the WII market collected $400,000 in premium payments spread across about 60,000 SHFs and the two Musika-supported insurance companies Focus and Mayfair. Musika-supported Risk Shield, moreover, remains the primary product designer and actuary in the WII market. There is a possibility that the market will exceed the breakeven point during 2016-17, particularly if the FISP e-voucher programme continues to incorporate WII its expansion from 13 districts and 241,000 SHFs in 2015-16 to 39 and 641,000 SHFs in 2016-17. In 2015-17, Musika hopes to increase WII coverage under e-voucher scheme to 100,000 SHFs. Musika play a primary role in influencing the MAL's decision to integrate WII into the e-voucher pilot. In addition to Musika's WII market intervention, other donor organizations – ILO, FAO, IFC, WFP – have also been working to grow the WII market, principally through working with different aggregators to recruit their clients into WII schemes or by supporting capacity building of other market actors. Notably, in many cases, these other market interventions involve Musika-supported organizations in principal roles, including Risk Shield as product designer/actuary role and either Focus or Mayfair as insurer. ***Additionality**: The scaling-up of market supply of WII owes both directly to Musika support to*

						market fist movers Risk Shield, Focus, Mayfair and the MAL (FISP e-voucher pilot) and indirectly to the latters' work with aggregators, such as NWK and ZNFU, and to their expansion of WII to other market actors. Overall, Musika has played a critical accelerator role by setting in motion the expansion of market demand for WII within Zambia over a shorter time frame than would have likely happened otherwise. ***Outcome Contribution**: Musika support was one of a number of factors that plausibly affected SHF supply of WII. Other potential factors include business expansion efforts undertaken by supported market actors done outside the parameters of Musika support and and interventions by other donor organizations to grow the WII market. However, given that organizations benefitting from direct or indirect Musika assistance currently dominate the market, being involved in one facet or another in growing the supply of WII, Musika's has made an overall strong contribution to this growth in market supply.*

Contribution Story

Prior to Musika's intervention in the WII market, knowledge of WII among relevant market actors was low and no organization was offering WII products. The uncertainties surrounding WII – particularly surrounding design, pricing and managing basis risk – substantially increased the perceived riskiness of offering WII and made actors reluctant to enter the WII market. As a result, there is little likelihood that a WII would have emerged on its own driven by profit-seeking enterprises; some form of donor intervention was thus required to establish the WII market.

Musika, with support from FSDZ, played this role, at least initially. Musika was a principal motivator in Risk Shield's entry into the market and played a key role in accelerating Focus' and Mayfair's entry into the market. These three organizations continue to play leading roles within the market, with Risk Shield being the only organization currently developing WII products, providing actuary services, and monitoring satellite data, while Focus and Mayfair remain the only two insurance companies offering WII products. Further, these three organizations have, both with Musika support and on their own business initiative, sought to grow their WII business thereby bringing a number of other actors, primarily aggregators, into the WII market. Musika for its part was a principal motivator in securing the decision by the Zambian MAL to integrate WII into the FISP e-voucher pilot, which, more than any other market development, has the potential to grow exponentially the size of the WII market. Other donor organizations – including the IFC, ILO, WFP and FAO – have also played an important contributory role in creating and growing the WII market bringing with them a number of other actors, again principally aggregators, into the market. Rainfall patterns since the beginning of the Musika intervention have further helped facilitate the growth of the market by creating conditions in which supply could grow more rapidly (e.g., existence of drought conditions amplify the potential benefits of WII to SHFs), although also making it more difficult for insurance companies to earn profits from WII, thus potentially increasing the reluctance of other insurers to enter the market. At the same time, the PIA ruling on bundling life insurance with non-life insurance has facilitated supply growth by allowing insurers and aggregators to offer bundled products, which are less risk and more profitable for insurers.

All together, market growth to date is over half way towards what Risk Shield estimates is needed market-wide to pass the break-even point and turn a profit from WII. Taking all of the above into consideration, Musika's WII intervention emerges as the primary contributing factor in the emergence and growth of the Zambian WII market, although with important contributions from the supported organizations' own business initiative and the interventions of other donor organizations and facilitated by 'favorable' rainfall patterns.

Causal Package

Strong Contributor: Musika WII intervention, Supported organizations' own business initiative

Contributor: Other donor WII interventions

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika WII intervention was a likely necessary component of the causal package

Outcome 7: Demonstration effect encourages other market actors to crowd-in the weather index insurance market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Aside from Focus General and Mayfair, other insurance companies are choosing not to participate in the WII market for the time being. While some have explored the WII market and are interested in possibly entering the market in the future, uncertainties surrounding the business model – including pricing, managing basis risk, and the profitability of WII – are keeping them on the sidelines. Generally, they prefer to wait and see how the market develops.	Musika Risk Shield Focus Mayfair ZSIC African Grey	R	4	1	1	African Grey currently offers multi-peril agricultural insurance to SHFs through the ZNFU Lima Credit Scheme and the Vision Fund (World Vision). African Grey has not explored WII, because it is concerned about its commercial viability. It notes, moreover, that the other large general insurance companies (e.g., Prudential) have also stayed out of the market saying, "The big boys are holding back, and they have the capacity. The fact that they are not going in is perhaps indicative. WII is not so profitable, and so long as it is, insurance companies won't be keen to get in." Once other insurance companies have fine-tuned the model and figured it out, then African Grey would be more willing to consider the WII market. Similar to African Grey, ZSIC also offers multi-peril agricultural insurance, but does not intend to enter the WII market until the business model is refined and prospects for profitability are improved. ZSIC was approach by Musika to work on WII, but it declined. Rather than enter the market as a primary insurer, ZSIC sees itself as a partner to other insurance companies to offer them WII re-insurance or to help other insurance companies develop their capacity to offer WII. According to ZSIC, Vodafone is also looking at offering WII using mobile-based technology, although the evaluation team was not able to confirm this during the endline fieldwork. ***Additionality**: Musika's WII intervention has failed to create a demonstration effect to the extent that it accelerated, catalyzed, or motivated other insurance companies to enter the WII market.* ***Outcome Contribution**: As no other insurance companies have entered the WII market to this point, aside from Focus and Mayfair, there is no outcome to which Musika could have contributed.*
Other market actors have entered the Zambian WII market; however, there is no evidence that they did so as a result of a demonstration effect by Musika.	Musika Risk Shield Focus	R	3	1	2	In addition to Musika, other donor programmes operating in the Zambia WII market include the following: DFID: Financial Services Deepening Zambia (FSDZ)

These market actors include donors (IFC, ILO, WFP, FAO, DFID), brokers (AON) and aggregators (MRI).	Mayfair FSDZ Manyika					*www.fsdzambia.org/* ILO: Impact Insurance Facility *www.impactinsurance.org/country/zambia* ILO: YAPASA *http://www.ilo.org/addisababa/media-centre/pr/WCMS_497342/lang--en/index.htm* WFP: R4 Rural Resilience Initiative *www.wfp.org/climate-change/initiatives/r4-rural-resilience-initiative* IFC: Global Index Insurance Facility *www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site* */industries/financial+markets/retail+finance/insurance/global+index+insurance+facility/* FAO: Climate Smart Agriculture Zambia *http://www.fao.org/climatechange/epic/projects/countries/zambia/en/* AON is currently offering brokerage services on behalf of NWK with Focus General. AON entered the market on its own accord. As far as the evaluation team could tell, AON is currently the only broker operating in the WII market. AON sees WII as a potential growth market and is positioning itself to be the primary player on the brokerage side capturing fist mover advantages over other brokerage firms. The IFC is paying the costs to send the head of AON's agricultural department to the WII training in Johannesburg. MRI is an example of an aggregator entering the market, in this case in collaboration with the ILO. ***Additionality**: Musika had little to nothing to do with the decision of these other actors to enter the WII market. These, with the exception of AON, are largely the results of donor initiatives begun and implemented independent of Musika. In AON's case, its entry into the WII market was indirectly accelerated by Musika via the latter's collaboration with Focus and NWK.* ***Outcome Contribution**: Most of these other donor WII initiatives have collaborated with Risk Shield and/or Focus or Mayfair, as these three Musika-supported organizations continue to dominate the supply-side of the Zambian WII market. In this sense, Musika has contributed indirectly to this outcome.*
Other market actors are entering the WII market as an indirect result of Musika's support to Focus General and Mayfair.	Musika Risk Shield Focus Mayfair FSDZ	C	3	2	2	As a result of own-marketing efforts by Musika-supported market actors – Risk Shield, Focus and Mayfair – a number of other crop aggregators have entered, or are poised to enter, the WII market, including One Acre Fund, Pioneer Seed, Seed Co and Monsanto. Continental Ginneries, Alliance, Syngenta, Wings of Change, Victor Series, Manyika (with contributions from ILO and MRI Seeds) and YAPASA (with contributions from ILO and FAO). Swiss Re, one of the world's largest re-insurers, is providing re-insurance to Mayfair's WII

	Manyika					scheme. While none of these examples constitute a 'demonstration effect,' per se, they are indirect (second-order) outcomes of Musika's support to Risk Shield, Focus and Mayfair. ***Additionality**: While it is likely that Focus and Mayfair would have at one point entered the WII market, it is less likely that either of these other aggregators would have entered the WII market as soon as they did without some kind of accelerator. In this case, the accelerator was Musika's support to Focus and Mayfair.* ***Outcome Contribution**: Musika support contributed to these other actors' participation in the WII market, but it was the independent business initiative taken by Focus, Mayfair and Risk Shield on the supply side that made the greatest contribution.*

Contribution Story

The entry of other actors into the WII market was primarily done at the own business initiative of these actors and not motivated by their observations of Musika-supported market actors (Risk Shield, Focus and Mayfair). Overall, there is no evidence that Musika's WII intervention has created a demonstration effect that is accelerating, catalyzing, or motivating broader WII market participation. This general conclusion has two exceptions. The first exception involves the aggregators recruited into the WII market by the Musika-supported actors Risk Shield, Focus and Mayfair. The second exception is the role played by Musika in establishing the foundations of market supply via Risk Shield, Focus and Mayfair without which none of the other market actors would have been able to match the demand for WII to supply. Musika's WII intervention thus appears to have played an important contributory role in both cases. Other factors contributing to this outcome include (1) demand-side market interventions by other market actors (principally donor organizations), (2) adverse rainfall patterns and (3) the PIA ruling allowing WII to be bundled with a credit-life insurance policy.

Causal Package

Primary Contributor: Supported organizations' own business initiative

Strong Contributor: Donor supply-side WII interventions

Contributor: Musika WII intervention

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was (1) sufficient to catalyze increased entry into the WII market by other market actors but (2) insufficient to produce a crowding-in effect among market actors

The Musika WII intervention was a (1) likely necessary component of the causal package and (2) likely unnecessary component of the causal package

Outcome 8: Supported market actors scale-up their offering of weather index insurance

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Contribution	Explanation
Since 2013, the number of SHFs covered by WII offered by Focus General has gone from 6,000 (2013-14) to 3,000 (2014-15) and to 50,000 (2015-16).	Musika Focus Risk Shield NWK ZNFU	C	4	2	2	In addition to increasing WII coverage among its existing clients (e.g., NWK, ZNFU), Focus has reached agreement with the One Acre Fund to provide WII for 2,500 of its client SHFs during 2016-17. Musika facilitated this relationship. Focus did a small pilot with Pioneer Seed in Mumbwa during 2014-15 providing WII to 400 of its client SHFs in Mumbwa and Pongwe. While the relationship with Pioneer was interrupted during 2015-16, Focus hopes to renew the relationship during 2016-17. Focus has likewise approached Seed Co and Monsanto to provide WII to their client SHFs. Both of these proposals are currently under consideration. Focus is committed long-term to WII. In fact, it opened its agricultural department for the express purpose of making a market in WII. It sees WII as the most viable strategy for achieving scale in providing microinsurance to SHFs, whom it sees as the largest potential growth market for microinsurance in Zambia. ***Additionality**: Musika accelerated Focus' entry into the Zambia WII market and has continued to support Focus to establish a foothold in the market and to scale-up its market outreach, which presumably has likewise accelerated Focus' scale-up efforts.* ***Outcome Contribution**: Notwithstanding the fact that Focus likely would have entered the market on its own on a different timeframe, Musika's support has a contributory factor – together with Focus' own initiative and the entry of other market actors with whom Focus is collaborating –to Focus' scale-up outcomes.*
Mayfair seeks to increase number of SHFs covered by WII from 1,000 SHFs in 2014-15 and 7,500 SHFs in 2015-16 to 15,000 SHFs in 2016-17, irrespective of FISP. If the FISP e-voucher expansion occurs, coverage could increase to as much as 40,000-50,000 SHFs during	Musika Risk Shield Mayfair NWK ZNFU	C	4	2	2	In addition to increasing WII coverage among its existing clients (e.g., from 1,000 to 5,000 among ZNFU Lima Credit Scheme farmers), Mayfair is bringing on board new clients, including 700 client SHFs of the aggregators Manyika, Wings of Change, and Victor Series and 500 SHFs participating in a WFP WII pilot in Pemba district. Mayfair recently signed an MoU with an FAO Seed Multiplication Project to cover a minimum of 2,000 of its clients SHFs during 2016-17. It has also reached agreement with Continental Ginneries to provide WII to its client SHFS, although the number to be covered has yet to be determined. Finally, Mayfair is talking with

2016-17.						Alliance and Syngenta about providing WII to their client SHFs, again with an undetermined number to be covered. Like Focus, Mayfair is committed long-term to the WII market and more generally to the agricultural microinsurance market. In addition to WII, Mayfair is looking to bundle WII with credit life insurance and to develop crop yield and fish pond production insurance. ***Additionality**: Musika accelerated Mayfair's entry into the Zambia WII market and has continued to support Mayfair to establish a foothold in the market and to scale-up its market outreach, which presumably has likewise accelerated Mayfair's scale-up efforts.* ***Outcome Contribution**: Notwithstanding the fact that Focus likely would have entered the market on its own on a different timeframe, Musika's support has a contributory factor – together with Focus' own initiative and the entry of other market actors with whom Focus is collaborating –to Focus' scale-up outcomes.*
ZNFU intends to expand WII coverage among SHFs participating in its Lima Credit Scheme from two districts in 2015-16 to six districts in 2016-17, but internal issues at ZNFU put its expansion plans in doubt.	Musika Risk Shield Focus Mayfair ZNFU	R|C	2	1|3	1|3	Due to internal problems related to the ZNFU corruption scandal, ZNFU has yet to settle WII claims for 2015-16. For the same reason, whether and the extent to which it continues offering WII to its client SHFs during 2016-17 is uncertain at this time. Information about ZNFU's internal issues and plans are entirely second-hand and unverified, as the evaluation team was unable to follow-up with the persons directly responsible for WII at ZNFU and was advised to refrain from raising this issue when talking to the ZNFU representative interviewed during the endline. This outcome confirms the expected outcome to the extent ZNFU does expand its WII offering during 2016-17, and it refutes the expected outcome to the extent ZNFU's internal problems cause it to scale back on its WII offerings. ***Additionality**: ZNFU would not have intended to scale-up its WII offerings absent its collaboration with Risk Shield, Focus and Mayfair. It is currently not collaborating with other market actors outside of those working with Musika. ZNFU's collaboration with Risk Shield, Focus and Mayfair may or may not have occurred in any case, or as a result of other donor-supported activities in the WII market, but this is speculation. Thus, this (potential) outcome has been catalyzed by Musika's support.* *If NWK does scale-back on its WII offering, this outcome has nothing to do with Musika support but rather entirely with internal issues at ZNFU.* ***Outcome Contribution**: ZNFU would not have been able to scale-up its WII offerings absent its collaboration with Risk Shield, Focus and Mayfair. It is currently not collaborating with other market actors outside of those working with Musika. ZNFU's may or may not scaled-up its WII offering in any but this is speculation. Thus, Musika's support has strongly contributed to this (potential) outcome.* *If NWK does scale-back on its WII offering, this outcome has nothing to do with Musika support*

						but rather entirely with internal issues at ZNFU.
NWK had hoped expand WII coverage among its client SHFs from 51,827 in 2015-16 to 70,000 in 2016-17. However, due to problems with payouts during 2015-16, it now projects covering fewer than 50,000 client SHFs during 2016-17. Notwithstanding the projected drop in WII coverage during 2016-17, NWK eventually wants to expand WII coverage to over 100,000 client SHFs in future years.	Mayfair Risk Shield Focus NWK	R|C	3	1|3	1|3	During 2015-16, Focus collected K 1,600,000 in insurance premiums but was liable for claims of K 1,915,112, which significantly exceeded expected payouts. At the time of the endline fieldwork, Focus has yet to make payouts to NWK. In the meantime, NWK had to make the payouts to its client SHFs on the collection of the cotton harvest. Focus' problem stems from a liquidity problem resulting (depending on the source) from its failure to purchase re-insurance or because it invested the premiums and was having difficulty liquidating the investments in a timely manner. Nonetheless, both NWK and Focus indicated that the payout was imminent and due to occur shortly after the completion of the endline fieldwork. One method NWK proposes to reach its goal of 100,000 covered with WII is to collaborate with the Zambian Cotton Ginners Association. First, however, it wants a "success story to take to them." Despite the payout issues with Focus during 2015-16, NWK will continue to work with Focus during 2016-17 and possibly beyond. ***Additionality**: NWK would not have intended to scale-up its WII offerings would absent its collaboration with Risk Shield and Focus. It is currently not collaborating with other market actors outside of those working with Musika. NWK's collaboration with Risk Shield and Focus may or may not have occurred in any case, or as a result of other donor-supported activities in the WII market, but this is speculation. Thus, this (potential) outcome has been catalyzed by Musika's support.* *If NWK does scale-back its WII coverage during 2016-17, Musika had little to do with this outcome, which is entirely a function of internal issues at Focus that lie outside the scope of support received from Musika.* ***Outcome Contribution**: NWK would not have been able to scale-up its WII offerings absent its collaboration with Risk Shield and Focus. It is currently not collaborating with other market actors outside of those working with Musika. NWK's may or may not have scaled-up its WII offering in any cast, but this is speculation. Thus, Musika's support has strongly contributed to this (potential) outcome.* *If NWK does scale-back its WII coverage during 2016-17, Musika had little to do with this outcome, which is entirely a function of internal issues at Focus that lie outside the scope of support received from Musika.*
The Zambian MAL may scale-up the number of SHFs covered as part of the FISP e-voucher scheme during 2016-17 and beyond.	Musika Risk Shield Mayfair	C	2	4	3	At this point, none of the market actors interviewed know what the MAL's plans are for 2016-17 and beyond with regards to expanding WII as part of FISP e-voucher scheme. The likelihood of expanding it and the potential outreach as a result are all best guesses. With that said, the expansion of WII via the e-voucher scheme would be the single greatest contributor to the

						growth of the WII market in Zambia and would increase outreach by multiples over current outreach. ***Additionality**: The integration of WII into the FISP e-voucher pilot would, in all likelihood, not have occurred without Musika advocacy. The MAL now has past experience to draw on in deciding whether to scale-up WII under FISP, in addition to a growing visibility of WII in the country due to efforts of Musika supported and non-supported market actors. However, Musika's continued advocacy continues to be a motivating factor in any decision to expand WII under the FISP e-voucher scheme.* ***Outcome Contribution**: Musika's initial and ongoing advocacy to integrate and expand WII under the FISP e-voucher scheme is one of a number of potential contributory factors, which includes past experience with WII and the growing visibility of WII in the country due to efforts of Musika supported and non-supported market actors. Among all possible contributory factors, however, Musika's support remains one of the strongest contributing factors, if not the strongest contributing factor, should the MAL elect to expand WII as part of the FISP e-voucher scheme.*

Contribution Story

Each of the Musika-supported market actors has since scaled-up its WII market offering. Focus General has grown from 6,000 WII clients in 2013-14 to 50,000 in 2015-16. Finally, Mayfair has increased its WII clients from 1,000 in 2014-15 to 15,000 in 2016-17 with potential to increase nearly three-fold to 40,000-50,000 clients in 2016-17 and additional multiples beyond that depending on whether and how the MAL elects to integrate WII into the FISP e-voucher scheme expansion. A primary contributing factor to these outcomes has been the business initiative undertaken by each of the supported organizations to expand beyond the scope of their SOW with Musika. In this case, Musika's original support, however, continues to play an important contributor role both in terms of capacity development support provided but also in terms of its role of primary motivator for Risk Shield's entry into the WII market and accelerator of Focus' and Mayfair's entry into the market. In the case of the past and potential future expansion of WII as part of the FISP e-voucher expansion, Musika has been the primary contributor, as according to key informants, Musika's role in integration of WII into the original FISP e-voucher pilot was instrumental and would very likely not have occurred without Musika's advocacy. The FISP e-voucher scheme alone has potential to grow the WII market exponentially. Favourable market conditions (e.g., rainfall patterns, PIA ruling on bundling WII with credit life policies) since the beginning of the Musika intervention have further helped facilitate the growth of the market by creating conditions in which supply could grow more rapidly.

Causal Package

Primary Contributor: Supported organizations' own business initiative

Contributor: Musika WII intervention (Other)

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika WII intervention was a likely necessary component of the causal package

Outcome 9: Supported market actors invest their own resources to market and supply weather index insurance

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Focus has increased its own efforts to market WII and expand its customer base	Musika Risk Shield Focus	C	4	2	2	Focus has secured an agreement to provide WII to 2,500 SHFs being supported by the One Acre Fund during 2016-17. In addition, it is in discussions with Pioneer Seed, Seed Co and Monsanto to provide WII to their client farmers during 2016-17, although the outcome of these negotiations is uncertain at this time. During 2014-15, Focus provided WII to 400 of Pioneers SHF clients—200 in Mumbwa and 200 in Pongwe—but owing to the departure of Pioneer's Managing Director in Zambia, this relationship was suspended and is now being renegotiated. Focus did hire its own actuary, but this was done outside of Musika support and with direct support by the IFC. **Additionality**: Musika accelerated Focus' entry into the WII market and thus, if we assume that Focus would have scaled-up once it entered the market, indirectly accelerated its decision to scale-up. **Outcome Contribution**: Musika support contributed indirectly to the Focus WII scale-up. Focus may have achieved this level of scale without Musika's support, but Musika's support appears to have been a contributor in getting Focus to this point so quickly.
Mayfair has invested its own resources in hiring new WII staff and has increased its own efforts to market WII and expand its customer base	Musika Mayfair Risk Shield	C	4	2	2	Mayfair has hired X additional staff to work on WII bringing the total number full-time and part-time WII staff to 5, including Agricultural Specialties Manager, Business Development Manager, Actuary and 2 support staff. Mayfair Is sending 3 of its WII staff to South Africa for training on WII. Mayfair has added the following WII customers on its own initiative: 700 client SHFs of the aggregators Manyika, Wings of Change, and Victor Series, 500 SHFs participating in a WFP WII pilot in Pemba district, 2,000+ SHFs participating in an FAO Seed Multiplication Project, and an unknown number of client SHFs of the aggregators Continental Ginneries, Alliance and Syngenta.

						Additionality: Musika accelerated Mayfair's entry into the WII market and thus, if we assume that Mayfair would have scaled-up once it entered the market, indirectly accelerated its decision to scale-up. **Outcome Contribution**: Musika support contributed indirectly to the Mayfair WII scale-up. Mayfair may have achieved this level of scale without Musika's support, but Musika's support appears to have been a strong contributor in getting Mayfair to this point so quickly.
Risk Shield has invested its own resources in hiring new WII staff and has increased its own efforts to market WII and expand its customer base.	Musika Risk Shield	C	3	3	3	**Additionality**: Musika was a primary motivator in Risk Shield's entry into the WII market. Thus even if we assume that Risk Shield would have scaled-up on its own once it entered the market; Musika played a key role catalyzing Risk Shield's decision to scale-up. **Outcome Contribution**: Musika was a primary motivator in Risk Shield's entry into the WII market. What expansion Risk Shield has been able to achieve since then owes directly to Musika's in this regard thus making Musika a strong contributor to this outcome.
NWK has delayed its intention to recruit members of the Zambian Cotton Ginnery Association (ZCGA) into a WII scheme.	NWK	R	2	1|2	1|2	During 2015-16, Focus collected K 1,600,000 in insurance premiums but was liable for claims of K 1,915,112, which significantly exceeded expected payouts. At the time of the endline fieldwork, Focus had yet to make payouts to NWK. In the meantime, NWK had to make the payouts to its client SHFs on the collection of the cotton harvest. Focus' problem stems from a liquidity problem resulting (depending on who tells the story) from its failure to purchase re-insurance or difficulty it had liquidating the investments it made with the NWK insurance premiums. Nonetheless, both NWK and Focus indicated that the payout was imminent and due to occur shortly after the completion of the endline fieldwork. The Chief Agriculture Services Officer at NWK had intended to recruit the ZCGA (which has over 350,000 members) to enlist in a WII scheme. However, due to issues related to the 2015-16 insurance payout, NWK has opted to wait until is has a "success story" to tell. He indicated, nonetheless, that he still intends to try recruiting ZCGA into the WII scheme. **Additionality**: If NWK does delay recruiting the ZCGA into a WII scheme, Musika had little to do with this outcome, which is entirely a function of internal issues at Focus that lie outside the scope of support received from Musika. If at some point NWK does recruit the ZCGA into a WII scheme, Musika accelerated NWK's entry into the market and thus, if we assume that NWK would have recruited the ZCGA once it entered the market, indirectly accelerated ZCGA's entry into the WII market. **Outcome Contribution**: If NWK does delay recruiting the ZCGA into a WII scheme Musika had little to do with this outcome, which is entirely a function of internal issues at Focus that lie outside the scope of support received from Musika. If at some point NWK does recruit the ZCGA into a WII scheme, Musika will have indirectly contributed to the investments made by ZNFU to recruit more participants in the WII scheme.

Contribution Story

Risk Shield, Focus and Mayfair have each increased their own-source investments in marketing and supplying WII since receiving support from Musika. These investments include the hiring of additional staff and the investment of time and resources to recruit new WII clients. These own-source investments have resulted in a scaling-up of the organizations' capacity and market outreach beyond that achieved, or achievable, under the terms of their relationships with Musika. In each case, Musika played an indirect role by, in the cases of Focus and Mayfair, accelerating their entry into the WII market and, in the case of Risk Shield, motivating its entry into the WII market.

Other factors influencing these outcomes include (1) the business initiative exercised by the three supported market actors independent of any support received by Musika, (2) demand-side market interventions by other market actors (principally donor organizations), (3) adverse rainfall patterns and (4) PIA rulings, which allow insurance companies and aggregators like NWK to bundle WII with life insurance productions, particularly (so far) credit life insurance. The latter two of these other factors helped increase the market demand for WII, thereby facilitating the supported organizations' expansion plans and outcomes by creating a supportive environment for the expansion decisions made by the supported organizations and the results of those expansion decisions. Without the supported organizations efforts on the supply side, moreover, there is no evidence to suggest that capacity would necessarily have existed in the market at this point in time to meet any potential increase in demand for WII, and the supported organizations entry into the WII market were either accelerated or primarily motivated by Musika. (FSDZ claims that in the absence of Musika, it would have assumed Musika's role, but this is by no means certain and thus counts only as a speculative counterfactual.)

Overall, the primary factor contributing to the supported organizations' own source investment appears to be their own business initiative. Musika likewise has played a strong contributory role by getting them to the point where they could exercise this business initiative, particularly at this point in time, other demand-side initiatives by other donors has played a supporting contributory role.

Causal Package

Primary Contributor: Supported organizations' own business initiative

Strong Contributor: Musika supply-side support

Contributor: Other donors demand-side initiatives

Facilitating Contributor: Favorable market environment conducive to the growth of the WII market in Zambia

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika WII intervention was a likely necessary component of the causal package

Assumption 1: Rainfall patterns demonstrate value of WII to SHFs

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
Poor rainfall patterns during 2015-16 have resulted in payouts to SHFs for each WII scheme currently being offered in the market by Musika-supported market actors.	Musika Risk Shield Focus Mayfair	C	4	Payouts have demonstrated to farmers the value of purchasing WII. In many cases, SHFs received payouts compensating them for a good share of losses incurred due to poor rainfall during the 2015-16 growing season. Anecdotal evidence suggests that, where payouts were made, SHFs acknowledged the benefits of the WII coverage.
Some of the SHFs in existing WII schemes received small or token payments that failed to compensate them for losses incurred.	Mayfair Manyika	R	3	Satellite rainfall data does not always match what occurs on the ground, at least from the SHFs' perspectives. This is known as 'basis risk.' Satellite data covers a particular geographic location (e.g., 20 kilometer radius) and determines payout amounts based on the average rainfall and estimated loss in that geographic location. The amount of rainfall, and estimated loss incurred, within that geographic location may vary, depending on the existence of 'micro-climates' and uneven rainfall patterns. Thus the situation may occur when one farmer receives less rain, and incurs more loss, than a neighboring farmer located in the same geographic location. Or, in other cases, average rainfall may be at or above 'normal,' but its distribution across the time period is irregular (e.g., heavier rains at the beginning of the period coupled with light rains during the rest of the period), resulting in a less than 'ideal' rainfall pattern and subsequent crop loss. In cases where the satellite data indicates more or less normal rainfall, but where farmers occur crop loss due to sub-optimal rainfall, disputes arise between the farmers/aggregators and the insurance company/Risk Shield. In such cases, the insurance company may make a 'token' payment to appease SHFs, but which fails to come close to covering losses. Mayfair claims to have made such token payments for the 2015-16 growing season. Manyika, which provided WII to its client SHFs, confirmed that this occurred in its case.
SHFs participating in the WII schemes being offered by NWK (through Focus) and ZNFU (through Focus and Mayfair) have yet to receive payouts.	Musika Focus Mayfair NWK	R	3	During 2015-16, Focus collected K 1,600,000 in insurance premiums but was liable for claims of K 1,915,112, which significantly exceeded expected payouts. At the time of the endline fieldwork, Focus has yet to make payouts to NWK. In the meantime, NWK had to make the payouts to its client SHFs on the collection of the cotton harvest. Focus' problem stems from a

				liquidity problem resulting (depending on who tells the story) from its failure to purchase re-insurance or that it invested the premiums and was having difficulty liquidating the investments in a timely manner. Nonetheless, both NWK and Focus indicated that the payout was imminent and due to occur shortly after the completion of the endline fieldwork. Due to internal problems related to the ZNFU corruption scandal, it has yet to settle WII claims for 2015-16. For the same reason, whether and the extent to which is continues offering WII to its client SHFs during 2016-17 is uncertain at this time.
The market's capacity to manage basis risk has improved over time but there still remain critical capacity/resource gaps.	Musika Risk Shield Focus Mayfair NWK Manyika	C	3	Musika's support has played a key role in developing supported market actors' capacity to manage basis risk, particularly in terms of its support to Risk Shield, which monitors and reports rainfall data, and capacity building provided to Focus and Mayfair. It is expected that other donor support to the market will further improve the market's capacity to manage basis risk; for example, the IFC's support to Focus, Mayfair, AON and PIA to attend the WII workshop in South Africa. However, market actors interviewed for the endline agree that additional resources are needed within the sector to develop cost-effective methods to conduct field verifications, while keeping the verification costs of WII low, which is one of the primary benefits of WII relative to multi-peril indemnity insurance. Nor is it clear how field verification costs should be allocated among different market actors, with no actor being in a position at present to bear the full cost of field verification. Thus, there is also general agreement among current market actors that further donor financial and other support is needed in this area.

Conclusion

The assumption is valid. Rainfall patterns have guaranteed that WII schemes paid out claims to participating SHFs, which has helped demonstrate to SHFs the benefits of WII. However, the two cases of late payment may have adversely affected, or may yet adversely affect, SHFs attitudes towards WII. In the case of Focus and NWK, it appears that NWK has already paid out the claims to its SHF clients along with the payment for goods sold and thus it is NWK that is awaiting payment not the SHFs. NWK is a relatively large aggregator in Zambia and, if this outcome sours NWK towards WII in the future, the market impact might be significant. Fortunately, however, NWK intends to continue offering WII to its client SHFs, although it may grow its coverage more slowly due to its recent experience than might otherwise have been the case. Precise information on how the ZNFU corruption scandal has affected ZNFU's payout under the WII scheme it has with Focus and Mayfair is lacking, as is how it may affect ZNFU's plans for future WII coverage. Notwithstanding these two outcomes, on balance the rainfall patters are judged to have strengthened demand among SHFs for WII and do not as of yet appear to have dampened either the insurance companies' or aggregators' plans to offer WII, although again in NWK's case, immediate expansion plans have been scaled-back.

Assumption 2: WII is profitable for insurers and priced affordably for SHFs

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
Both Focus and Mayfair have yet to earn a profit from offering WII.	Focus Mayfair	R	3	Given the low per unit premium earned on WII, significant scale is required to earn a profit on offering it. Estimates about the scale required differ. ZISC, for example, estimates that 200,000 clients are required to earn a profit on WII. Focus General estimates that it would have broken even during 2015-16 covering 52,000 SHFs had rainfall patterns been more favorable.
According to Risk Shield, the WII market is close to and poised to pass the break-even point perhaps as early as next year.	Risk Shield	C	2	Risk Shield estimates that the market requires a premium value of $700,000 and coverage of 100,000 SHFs, divided between 2-3 insurance companies, to pass the breakeven point. During 2015-16, the WII market collected $400,000 in premium payments spread across about 60,000 SHFs and two insurance companies (Focus and Mayfair). There is a possibility that the market will exceed the breakeven point during 2016-17, particularly if the FISP e-voucher programme continues to incorporate WII in the expansion of the e-voucher programme from 13 districts and 241,000 SHFs to 39 and 641,000 SHFs. Musika hopes to increase WII coverage under e-voucher scheme to 100,000 SHFs.
Development of the WII market is occurring during the worst drought in Zambia over the last 35 years thus resulting in higher than average payouts and affecting short-term profitability of WII.	Musika Risk Shield Focus Mayfair	R	4	The drought is a two-edged sword. On the one hand, it increases payouts, thus reducing profit, for insurance companies, while simultaneously demonstrating the value of WII to SHFs. The unusual weather patterns experienced during the WII pilot phase thus cannot be used to predict the long-term viability of WII covering, alternately, periods of low, normal and high rainfall. For example, Focus says it would have earned a profit on its WII had 2015-16 been a more 'typical' rainfall year.
WII premiums appear so far to be appropriate, although in some cases have been subsidized by Musika.	Musika Risk Shield Focus Mayfair	C	2	For the FISP e-voucher pilot, the premiums were K 70 per lima, with Musika paying K 35 and the farmers paying K35.

PIA has drafted and submitted to the Ministry of Justice proposed regulations governing the microinsurance sector. The proposed regulations, however, have yet to be submitted to Parliament and it is not known when they will be.	Focus Mayfair FSDZ PIA NWK	C	4	Currently, there is no legal recognition or definition of 'microinsurance' In Zambia. Current laws prohibit insurance companies from offering bundled long-term/life insurance and short-term/non-life insurance (e.g., WII) insurance. The proposed regulations would, presumably, define microinsurance and stipulate the conditions in which it can bundle life and non-life policies. In the meantime, PIA is allowing insurance companies to offer non-life with short-term life insurance, as long as the policy is for no more than one season. So far, only credit-life policies have been bundled with WII; PIA does not yet allow life insurance to be bundled with other general insurance products. Regulations regarding the bundling of life and non-life products are critical in the context of WII as life insurance offers a more predictable payout structure along with a higher per unit margin than does WII, while allowing insurers to diversify their risks. Thus, by allowing insurance companies to bundle WII and credit-life insurance, the PIA ruling increases the likelihood that insurance companies can earn a profit form offering WII.

Conclusion

It is too early to conclude whether this assumption is valid. As of now, WII is not a profitable insurance product for insurers. Overall, however, the signs are positive that the assumption will prove to be valid over time.

The most positive sign is Risk Shield's estimate that the WII market is nearly the breakeven point with potential to surpass it in the coming year, including by a substantial margin if the hoped-for expansion of WII under the FISP e-voucher scheme occurs, although this surpassing the market-wide breakeven point does not necessarily depend on significant scale-up of WII under FISP. Another positive sign is the progress both Focus and Mayfair are making toward the level of coverage each estimates is required to earn a profit on WII. Yet another positive sign is that despite higher than expected payouts during 2015-16, and failure to achieve profitability, both Focus and Mayfair unequivocally assert their long-term commitment to the WII market, having invested a non-trivial amount of their own resources in hiring staff and growing their market. Risk Shield as well appears permanently established in the Zambian WII market (or at least with the intention of remaining permanently in the market). Thus, the short-term hit to profits caused by the ongoing drought to not appear on balance to have adversely affected the long-term growth prospects in the Zambian WII market. Finally, the temporary PIA ruling allowing the bundling of life and non-life policies (e.g., WII with credit-life insurance), in anticipation of a formal regulation allowing the same, is a way to boost the profitability of WII and contribute to its expansion (e.g., by making it a more attractive product for insurance companies and aggregators).

As for the appropriateness of WII pricing, the evaluation team was unable, for scheduling and logistical reasons, to meet with SHFs during the endline evaluation fieldwork to assess their experience with WII. However, none of the other market actors involved with the Musika-supported WII schemes noted that farmers were, in general, discontented with the current WII pricing structure. To the extent there was discontent, it had more to do with payouts associated with on the ground perceptions that were inconsistent with the average satellite rainfall data (basis risk).

Assumption 3: Women benefit similarly to men

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The Musika ATS intervention includes no aspects designed specifically to benefit women.	Musika Risk Shield Focus Mayfair NWK ZNFU AON Manyika	R	4	WII affects women and men equally. The WII providers have no policies specifically to target women farmers, nor, however, does the WII product include any elements that favor women over men or vice versa. The relative benefit to women and men depends on their level of involvement in the crops covered by the WII.

Conclusion

This assumption is valid. While the WII product design does not include elements targeted specifically to women, and neither to date do the insurance companies or aggregators specifically target women, women will benefit equally to men from participating in a WII scheme to the extent they are involved in producing the crops covered by the WII schemes.

Assumption 4: Government policies support development and growth of weather index insurance market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
PIA is working with its Technical Advisory Group (TAG) to formulate a national microinsurance strategy under 3 pillars: (1) enabling environment, (2) capacity building, and (3) demand stimulation.	Musika FSDZ PIA	C	4	TAG is facilitated by FSDZ and includes representatives from the Insurance Association of Zambia, Brokers Association, MFI Association, and Bank of Zambia. Musika has not participated in the TAG nor in the drafting of the proposed microinsurance regulations.
PIA has drafted and submitted to the Ministry of Justice proposed regulations governing the microinsurance sector. The proposed regulations, however, have yet to be submitted to Parliament and it is not known when they will be.	Focus Mayfair FSDZ PIA NWK	C	4	Currently, there is no legal recognition or definition of 'microinsurance' In Zambia. Current laws prohibit insurance companies from offering bundled long-term/life insurance and short-term/non-life insurance (e.g., WII) insurance. The proposed regulations would, presumably, define microinsurance and stipulate the conditions in which it can bundle life and non-life policies. In the meantime, PIA is allowing insurance companies to offer non-life with short-term life insurance, as long as the policy is for no more than one season. So far, only credit-life policies have been bundled with WII; PIA does not yet allow life insurance to be bundled with other general insurance products. Regulations regarding the bundling of life and non-life products is critical in the context of WII as life insurance offers a more predictable payout structure along with a higher per unit margin than does WII. Thus bundling WII with a credit-life policy, such as what NWK is already doing, is a way to boost the profitability of WII and contribute to its expansion (e.g., by making it a more attractive product for insurance companies and aggregators). Premium collection one of biggest challenges in WII, which is why working through aggregators – the common practice at present – offers a cost-effective solution to this

				challenge. Another possible cost-effective solution is to offer WII, and other microinsurance products, via digital/mobile platforms. It is thus important that the PIA microinsurance regulations address distribution channels for microinsurance, including WII, as well.
The Government of Zambia's economic policy emphasis on diversifying from copper mining to agricultural production facilitates an environment in which different state and non-state actors can look for ways to promote growth in agricultural production (including fish production).	Musika FSDZ PIA	C	3	In this climate, donor organizations are in turn focusing on issues of climate change and food security, both of which are addressed by WII.

Conclusion

The assumption is valid to date. Government policies have created a reasonably favorable environment for the establishment and growth of the WII market. The policies have provided insurance companies and aggregators the flexibility to design and offer WII products that satisfy market demand, while also allowing them to diversify risk and increase profits via bundling life and non-life policies. However, a permanent legal solution to this issue that clarifies all relevant details of the microinsurance sector is preferred over the existing temporary solution. This applies not only to WII but also to other forms of microinsurance, which can either be bundled with WII or offered as stand alone products, such as crop yield insurance, insurance for fish pond producers, and to distribution mechanisms as well, including the offering of WII and other microinsurance products over digital/mobile platforms.

Assumption 5: Over the long-term, climate volatility does not lead to regular claims that push insurance premiums to unaffordable levels

Conclusion

There is to date no evidence basis to determine whether this assumption is valid or invalid. It will require several years still for enough evidence to be accumulated to assess this assumption.

Annex 8: Contribution Analysis ATS

CONTRIBUTION ANALYSIS OF THE MUSIKA ATS AGRO INTERVENTION

Outcome 1: Reduced poverty

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's ATS Agro intervention is contributing to reduced poverty among SHFs.	N/A	N	1	1	1	The evaluation methods were not appropriate to measure changes in SHF poverty levels. It is, moreover, too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of the Musika ATS Agro intervention. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether the poverty status among affected SHFs has changed since the beginning of the Musika ATS Agro intervention. In addition, there are a large number and wide variety of other potential factors, aside from the Musika ATS Agro intervention, that affect changes in SHFs' poverty status. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in SHF poverty status relative to the Musika ATS Agro intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 2: Smallholder farmers increase income

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's ATS Agro intervention is contributing to increased on-farm or household income among SHFs.	SHFs Other	N	1	1	1	The evaluation methods were not appropriate to measure changes in on-farm or household income. It is, moreover, too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of the Musika ATS Agro intervention. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether on-farm or household income among affected SHFs has changed since the beginning of the Musika ATS Agro intervention. In addition, there are a large number and wide variety of other potential factors, aside from the Musika ATS intervention, that affect changes in SHFs' income. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in SHF poverty status relative to the Musika ATS Agro intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 3: Smallholder farmers increase on-farm yields

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is limited anecdotal evidence that SHFs have improved their yields, or more generally on-farm performance, as a result of inputs purchased and/or extension training received from ATS Agro.	SHFs Other	N	1	1	1	The Musika ATS Agro intervention in Northern Province is relatively new with the SSP network only relatively recently mobilized such that it has yet to operate during the primary growing season. To date, the SSPs have mostly been involved selling and spraying herbicides for household vegetable gardens. A small handful SHFs with vegetable gardens interviewed during the endline claimed to have experienced increased vegetable yields as a result. These, however, were too small a sample to draw even any tentative conclusions. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*
Overall, there was insufficient evidence to conclude whether and how Musika's ATS Agro intervention is contributing to increased on-farm yields.		N	2	1	1	The causal linkages between the increased use of agro-inputs (including herbicides) and increased on-farm yields are well understood by ATS and other agro-input dealers and SHFs. In particular, the former can cite evidence based on experience, which demonstrates clearly this linkage. Nonetheless, it is too early in the intervention cycle to observe any changes in on-farm yields that may be occurring as a result of Musika's ATS Agro intervention. The evaluation methods, moreover, were not well suited to measure this outcome in any case. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

There exists anecdotal evidence suggesting improved on-farm yields resulting from SHFs' interactions with ATS, although these could not be verified. In addition, there are a large number and wide variety of other potential factors aside from the Musika ATS Agro intervention that affect changes in on-farm yields. These factors are mostly unaccounted for by the evaluation methodology. Overall, however, contribution claims related to on-farm yields are more credible, all else equal, than contribution claims related to changes in on-farm or household income or household poverty status, as the causal effects from input usage to improved yields is more direct and with fewer potentially confounding factors. Thus, to the extent beneficiary farmers are (1) increasing input usage as a result of ATS outreach and extension efforts and (2) increasing on-farm yields, then it is reasonable to claim some contribution for Musika/ATS. This conclusion includes two caveats: (1) the wholly anecdotal nature of the evidence and (2) the uncertainty as to the extent ATS' outreach and extension efforts were facilitated by Musika or the result of its own business initiative.

Causal Package

Contributor: ATS' own business initiative; Musika ATS Agro intervention; Other unknown factors (e.g., other farmer cultivation practices, weather conditions)

Sufficiency & Necessity

The causal package was so far insufficient to increase on-farm yields (this might change after the conclusion of the following production season)
The Musika ATS Agro intervention was a likely necessary component of the causal package

Outcome 4: Demonstration effect encourages other SHFs to copy practices adopted by Musika/ATS Agro assisted SHFs

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
According to key informants, SHF demand for agro-inputs in Northern Province is growing owing to a variety of factors, but which do not including copying the behavior of ATS-assisted SHFs.	Musika ATS	R	3	1	1	SHF demand for agro-inputs is, by all accounts, growing rapidly in the province. Some key informants note, moreover, that SHFs are, at an increasing rate, treating farming as a business, which implies a desire to increase on-farm performance as means to generate household income. Factors contributing to this outcome include the set following: • Depletion of the fish stock due to overfishing, which is leading SHF households to put more emphasis on farming as both a food security and livelihood activity. • Government of Zambia (GoZ) policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and certification of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. • Improved road infrastructure, which reduces the time and cost to transport goods to the North from major commercial centers (e.g., Lusaka). There is, however, no evidence observed by the evaluation team or cited by key informants suggesting that the increased demand for agro-inputs is a result of non-assisted farmers copying the practices (e.g., increased agro-input usage) of those SHFs benefitting from the Musika and ATS Agro collaboration. ***Additionality**: There is no evidence of SHF copying and thus no evidence for additionality by Musika/ATS Agro.* ***Outcome Contribution**: There is no evidence of SHF copying and thus no evidence for any*

						outcome contribution by Musika/ATS Agro.

Contribution Story

SHFs in Northern Province do appear to be increasing their use of agro-inputs, but there is no evidence linking this change to a copying phenomenon in which non-beneficiary SHFs copy behavior observed in beneficiary SHFs. Rather there appear to be a number of factors contributing to this growth. Most of these lie outside of Musika's support to ATS Agro and include the transition in Northern Province from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Northern Province a natural, yet untapped, center of agricultural production; and favorable government policies.

Causal Package

Contributor: Favorable market environment conducive to the growth in SHF demand for agro-inputs

Sufficiency & Necessity

The causal package was insufficient to produce a copying effect among non-beneficiary SHFs

The Musika ATS Agro intervention was a likely unnecessary component of the causal package

Outcome 5: Market demand for agro-inputs in previously under-served markets increases (e.g., SHFs increase their purchases of agro-inputs)

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Herbicide significantly reduces the time and labour required to weed cultivated land, which is one of the primary constraints to agricultural production in Northern Province. By doing so, it also allows SHFs to increase the area of land	Musika ATS Seed Co SHFs	C	4	1	1	Northern Province enjoys relatively plentiful rainfall, and it has been less affected by the recent drought than many other provinces in Zambia. While on balance this is favorable for agricultural production, it means that weeds are a particular problem in the North. Key informants estimate that it can take one person a couple weeks or more or more to weed (using a hand-held hoe) 1 hectare. The prevalence of weeds, and the labour required to eliminate them, reduce both the per-hectare yield of planted land and the hectares number of

under cultivation. Both factors contribute to a significant demand potential for herbicides (ATS' primary product) in the Northern Province. Up until Musika's ATS intervention, however, this demand has been largely latent without a mechanism to trigger or fulfill it.						hectares planted. The use of herbicides can reduce the amount of time required to clear a hectare of land to 1-2 days and increase yields by 2-5 fold. For example, key informants estimate that the average maize yield to be 20-40 90 kg bags per hectare. By using improved seeds and applying herbicides, yields can increase to as much as 20-40 90 kg backs per hectare. The benefits to SHFs of using herbicides are reasonably clear (or at least the case for herbicides can be reasonably clearly demonstrated). What has been largely lacking in the market prior to ATS is a mechanism to generate awareness of these benefits, thereby transforming latent demand into actual demand, and to fulfill the demand once actualized. ***Additionality**: While ATS is taking advantage of the favorable growing conditions in Northern Province to sell its herbicide and other agro-inputs, they exist independent of Musika's ATS intervention.* ***Outcome Contribution**: While ATS is taking advantage of the favorable growing conditions in Northern Province to sell its herbicide and other agro-inputs, they exist independent of Musika's ATS intervention.*
The expansion of the FISP e-voucher scheme is expected to lead to a significant growth in the demand for agro-inputs in Northern Province.	DACO ZNFU	C	3	1	1	FISP has been operating in the Northern Province since 2002; however, it has been plagued by administrative problems related to, for example, inaccurate targeting and lax controls in creating farmer lists (e.g., prevalence of 'ghost' farmers on the list who did not exist). The FISP e-voucher is intended to address these and other problems. On the demand side, farmers are provided a card with a certain amount of money on it, which they can use at certified agro-input dealers to purchase inputs. Unlike in the past farmers can use the card to purchase a wide variety of agro-inputs (e.g. livestock feed) consistent with the GoZ's objective to diversify the agro-input market. ***Additionality**: There is no additionality. This outcome is independent of the Musika ATS intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika ATS intervention.*
Late payments by FRA have made it harder for SHFs to purchase agro-inputs for the 2016-17 growing season.	Musika ATS SHFs	R	2	1	1	The FRA purchased maize from farmers in July-August and, as of the evaluation endline, had still not paid for the maize. ***Additionality**: There is no additionality. This outcome is independent of the Musika ATS intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika ATS intervention.*
The creation of ATS' distribution network offers the potential to transform the latent demand for	Musika ATS	C	3	3	3	Market conditions, which are necessary to actualize the latent SHF demand for herbicides and other agro-inputs, include the following:

herbicides and other agro-inputs into actualized demand along with a distribution system to fulfill this demand once actualized.	DACO SHFs					• Sensitization on the benefits of herbicides/inputs and training (extension) in their use. • Distribution system to match supply to demand and also to reduce the transaction costs of purchasing the herbicides/inputs. Notably, the ATS distribution network is designed to generate each of the above market conditions. ***Additionality**: ATS is one of a few agro-inputs dealers in Northern Province that is working to create the market conditions under which the demand for agro-inputs can grow (others include, for example, Seed Co, Pioneer and MRI). Among these, it has the largest network for actualizing SHF demand with Musika acting as a catalyst for its creation.* ***Outcome Contribution**: To the extent that ATS is able to actualize SHF latent demand for herbicides and other agro-inputs, the Musika intervention, and in particular its SSP network, will be an important contributor to this outcome along with ATS's own initiative to expand its distribution network via own-source investments and strategic partnerships with other agro-input dealers.*
By reducing the labour required to weed fields, herbicide usage frees up SHFs to cultivate larger plots of land leading to greater demand for agro-inputs.	Musika ATS Seed Co SHFs	C	3	3	2	SHF access to arable land is generally not a binding constraint in Northern Province. Rather, it is the time required to weed that imposes constraints on SHFs by limiting the amount of arable land they can cultivate. Numerous key informants observed that herbicide usage frees up SHFs to cultivate more land thereby increasing the demand for herbicides and other agro-inputs. SHFs confirmed these observations, as the following quotes illustrate. "We incurred a lot of losses, sometimes we would buy expired chemicals. We are now taught how to use chemicals. Herbicides have reduced the time we spend on weeding, and we can now spend more time on our gardens." "Before we used a hand hoe for weeding. We are now able to grow vegetables like tomatoes, which previously we could not grow due to tomato diseases and pests. We are now growing greater variety of vegetables. Gardening has been made easier by use of herbicides. This gives us confidence to grow other field crops like maize." "I have increased the area under vegetables. I can easily earn K 1,000 through vegetable sales by increasing the size of my gardens." "Weeding is very labour intensive. The use of herbicides makes it easier and frees labour for other productive uses like expanding the area under cultivation and for women to attend to other home chores." Weeding also has an important gender dimension, as it is the women of the household who typically do most of the weeding. The use of herbicides thus frees up women from the drudgery of weeding freeing their time up for other productive, domestic or leisure pursuits. It also reduces the demands for children's labour in the fields.

						***Additionality**: Without the reduction in time and labour to weed, SHFs would not be in a position to expand the area under cultivation. Thus the Musika ATS intervention has helped catalyze this outcome.* ***Outcome Contribution**: To the extent the SHFs do increase the land under cultivation, leading in turn to higher demand for herbicides and other agro-inputs, the outcome will be a product of a variety of other factors as well, including the actual amount of arable land available, the types of crops planted, farmers' ability to pay for inputs, and degree to which SHFs use herbicides and other inputs on those lands. Thus, overall, the Musika ATS intervention is one of a number of contributing factors in this outcome.*

Contribution Story

The growing conditions in Northern Province, characterized by relatively good rainfall and abundant arable land, create favorable conditions for growing SHF demand for agro-inputs. In particular, the relatively wet climate creates conditions in which weeds grow prolifically in the fields. Weeding thus constitutes one of the greatest barriers to agricultural productivity and sources of labour demand in on-farm production, a cost that is disproportionately borne by the women of the household, and limits the amount of land SHFs can bring into agricultural production. Estimates put the reduction in labour requirements resulting from herbicide usage at anywhere from 1-3 weeks, depending on the size of the field. The benefits of herbicide usage are such that when exposed to them, SHFs manifest significant demand. In addition to this, the expansion of the FISP e-voucher scheme in the Northern Province is expected to contribute to a general increase in SHF demand for agro-inputs apart from Musika's ATS intervention. (This favorable market trend is counteracted somewhat by the late payments by the FRA, but the overall market trend is judged to be, on balance, highly favorable.)

Thus the conclusion is that there exists a significant latent demand for herbicides (and other agro-inputs), BUT that this latent demand remains un-actualized to date due to existing poor supply characteristics of the agro-input market, due in large part to a limited distribution network (along with information, training and extension) in the North. The distribution network created by ATS with Musika support, which is already the most extensive agro-input distribution network in Northern Province, offers potential to actualize the latent SHF demand for herbicides and other agro-inputs via the provision of information, training, extension services and accessible supply, which significantly reduces the transaction costs paid by SHFs to access agro-inputs. Musika was the primary motivator for the creation of the ATS SSP network and is a strong contributor to this outcome with further contributions by ATS' own business initiative and favorable market conditions.

Causal Package

Strong Contributor: Musika ATS intervention

Contributor: ATS business initiative Favorable market environment conducive to the growth in SHF demand for agro-inputs.

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika ATS intervention was a likely necessary component of the causal package

Outcome 6: Market supply of agro-inputs in previously under-served markets increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The primary economic activity in the Northern Province has traditionally been agriculture. Northern Province is being increasingly viewed as a center of agricultural production. As a result, the number of agro-dealers setting up shop in the Northern Province is increasing.	Musika ATS Seed Co Pioneer Jedo DACO ZNFU	N	4	1	1	Overall, there are about 36 agro-dealers operating in the Northern Province, up considerably from just a few years ago, and include most of the mainline agro-input companies operating in Zambia (e.g., Pannar Seed, Seed Co, Pioneer, MRI, Syngenta, Zamseed, Cropserve, Osho Agro, Yara, and Omnia). For example, three years ago, there were only an estimated 3 input dealers in Kasama, 0 in Mungwi and 0 in Kaputa. Now there are about, respectively, 21, 7 and 2. This outcome owes to a variety of factors, none of which are related to the Musika ATS intervention. These include the following: • Depletion of the fish stock due to overfishing, which is leading SHF households to put more emphasis on farming as both a food security and livelihood activity. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in the North, which necessitates the establishment and certification of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Northern Province a natural, yet untapped, center of agricultural production. • Presence of FRA satellite offices, which means that SHFs have a ready-made market for maize. • Improved road infrastructure, which reduces the time and cost to transport goods to the North from major commercial centers (e.g., Lusaka). ***Additionality**: There is no additionality. This outcome is independent of the Musika ATS intervention.*

						***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika ATS intervention.*
The expansion of the FISP e-voucher scheme is expected to lead to a significant growth in the supply of agro-inputs in Northern Province. The GoZ has, therefore, taken steps to identify, train and certify a relatively large number of agro-input dealers to meet the expected increase in demand.	DACO ZNFU	N	3	1	2	FISP has been operating in the Northern Province since 2002; however, it has been plagued by administrative problems related to, for example, inaccurate targeting and lax controls in creating farmer lists (e.g., prevalence of 'ghost' farmers on the list who did not exist). The FISP e-voucher is intended to address these and other problems. On the supply side, the Zambian Ministry of Agriculture and Livestock (MAL) is identifying a set of agro-dealers via a tendering process, training them and then certifying them to provide inputs under the e-voucher scheme. (Musika is assisting the GoZ with agro-dealer training in the North.) Selected agro-dealers are provided a point of sales machine, which is linked to the GoZ national payments system, which functions similarly to a credit/debit card terminal at a retail store. The MAL's target is to enroll approximately 22,721 of 90,000 SHFs in Kasama District into the FISP e-voucher scheme. Given that most agro-input dealers are located in population centers (e.g. lacking the type of distribution network ATS is seeking to create), the MAL is actively seeking out agro-dealers operating, or willing to operate, in marginal rural areas. To qualify under as a certified agro-dealer under the FISP e-voucher scheme, the agro-dealers must have a physical storefront (e.g. store or shed) and access to the mobile phone network. To date, the MAL has registered 36 agro-dealers in Kasama District. According to Jedo Commodities, "From this year going forward, any organization that does agriculture, will want to come to the Northern Province. Since there is no commercial farming in the North, the focus will be on the smallholder farmers." ***Additionality**: There is no additionality. This outcome is independent of the Musika ATS intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika ATS intervention.*
Notwithstanding positive trends in the Northern Province agro-input market, there remain significant challenges to growing the market.	Musika ATS Seed Co Pioneer Jedo DACO ZNFU	R	4	1	1	There remain a number of challenges to growing the agro-input market in the Northern Province. These challenges include the following: • Low level of awareness and adoption of 'modern farming practices.' SHFs in the North have had comparatively little exposure to modern farming methods, including the use of agro-inputs. • Poor rural road infrastructure. Despite improvements in the highway infrastructure connecting larger cities/towns, roads to rural communities remain poor and can be inaccessible during the rainy season. • Poor distribution outreach. Most agro-input dealers operate from storefronts in larger

						cities/towns and do not have distribution networks reaching marginal rural areas where the majority of SHFs live. • Lack of markets: Aside from FRA maize purchases, there are relatively few crop aggregators operating in Northern Province meaning that, in many cases, farmers do not have a ready market for their crops, or alternatively they are forced to sell at low prices at the farm gate to 'briefcase buyers' or to pay to transport their goods to market. • Market distortions created by 'rogue' agro-input sellers. Among agro-input dealers are dealers who move in and out of the market selling low-cost, inferior agro-inputs. The presence of these rogue agro-dealers distorts market supply by undercutting established, credible agro-dealers and market demand by creating false adverse perceptions among SHFS about the benefits of agro-input usage. • Poor legal/regulatory framework for agro-inputs. The Zambian Environmental Management Agency (ZEMA) is responsible for regulating the agro-inputs sector but has not done a good job of establishing and enforcing rules related to the sector, including registration of agro-businesses. A result of this is that the costs to market entry and exit are low, which contributes to the problem of rogue agro-input dealers. The ATS distribution and business model addresses each of the above challenges via its method of bringing information, product and service directly to SHFs via the SSP model and via strategic partnerships with Jedo and other agro-input firms (Seed Co, Pioneer and Omnia). ***Additionality**: There is no additionality. This outcome is independent of the Musika ATS intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika ATS intervention. However, Musika's ATS intervention has potential to address and overcome many of the existing market constraints to growing the agro-input market in Northern Province.*
ATS has significantly increased its sales and outreach in the province and is creating a distribution network with potential to scale-up its sales and outreach by large multiples over the coming years.	Musika ATS Seed Co Pioneer Jedo	C	3	4	3	From a baseline of essentially zero prior to the Musika intervention, ATS has established field offices in Mpika, Kasama, Mbala and Isoka, trained and supported 20 SSPs and (soon) an additional 100 sub-SSPs, and entered into strategic partnerships with Seed Co, Pioneer Seed, Omnia Fertilizer and Jedo Commodities. To date, ATS estimates that SSPs have trained over 10,000 farmers. Over the next several years, ATS hopes to reach over 300,0000 farmers in Northern Province via the distribution network it has set up with Musika assistance. During the recent off-season, ATS estimates that SSPs sold over 7,000 liters worth K 580,000 (£48,000) of herbicide and other agro-chemicals to SHFs operating home vegetable gardens over a three-month period. ATS further estimates that during the 2016-17 cropping season, each SSP operating at full capacity can sell up to about K 20,000 (£1,600) per month across the

						entire network, assuming each reaches 2,000 SHFs who purchase an average of 2 liters each. ***Additionality**: Musika catalyzed ATS' decision to enter the Northern Province and was a primary motivator in ATS' decision build its distribution network via the SSP model. The idea for the SSP model was a particularly important contribution by Musika, in addition to such things as motorbikes for field staff, storage containers, training and other support for SSPs (e.g., knapsack sprayers, protective clothing and bicycles), which ATS would not have implemented on its own accord, even though it might have entered the Northern Province at some later date and in a much scaled-down manner.* ***Outcome Contribution**: Musika had no influence over the emergence of those factors making the Northern Province a potential agricultural production center. However, it was an important contributor, along with ATS' own business initiative, to the growth in the supply of agro-chemicals within the distribution network created by ATS, which is already the largest distribution network of any agro-input dealer in Northern Province.*

Contribution Story

The agro-input market in Zambia's Northern Province is has been growing at a moderate to significant rate in recent years and has potential to grow at an even greater rate in the near future owing to a number of favorable factors, including: the transition in Northern Province from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Northern Province a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme, which requires a network of certified agro-dealers to meet the anticipated increase in SHF demand for agro-inputs; and the presence of FRA satellite offices, which creates a ready-made market for maize production.

Notwithstanding, there remain potential confounding factors, which may together contribute to slower market growth than potential. These factors include low levels of awareness and implementation among SHFs of modern farming practices, including input usage; the continued concentration of agro-input dealers in large cities with limited outreach to marginal rural communities; a poor road system serving marginal rural communities; lack of ready markets for certain agricultural products (as evidenced in part by the relative absence of for-profit commodity aggregators); supply-side and demand-side market distortions caused by the market entry and exit of rogue agro-dealers; and a poor regulatory framework, particularly related to agro-business registration requirements.

Factors indicating favorable prospects for market growth, however, appear to outweigh the unfavorable prospects for market growth by a significant degree indicating that, on balance, the prospects for growing the agro-input market in Northern Province are highly favorable.

The above contributory factors have created an environment in which ATS' unique marketing/distribution strategy can flourish, and early indications are that the distribution strategy has already achieved significant outcomes, in terms of SHF outreach and sales during the agricultural off-season, and is poised (if all goes well) to reach tens of thousands of SHFs selling tens of thousands of pounds worth of herbicides and other agricultural inputs (e.g., seeds and fertilizer). Thus, while the overall prospects for market growth are influenced by the favorable factors identified here, Musika has contributed directly to the growth (and potential growth) in the agro-input market in Northern Province via its support to ATS to conceive of and create and build what is now the largest agro-input distribution network in Northern Province.

Causal Package

Strong Contributor: ATS' own business initiative

Contributor: Musika support

Facilitator: Environmental conditions, which are having the effect of transforming Luapula into a potential agricultural production center

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika ATS intervention was a likely necessary component of the causal package

Outcome 7: Demonstration effect encourages other market actors to crowd-in the agro-input market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Up until a few years ago, there were relatively few agro-input dealers operating in the Northern Province. However, an increasing number of agro-dealers are beginning to enter the Northern Province. Notwithstanding, the entry of agro-input dealers into Northern Province appears to be driven by a variety of other factors unrelated to Musika's intervention with ATS in Northern Province.	Musika ATS Seed Co Pioneer DACO ZNFU	R	3	1	1	Three years ago there were only an estimated 3 agro-input dealers in Kasama, 0 in Mungwi and 0 in Kaputa. Now there are about, respectively, 21, 7 and 2. Agro-input dealers now operating in the North include most of the mainline agro-input companies operating in Zambia, including, for example, Pannar Seed, Seed Co, Pioneer, MRI, Syngenta, Zamseed, Cropserve, Osho Agro, Yara, and Omnia Fertilizer. It is difficult to pinpoint one or a couple of primary factors driving the increase in agro-input dealers in Northern Province. Rather there appear to be a number of factors exerting varying (but undetermined) levels of influence. These factors include the following: • Transition in the North from a predominantly fishing-based economy to a more agricultural-focused economy, as many of the predominant fisheries in Northern Province are becoming over-fished. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in the North, which necessitates the establishment and registration of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Northern Province a natural, yet untapped, center of agricultural production. • Presence of FRA satellite offices, which means that SHFs have a ready-made market for maize. ***Additionality**: The agro-input dealers entering and operating in the Northern Province likely would have done so and in the same timeframe irrespective of Musika's intervention with ATS.*

						***Outcome Contribution**: The supply growth in the agro-input market in Northern Province is proceeding apace irrespective of Musika's intervention with ATS.*
Among those agro-input dealers entering and operating in Northern Province, none have so far set up a distribution network reaching out to marginal rural areas similar to what ATS is doing with Musika support.	Musika ATS Seed Co Pioneer DACO ZNFU	R	3	1	1	The distribution model developed and being implemented by ATS with Musika support – creating an agent network of spray service providers (SSPs) in marginal rural areas together with farmer training and demonstration plots – has not been replicated (in any form) by other agro-input dealers in Northern Province. While some agro-input dealers have established supply/distribution depots in rural areas (e.g., Seed Co, Pioneer and MRI) and do demonstration plots (e.g., Pioneer, Seed Co, MRI, Zamseed), none has established an agent network that are located and operate in marginal rural areas. Rather, the prevailing business model is to locate distribution outlets (stores) in population centers (e.g., Kasama, Mbala, Luwingu). ***Additionality**: As no other agro-input dealer appears to have replicated the ATS distribution model to date, there is no additionality.* ***Outcome Contribution**: As no other agro-input dealer appears to have replicated the ATS distribution model to date, there is no outcome contribution.*
Other agro-input or agro companies have approached ATS about possible collaboration in Northern Province. These include Zambeef, MRI, Pannar Seed, DK Seed, and various livestock companies.	Musika ATS	C	2	1	1	This is largely anecdotal evidence without any specifics provided. None of these possible collaborations have come to fruition nor is it known whether they will come to fruition. To the extent other agro companies are approaching ATS about possible strategic collaborations, it does indicate that the knowledge of ATS' activities in Northern Province is spreading with potential for a demonstration effect via growth in/replication of ATS' business model. ***Additionality**: If these inquiries about possible collaborations bear fruit, then Musika would arguably play a catalyzing role given the critical role Musika played catalyzing ATS' decision to enter the Northern Province. To date, however, nothing of substance has happened, so there is no additionality.* ***Outcome Contribution**: If these inquiries about possible collaborations bear fruit, then Musika would arguably play contributory role in growing the agro-input market in Northern Province via strategic partnerships. To date, however, nothing of substance has happened, so there is no outcome contribution.*

Contribution Story

There is no evidence that a demonstration effect has occurred, either in terms of inducing other agro-input dealers to enter the Northern Province or in terms of inducing attempts to replicate (or adapt) the ATS distribution model to reach SFHs located in underserved, marginal rural areas. Rather, it appears that other factors are driving market entry and market growth in Northern Province, all having to do with more general factor in the broader natural, political and economic environment. These factors include: the transition in Northern Province from a fishing-dominant economy to one increasingly focused on agricultural production; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Northern Province a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme, which requires a network of certified agro-dealers to meet the anticipated increase in SHF demand for agro-inputs; and the presence of FRA satellite offices, which creates a ready-made market for maize production.

Causal Package

Contributor: The evidence does not allow a parsing out of relatively more or less important factors driving entry and growth in the Northern Province agro-input market. Several factors in the broader environment appear to be contributing to this outcome.

Sufficiency & Necessity

The causal package was sufficient to induce entry and growth in the Northern Province agro-input market by non-supported agro-input dealers, but it was but insufficient to induce entry and growth in the Northern Province agro-input market due to a demonstration effect of Musika's ATS Agro intervention.

The Musika ATS intervention was a likely unnecessary component of the causal package.

Outcome 8: ATS scales-up its distribution network

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Prior to its work with Musika, ATS had only office in Northern part of Zambia in Mpika. With Musika support, ATS has since set up a distribution network in Northern Province consisting of a distribution hub in Kasama, branches in	Musika ATS	C	4	3	2	Before its work with Musika, ATS did not see the business sense in investing in a distribution network in Northern Province. Its only established presence in the Northern part of the country was a branch office in Mpika, Muchinga Province. From ATS' perspective, the biggest limiting factor to setting up shop in Northern Province was the cost involved in getting its product to end users, including both the cost to transport

Mbala, Mpika and Isoka, and an agent in Mansa.						products large distances overland to the North and the cost to hire new staff, purchase vehicles and motor bikes and establish distribution offices and depots. According to ATS, "We only have small resources, so we have to be very careful. We need to get there in a controlled manner. It is dangerous and very expensive to expand too fast." ATS credits Musika support with enabling it to expand its operations and set up its existing distribution network, in Northern Province, "With the help of Musika, we have managed to get to more marginal areas. ATS is a small local company, it would not have created its distribution network without Musika help, or it would only have done so on a small scale years down the line." Currently, 80% of ATS' business is with larger, commercial farmers. ATS, however, stresses that the commercial market is very crowded, and it thus has relatively little growth opportunity. Instead, it sees the major growth opportunity in serving the SHF market. ATS' work with Musika has been instrumental in helping it develop a business model for targeting/serving the SHF market. ***Additionality**: ATS probably would not have likely invested in establishing a distribution network in Northern Province without Musika support. If it had gone to the North, it would have done so much later and at a much smaller scale. Thus Musika is judged to have played an important catalytic role in this outcome.* ***Outcome Contribution**: Once located in Northern Province, ATS has expanded its network via the SSP network, its own investments and via strategic partnerships with out agro-input dealers, some of which Musika facilitated (e.g., Jedo Commodities) and some of which were done via ATS' own initiative (e.g., Seed Co and Pioneer) or via the initiative of other organizations (e.g., Omnia). The initial and ongoing support provided by Musika, however, has also played a contributory role to this outcome.*
With Musika support, ATS has established an SSP network in Northern Province consisting of X SSPs and X sub-SSPs with potential over time of reaching hundreds of thousands of SHFs.	Musika ATS	C	4	4	4	To this point, Musika and ATS have selected and trained 20 SSPs. SSPs are 'lead farmers' or individuals (all males) of good standing within the community who are already a bit more advanced in terms of their farming practices and production. Each SSP receives training provided by Musika and ATS on input usage and sales/marketing practices in addition to a knapsack sprayer, protective clothing and a bicycle, again provided by Musika. SSPs purchase inputs from ATS at a 10% discount, which they then sell to farmers in their assigned catchment areas and, for those farmers who need it, also provide spray services using their knapsack sprayer. (ATS' main product is the herbicide 'Scorpion,' which constitutes the large bulk of ATS sales in Northern Province.) SSPs earn income from two sources: (1) 10% of input sales (purchased at a 10% discount and sold at full retail price) and (2) service fee for spraying. SSPs are assigned a catchment area near their place of residence with an approximate 10 kilometer radius. So far, ATS has trained about 8,000 SHFs via its SSP

						network. Each SSP, in turn, is expected to select an additional 5 sub-SSPs whom they will be responsible for supervising. Sub-SSPs will work similarly to the SSPs, with the exception that they will receive a 5%, as opposed to 10%, commission on sales (the SSP takes the other 5%). Sub-SSPs have only recently been recruited and are currently undergoing training. Prior to SSPs, ATS sold in the Northern Province exclusively through 'seasonal agents,' who were stockists carrying ATS products (typically sent to the North by bus or other means of transport). The seasonal agent model, however, did not work, for a couple of reasons. First, the agents marked up the price of the inputs too high resulting in poor sales. Second, the agents did not pay for the stock as agreed and at the end of the growing season, disappeared, taking the unsold stock with them. Overall, once the sub-SSPs are all recruited and trained, and assuming no turnover among the SSPs, ATS will have a network of 20 SSPs (and 100 sub-SSPs) working in Northern Province. No other agro-input company has a distribution network in Northern Province that comes remotely close to matching that of ATS. According to ATS, the SSP network is an entirely new business model, which it would have never come up with on its own, which so far has been working well, "Musika changed the strategy. Instead of agro-dealers, we are working through SSPs, which have huge potential." During the recent off-season, SSPs focused on selling and spraying chemicals for vegetable gardens and did some spraying for pest control as well. Over this time, ATS estimates that SSPs sold over 7,000 liters worth K 580,000 (£48,000) of herbicide and other agro-chemicals to SHFs operating home vegetable gardens over a three-month period. ATS further estimates that during the 2016-17 cropping season, each SSP operating at full capacity can sell up to about K 20,000 (£1,600) per month across the entire network, assuming each reaches 2,000 SHFs who purchase an average of 2 liters each. ATS estimates that the upper bound potential for its distribution In July 2016, ATS submitted a proposal to Musika to further expand its distribution network; however, Musika has yet to respond. In the interim, ATS plans to consolidate the work it has accomplished under Musika and ensure that its distribution network is functioning well. ***Additionality**: ATS would never have thought of, let alone set up, an SSP distribution network in Northern Province without Musika support. Thus, Musika was the primary motivator for the establishment of the ATS distribution network in Northern Province.* ***Outcome Contribution**: The SSP distribution network has already generated a non-trivial level of sales in the off-season, and the sales potential during the 2016-17 growing season appears to be significant. This represents an increase in sales from nearly zero prior to ATS' work with Musika and the establishment of the SSP network thus making Musika a strong contributor to*

						the observed outcome.

Contribution Story

With Musika support, ATS has created the most extensive distribution network of any other agro-input dealer in Northern Province, by a substantial margin. In addition to sales offices in Kasama, Mpika, Mbala and Isoka, ATS has created a distribution network with currently 20 SSPs and another 100 sub-SSPs potentially coming on line soon, for a total agent network of 120 SSPs reaching a potential 390,000 SHFs. Without Musika support, is highly unlikely (with a probability approaching 0) that ATS would have created such an extensive distribution network nor adopted any business strategy with anywhere near the same potential for reaching large numbers of SHFs in Northern Province. ATs has also taken its own business initiative to expand its distribution network, such as by entering into strategic partnerships with Seed Co, Pioneer, Jedo, and Omnia.

In the background to this intervention are a number of facilitating environmental factors, which combined have made, or are making, Northern Province a more hospitable market for the creation of an agro-input distribution network. These factors include: the transition in Northern Province from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Northern Province a natural, yet untapped, center of agricultural production; favorable government policies; and the presence of FRA satellite offices, which creates a ready-made market for maize production.

Causal Package

Primary Contributor: Musika support

Contributor: Supported and other organizations' own business initiative

Facilitating Contributor: Environmental conditions, which are having the effect of transforming the Northern Province into a potential agricultural production center

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika ATS Agro intervention was a likely necessary component of the causal package

Assumption #1: ATS focuses on both sales and extension services and gives due attention to each

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The ATS distribution network – including its network of SSPs and its joint partnerships with Seed Co, Pioneer, Jedo and Omnia – focuses on both sales and extension services with the latter including training (including demo plots) and spray service provision.	Musika ATS Seed Co Pioneer Jedo	C	4	Although ATS does have storefront sales outlets, its rural outreach via its SSP network and joint ventures with other market actors constitutes the heart of its distribution network. This operation and success of this distribution network in turn depends heavily on the provision of information, training and spray service provision.

Conclusion

The assumption is valid. Simply put, without extension services, there are no sales, or at the very least, there are a fraction of the sales that might otherwise be achieved. The ATS distribution system explicitly recognizes this relationship. By all the evidence, ATS is fully committed to its current strategy of twinning sales outreach with extension services with the latter being seen as critical to increase SHF demand for the inputs sold by ATS.

Assumption #2: ATS supports and monitors the performance of its expanded distribution network

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
ATS is, so far, highly satisfied with the results of its work with Musika and is fully committed to continuing to build its distribution network in Northern Province.	Musika ATS	C	3	ATS' commitment is evidenced by the investments it has made in expanding its network in Northern Province, including adding field offices and staff, investing in fixed assets, and forging joint partnerships with other market actors.
ATS has established, with Musika assistance, a management/monitoring structure in Northern Province, which includes a regional HQ in Kasama and branch offices in Mpika, Mbala and Isoka.	Musika ATS	C	1	The organizational structure ATS has set up in Northern Province, with Kasama as the regional HQ and satellite offices in Mpika, Mbala and Isoka., and with the Kasama regional office liaising with ATS HQ in Lusaka, appears to provide an effective mechanism allowing ATS to monitor and manage its operations in Northern Province. Nonetheless, the evaluation team was not able to ascertain during the fieldwork how effectively this organizational structure was functioning in practice.

Conclusion

The first part of this assumption, that ATS supports its distribution network in Northern Province, appears by all accounts to be valid. The second part of this assumption, that ATS monitors the performance of its Northern Province distribution network, also appears to be valid, judging largely by the organizational structure ATS has set in place to manage and monitor its Northern Province distribution network. Given, however, the evaluation team's inability to verify how well this organizational structure was working, this latter conclusion can only be stated tentatively.

Assumption #3: Expanding the distribution network is profitable for ATS

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
According to ATS, the SSP distribution model is a "very viable business strategy," although it was not able to specific whether and what profits ATS was earning from it.	ATS	C	2	Prior to SSPs, ATS sold through 'seasonal agents', but this proved commercial unviable. The agro-dealers marked up the prices so as to make the ATS products uncompetitive, did not pay for the inputs, and at the end of the season absconded with the inputs without paying for them. ATS views the SSP model as a significant improvement over seasonal agents and one with significant commercial potential. To date, ATS is very satisfied with the results it has achieved in Northern Province as a result of its collaboration with Musika.
Although sales do not necessarily translate into profits, the sales achieved to date and projected for the 2016-17 growing season bode well for the profitability of the SSP model and ATS' Northern Province distribution network.	Musika ATS	C	2	During the recent off-season, ATS estimates that SSPs sold over 7,000 liters worth K 580,000 (£48,000) of herbicide and other agro-chemicals to SHFs operating home vegetable gardens over a three-month period. ATS further estimates that during the 2016-17 cropping season, each SSP operating at full capacity can sell up to about K 20,000 (£1,600) per month across the entire network, assuming each reaches 2,000 SHFs who purchase an average of 2 liters each.

Conclusion

While it is too early to determine whether this assumption is true, the early indications are promising. ATS is, so far, pleased with the results of its distribution network and sees it as much more commercially viable approach that the seasonal agent approach, which it had used to date. Sales achieved to date and projected for the 2016-17 growing season are also favorable indicators of the potential profitability of the ATS distribution network. Unfortunately, profit figures were not available to the evaluation team, nor was it able to confirm the sales figures reported by ATS. Thus any conclusion about the profitability of the ATS distribution network can only be stated tentatively at this point.

Assumption #4: Spray service providers an income from spraying and other services

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
It is too early to determine how much SSPs will earn from providing spraying and other services.	Musika ATS SSPs	N	2	SSPs earning income from two sources: (1) the 10% commission on input sales and (2) fees charged for spraying services. In addition, SSPs managing sub-SSPs earned an additional 5% commission on sales by sub-SSPs. Sub-SSPs earn (1) 5% commission on input sales and (2) fees charged for spraying services. There is little to go on at this point as to whether the current payment structure will generate a sufficient level of income among SSPs and sub-SSPs to motivate their sustained engagement with SHFs. For one SSP, at least, the current payment structure is not sufficient, ""The commission I make now is too small and I only use it for my drink and talk airtime for my phone." This may or may not be the case, however, during the growing season when the SSPs are expected to sell a much greater volume of inputs and spray services. The SSP network was mobilized during the off-season, during which time SSPs focused on selling inputs and providing spraying services for SHFs' vegetable gardens, in addition to some spraying for pest control. Added to this, the sub-SSPs were only recently selected and trained, so they have yet to engage with SHFs in any capacity. Thus there is no experience to draw on to suggest whether and how much money SSPs and sub-SSPs will earn from providing spraying and other services.
Early indicators suggest that not all SSPs have performed well to date.	ATS	R	2	According to ATS, 5 of the SSPs in Mbala, 3 doing well and 2 are not doing well. Of the 5 SSPs operating out of Mbala, 3 have demonstrated business initiative (or entrepreneurial drive) in seeking out and serving SHF clients. Two, however, have not, one of which has demonstrated little to no inclination so far to engage with SHFs. This highlights a more general issue with any sales force; not all sales people will succeed. Indeed, it can probably be expected that a non-trivial to substantial number of SSPs will not succeed, either due to difficulties encountered in serving their assigned catchment areas, lack of demand, or lack of personal initiative. This outcome appears

				particularly likely among the sub-SSP force, which earns less from sales than SSPs and who are expected to pay for their own sprayer, protective clothing and bicycles (whereas Musika subsidizes these costs for SSPs). ATS field staff is in on-going contact with the SSPs and sub-SSPs, plus it holds a series of monthly meetings with all SSPs, which will presumably allow it to monitor SSP performance and make adjustments as necessary. At this point, however, there are no specific indications just how ATS plans to address this particular issue or other issues as they inevitably arise in managing its large and geographically disbursed sales/extension force.
Issues have arisen with regards to the catchment areas assigned to SSPs.		R	2	During the off-season, some of the SSPs experienced difficulties covering the catchment area assigned to them. Although the SSPs have bicycles, the distances traveled over poor rural roads can be time consuming, making it difficult for the SSPs to cover their entire 10 kilometer radius catchment area. For example, according to one SSP, ""I fail sometimes fail to reach all the farmers. Sometimes I cycle for as long as 80km and reach home very tired." This issue would be expected to be an even greater challenge during the growing season during which SSPs must also tend to their own fields in addition to covering their assigned catchment area. ATS reports that there was recently a meeting among the SSPs and ATS to discuss this issue raising the possibility that ATS may revise how it assigns catchment areas to SSPs and sub-SSPs.

Conclusion

There is insufficient evidence at this point to validate or invalidate this assumption. However, of all the assumptions underlying the Musika ATS intervention, the assumption that SSPs will earn a sufficient income to motivate their sustained participation in the ATS distribution network appears to be the most vulnerable to being invalidated through experience. There exists anecdotal evidence that issues are already beginning to arise related to the payment structure for SSPs (whether the commissions and fees large enough) and to the catchment areas to which the SSPs have been assigned (specifically, the SSPs' ability to cover the catchment areas given that they are also farmers working their own land). However, the conditions under which SSPs have worked to date – that is, during the agriculture production off-season – are expected to be quite different from what the SSPs will experience during the upcoming growing season, such that caution should be used to draw firm conclusions from past experience. ATS does have a management system in place to deal with issues as they arise, but it is not known how well this management system will function in practice and how effectively it will deal with issues and make necessary adaptations as they arise. Much more will be known about this by the end of the 2016-17 growing season.

Assumption #5: Women benefit similarly to men

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The Musika ATS intervention includes no aspects designed specifically to benefit women.	Musika ATS	R	4	Most all activities undertaken by ATS, with or without Musika support, are gender neutral, at least in their design if not in their impact. SHFs are presented the same messages and offered the same products regardless of sex. Depending on one's point of view, this is either a positive outcome (assuming in the past women were treated less preferentially than men) or a neutral outcome.
The sale and use of agricultural inputs that reduce the on-farm labour required for weeding disproportionately benefit women and children relative to men.	Musika ATS Seed Co Pioneer Jedo DACO ZNFU	C	4	Women play numerous roles in the agricultural value chain. Among these roles, weeding the fields in one of the most prominent. Weeds are a particular problem in Northern Province's relatively wet climate, and women devote a large share of their on-farm labour (relative to men) weeding the fields. Children can also be heavily involved in weeding, often taking them out of school. The increased use of herbicides thus offers potentially large benefits for both women and children by significantly reducing their on-farm labour requirements.

Conclusion

This assumption has proven valid in terms of intervention design and in terms of the business strategy adopted and scaled-up by ATS Agro with Musika support and on its own initiative. All activities supported by Musika or otherwise implemented by ATS are gender neutral in design. Nonetheless, to the extent that the increased use of herbicides and other agro-inputs among SHFs decreases the on-farm labour requirements in areas where women play disproportionately important roles, as in the case of weeding, women stand to benefit more relative to men. This is similarly true of children. Increased use of agro-inputs that reduce the labour demands on children also stand to generate significant benefits for children, such as by reducing the amount of time they are removed from school to work in the fields.

Assumption #6: Business environment remains conducive to growth in the agro-input market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
To date, the business environment has been highly conducive to the growth of the agro-input market in Luapula Province.	Musika ATS Seed Co Pioneer Jedo DACO ZNFU	C	4	A variety of external factors have jointly contributed to creating a favorable business environment in Luapula for the growth of the agro-input market. These factors include the following: • Transition in Luapula from a predominantly fishing-based economy to a more agricultural-focused economy, as many of the predominant fisheries in the province are becoming over-fished. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and registration of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. The above external factors appear, for the most part, to be relatively stable in that they represent longer-term trends thus making them more likely to remain sustainable over time. They are, however, susceptible to a variety of economic (e.g., unfavorable shifts in the general economy or exchange rates), climate (e.g., unfavorable shifts in rainfall patterns) or political (e.g., changes in MAL policy) that could results in corresponding unfavorable shifts in the general business environment.

Conclusion

So far, the assumption remains valid and reflects a number of favorable, longer-term (and thus presumably more sustainable) trends that bode well for the future. The assumption, however, is vulnerable to unexpected economic, climate or political shocks that can potentially stall or even reverse the favorable trends contributing to the current positive business climate.

Annex 9: Contribution Analysis Mule-Stus

CONTRIBUTION ANALYSIS OF THE MUSIKA MULE-STUS INTERVENTION

Outcome 1: Reduced poverty

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's intervention with Mule-Stus is contributing to reduced poverty among SHFs.	N/A	N	1	1	1	The evaluation methods were not appropriate to measure changes in SHF poverty levels. It is, moreover, too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of Musika's intervention with Mule-Stus. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether the poverty status among affected SHFs has changed since the beginning of the Musika Mule-Stus intervention. In addition, there are a large number and wide variety of other potential factors, aside from the Musika Mule-Stus intervention, that affect changes in SHFs' poverty status. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in SHF poverty status relative to the Musika Mule-Stus intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 2: Smallholder farmers increase income

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is limited anecdotal evidence that SHFs have improved their on-farm or household income as a result of inputs purchased and/or extension training received from Mule-Stus.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	C	1	1	1	Some key informants and farmers cited examples of improved on-farm or household income, or other aspects of household well being, that resulted from the SHFs commercial dealings with Mule-Stus. Of these, most directly tied any increase in household income or well being to improved on-farm performance. The following quotes illustrate this finding. "Overall, there has been a 15%-20% improvement in production, which can also translate into an equivalent increase in household income. Changes in farming production, sales and income lead to improved household well being, food security and asset acquisition. The extra income can be used to purchase household assets, such as bicycles, motorcycles and in some cases motor vehicles."

						"Our income from vegetables has more than doubled. From the sale of vegetables, we are able to buy food and meet other needs. A number of farmers have improved their houses, while others have bought vehicles; we know at least four who have. Our estimate is that at least 50% of the farmers have improved their livelihoods." "The income has increased from an average of ZMW 2,000 from a quarter of a lima to ZMW 7,000. The changes have translated into better household well being in terms of improved food security and income levels. There has also been a general improvement in asset acquisition. Those who have constructed improved houses are about 70%." The evaluation team, however, was unable to verify any of the above, or other, anecdotes claiming improvements in on-farm income, household income or household well being due to SHFs' interactions with Mule-Stus. Moreover, the causal chain from the increased adoption of agro-inputs to improved on-farm or household income can be complex and indirect. There are also a number of other factors that are potentially contributing to these outcomes related to farming practices, specific weather conditions, etc. unrelated to Mule-Stus, none of which can be accounted for by the evaluation methodology. ***Additionality**: The entirely anecdotal nature of the evidence, the lack of verification for the evidence, the complex and possibly indirect causal chain, and the existence of unaccounted for other contributory factors makes it inappropriate to claim any Musika additionality for this outcome.* ***Outcome Contribution**: The entirely anecdotal nature of the evidence, the lack of verification for the evidence, the complex and possibly indirect causal chain, and the existence of unaccounted for other contributory factors makes makes it inappropriate to claim any Musika contribution for this outcome.*
A larger number of key informants and farmers interviewed during the endline had yet to observe any improvements in on-farm or household income as a result of inputs purchased and/or extension training received from Mule-Stus.	DOs Agro-dealers SHFs	N	2	1	1	In these cases, the key informants and farmers said Mule-Stus had only recently begun to work in their area such that there has been insufficient time to observe any improvements in on-farm or household income due to the SHFs' interactions with Mule-Stus. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether the on-farm or household income among affected SHFs has changed since the beginning of the Musika Mule-Stus intervention. While there is some limited anecdotal evidence suggesting improved on-farm and household income and well being resulting from SHFs' interactions with Mule-Stus, these could not be verified. In addition, there are a large number and wide variety of other potential factors, aside from the Musika Mule-Stus intervention, that affect changes in on-farm and household income. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in on-farm or household income relative to the Musika Mule-Stus intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 3: Smallholder farmers increase on-farm yields

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is limited anecdotal evidence that SHFs have improved their yields, or more generally on-farm performance, as a result of inputs purchased and/or extension training received from Mule-Stus.	Musika Mule-Stus DOs SHFs	N	1	2	2	Some of the key informants and SHFs interviewed during the endline cited improvements in on-farm yields and sales resulting from their dealings with Mule-Stus. For example, key informant claim to have observed anywhere from a 20%-60% increase in yields of maize, vegetables and legumes among SHFs living in areas served by Mule-Stus. Mule-Stus itself estimates more conservative yield improvements ranging from 15%-20% on average. According to one farmer interviewed during the endline, "We are producing and selling more. For instance, a number of people in the community have doubled their maize hectarage from the time we got training from Mule-Stus." The evaluation team, however, was unable to verify any of the above, or other, anecdotes cited claiming improvements in on-farm yields due to SHFs' interactions with Mule-Stus. Moreover, to the extent such improvements are occurring and are reasonably widespread, a number of other factors are potentially contributing to these outcomes related to farming practices, specific weather conditions, etc. unrelated to Mule-Stus, none of which can be accounted for by the evaluation methodology. ***Additionality**: To the extent yields have increased among beneficiary SHFs as a result of increased agro-input usage, it is unlikely that the SHFs would have increased input usage in the absence of outreach and extension efforts undertaken by Mule-Stus. They may have eventually done so as a result of outreach and extension efforts by other agro-input dealers, but this cannot be known. Thus, again to the extent this has occurred, Mule-Stus appears to have facilitated this outcome, although it is not known to what degree this resulted from Musika's facilitation or from Mule-Stus' own business initiative. However, the entirely anecdotal nature of the evidence, the lack of verification for the evidence, and the existence of unaccounted for other contributory factors make this a tentative conclusion.* ***Outcome Contribution**: To the extent yields have increased among beneficiary SHFs as a result*

						of increased agro-input usage, it is unlikely that the SHFs would have increased their yields to the same extent in the absence of outreach and extension efforts undertaken by Mule-Stus. They may have eventually done so as a result of outreach and extension efforts by other agro-input dealers or other farmer-specific or weather-related factors, but this cannot be known. Thus, again to the extent this has occurred, Mule-Stus appears to have contributed to this outcome. The entirely anecdotal nature of the evidence, the lack of verification for the evidence, and the existence of unaccounted for other contributory factors make this a tentative conclusion.
A larger number of key informants and farmers interviewed during the endline had yet to observe any improvements in yields or on-farm performance as a result of inputs purchased and/or extension training received from Mule-Stus.	PAO DOs SHFs	N	2	1	1	In these cases, the key informants and farmers said Mule-Stus had only recently begun to work in their area, such that there has been insufficient time to observe any improvements in on-farm performance due to the farmers' interactions with Mule-Stus. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

There exists anecdotal information suggesting improved on-farm yields resulting from SHFs' interactions with Mule-Stus, although these could not be verified. In addition, there are a large number and wide variety of other potential factors aside from the Musika Mule-Stus intervention that affect changes in on-farm yields. These factors are mostly unaccounted for by the evaluation methodology. Overall, however, contribution claims related to on-farm yields are more credible, all else equal, than contribution claims related to increased on-farm or household income or improved poverty status, as the causal effects from input usage to improved yields is more direct and with fewer potentially confounding factors. Thus, to the extent beneficiary farmers are (1) increasing input usage as a result of Mule-Stus outreach and extension efforts and (2) increasing on-farm yields, then it is reasonable to claim some contribution for Musika/Mule-Stus. This conclusion includes two caveats: (1) the wholly anecdotal nature of the evidence and (2) the uncertainty as to the extent Mule-Stus' outreach and extension efforts were facilitated by Musika or the result of its own business initiative.

Causal Package

Contributor: Mule-Stus own business initiative; Musika Mule-Stus intervention; Other unknown factors (e.g., other farmer cultivation practices, weather conditions)

Sufficiency & Necessity

(To the extent that on-farm yields are increasing among beneficiary farmers) The causal package was sufficient to increase on-farm yields
(To the extent that on-farm yields are increasing among beneficiary farmers) The Musika Mule-Stus intervention was a likely necessary component of the causal package

Outcome 4: Demonstration effect encourages other SHFs to copy practices adopted by Musika/Mule-Stus assisted SHFs

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
According to key informants, SHF demand for agro-inputs in Luapula Province is growing owing to a variety of factors, but which do not include copying the behavior of Mule-Stus-assisted SHFs.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	R	3	1	1	SHF demand for agro-inputs is, by all accounts, growing rapidly in the province. Some key informants note, moreover, that SHFs are, at an increasing rate, treating farming as a business, which implies a desire to increase on-farm performance as a means to generate household income. Factors contributing to this outcome include the following set: • Depletion of the fish stock due to overfishing, which is leading SHF households to put more emphasis on farming as both a food security and livelihood activity. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and certification of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. • Improved road infrastructure, which reduces the time and cost to transport goods to Luapula from major commercial centers (e.g., Lusaka). • Operations of other donor-funded programmes promoting improved on-farm performance by SHFs, including PLARD II, S3P, SUN, SAPP, and CASU. Key informants, however, also cite growing commercial linkages between SHFs and agro-input dealers resulting from increased SHF outreach efforts by agro-input dealers, including the increased provision of information and extension services. As a result of these interactions, SHFs are more aware of the advantages of using agro-inputs to increase yields and reduce

						labour, including, in the first case, use of certified seeds and, in the second case, use of herbicides. There is, however, no evidence observed by the evaluation team or cited by key informants suggesting that the increased demand for agro-inputs is a result of non-assisted farmers copying the practices (e.g., increased agro-input usage) of those SHFs benefitting from the Musika and Mule-Stus collaboration. ***Additionality**: There is no evidence of SHF copying and thus no evidence for additionality by Musika/Mule-Stus.* ***Outcome Contribution**: There is no evidence of SHF copying and thus no evidence for any outcome contribution by Musika/Mule-Stus.*

Contribution Story

SHFs in Luapula do appear to be increasing their use of agro-inputs, but there is no evidence linking this change to a copying phenomenon in which non-beneficiary SHFs copy behavior observed in beneficiary SHFs. Rather there appear to be a number of factors contributing to this growth. Most of these lie outside of Musika's support to Mule-Stus and include the transition in Luapula from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Luapula a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme, which requires a network of certified agro-dealers to meet the anticipated increase in SHF demand for agro-inputs; and the presence of other donor-funded agriculture support programmes, including PLARD II, S3P, SUN, SAPP, and CASU. There is also anecdotal evidence that other agro-input dealers are also making efforts to expand their outreach to SHFs and provide them with information and extension services (although none to the extent of Mule-Stus).

Causal Package

Contributor: Favorable market environment conducive to the growth in SHF demand for agro-inputs, Collective outreach and marketing efforts by other agro-input dealers

Sufficiency & Necessity

The causal package was insufficient to produce a copying effect among non-beneficiary SHFs

The Musika Mule-Stus intervention was a likely unnecessary component of the causal package

Outcome 5: Market demand for agro-inputs in previously under-served markets increases (e.g., SHFs increase their purchases of agro-inputs)

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
According to key informants, SHF demand for agro-inputs in Luapula is growing owing to a variety of factors mostly unrelated to Musika's support to Mule-Stus.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	C	2	2	2	SHFs in Luapula still, for the most part, rely on traditional agricultural practices, such as slash and burn methods for preparing land, the use of recycled seed, and low rates of other agro-input usage (fertilizer, herbicides, pesticides, fungicides). This is changing, however, as SHF demand for agro-inputs are, by all accounts, growing rapidly in the province. Some key informants note, moreover, that SHFs are, at an increasing rate, treating farming as a business, which implies a desire to increase on-farm performance as means to generate household income, in part to replace income lost due to the decline in the local fishing industry. Factors contributing to this outcome include the set of external factors already cited: • Depletion of the fish stock due to overfishing, which is leading SHF households to put more emphasis on farming as both a food security and livelihood activity. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and certification of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. • Improved road infrastructure, which reduces the time and cost to transport goods to the North from major commercial centers (e.g., Lusaka). • Operations of other donor-funded programmes promoting improved on-farm performance by SHFs, including PLARD II, S3P, SUN, SAPP, and CASU. Key informants, however, also cite growing commercial linkages between SHFs and agro-input

						dealers resulting from increased SHF outreach efforts by agro-input dealers, including the increased provision of information and extension services. As a result of these interactions, SHFs are more aware of the advantages of using agro-inputs to increase yields and reduce labour, including, in the first case, use of certified seeds and, in the second case, use of herbicides. By virtue of its relatively large presence within the Luapula agro-input market, however, Mule-Stus has also contributed, if only marginally, to the growing demand for agro-inputs in the province. For example, Mule-Stus reports that, of SHFs benefitting from its extension support, up to 70% adopt herbicide usage and another 40% adopt agricultural lime. Moreover, Mule-Stus reports that, previously, the primary motivation of SHFs to participate in extension trainings was the hope of receiving some monetary or in-kind benefit. Increasingly, however, SHFs attending the trainings do so out of a desire to learn and apply the knowledge gained to improve their on-farm performance. The following quotes by SHFs participating in one of the endline FGDs illustrate how Mule-Stus has contributed to the increased demand for agro-inputs in the province. "We know Mule-Stus since the end of 2015. Since then, it has interacted with us in various ways. It has brought agricultural inputs near our doorsteps. It has taught us various extension methods and has been teaching us issues to do with entrepreneurial skills and record keeping. In short, it has taught us to handle farming as a business." "Farmers used to go to over 40 kilometers to town to buy agricultural inputs as there was no market outlet in the area. It was expensive to get there and took a lot of time. However, this is no longer the case given that Mule-Stus has placed a container in the area where he has stocked inputs for sale." "Mule-Stus brought in a new aspect in our farming practices related to the use of herbicides for weeding. This had never been taught to us before by anyone. We have also been practicing farming as a business on account of the skills we got from Mule-Stus." ***Additionality**: The growth in demand for agro-inputs among SHFs in Luapula would likely have occurred without Mule-Stus' involvement. However, owing to its relatively large presence in the Luapula agro-input market, Mule-Stus has perhaps helped accelerate the onset of the current growth trend.* ***Outcome Contribution**: The growth in market demand for agro-inputs in Luapula is the product of numerous factors outside of Musika's intervention with Mule-Stus. However, Mule-Stus' relatively large market presence, aided by its commitment to farmer extension, is also contributing to the growth in demand for agro-inputs in the province.*
The expansion of the FISP e-voucher	Musika	C	3	1	1	FISP has been operating in the Northern Province since 2002; however, it has been plagued by

scheme is expected to lead to a significant growth in the demand for agro-inputs in Luapula Province.	Mule-Stus PAO DOs Agro-dealers					administrative problems related to, for example, inaccurate targeting and lax controls in creating farmer lists (e.g., prevalence of 'ghost' farmers on the list who did not exist). The FISP e-voucher is intended to address these and other problems. On the demand side, farmers are provided a card with a certain amount of money on it, which they can use at certified agro-input dealers to purchase inputs. Unlike in the past farmers can use the card to purchase a wide variety of agro-inputs (e.g. livestock feed) consistent with the GoZ's objective to diversify the agro-input market. ***Additionality**: There is no additionality. This outcome is independent of the Musika Mule-Stus intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika Mule-Stus intervention.*
Late payments by FRA have made it harder for SHFs to purchase agro-inputs for the 2016-17 growing season.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	R	2	1	1	The FRA purchased maize from farmers in July-August and, as of the evaluation endline, had still not paid for the maize. ***Additionality**: There is no additionality. This outcome is independent of the Musika Mule-Stus intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika Mule-Stus intervention.*
Mule-Stus extension and information provision has increased SHF knowledge and stimulated demand for agro inputs.	Musika Agro-dealers SHFs	C	2	2	2	SHF report Mule-Stus extension and information provision, both in the field and in store, has built their knowledge and increased their use of agro inputs. ***Additionality**: There is additionality to demand growth from the Musika Mule-Stus intervention.* ***Outcome Contribution**: There is outcome contribution, Mule-Stus' relatively large market presence, aided by its commitment to farmer extension, is also contributing to the growth in demand for agro-inputs in the province.*

Contribution Story

Smallholder farmer demand for agro-inputs in Luapula Province is, by all accounts, growing rapidly. There are a number of factors contributing to this growth. Most of these lie outside of Musika's support to Mule-Stus and include the transition in Luapula from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Luapula a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme; and the presence of other donor-funded agriculture support programmes, including PLARD II, S3P, SUN, SAPP, and CASU. There is also anecdotal evidence that other agro-input dealers are also making efforts to expand their outreach to SHFs and provide them with information and extension services (although none to the extent of Mule-Stus). Mule-Stus' relatively large presence in the Luapula agro-input market; however, has contributed to this outcome,

if only marginally, first by helping to accelerate its emergence and, second, by contributing to its scale. Mule-Stus' market presence, in turn, owes significantly to Musika support in terms of its initial establishment and then largely to its own business initiative in expending its distribution network across the province

Causal Package

Strong Contributor: Favorable market environment conducive to the growth in SHF demand for agro-inputs

Contributor: Musika Mule-Stus intervention; Mule-Stus' own business initiative

Sufficiency & Necessity

The causal package was sufficient to produce the expected outcome

The Musika Mule-Stus intervention was a likely component of the causal package

Outcome 6: Market supply of agro-inputs in previously under-served markets increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The primary economic activity in Luapula has traditionally been fishing owing to its relative abundance of fresh waterways. This is changing, however, and increasingly Luapula is being viewed as a center (or potential center) of agricultural production. As a result, the number of agro-dealers setting up shop in the Luapula is increasing.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	N	3	1	1	Over the last few years, an increasing number of agro-input dealers have set up shop in Luapula Province, including nearly every large agro-input firm operating in Zambia. Key informants estimate that about 20 agro-input firms are now operating in Luapula, up from as few as four just a few years ago. Key informants further estimate that the volume and value of input sales – including seeds and agro-chemicals – has increased by around 50%-60% over the past two years alone. According to these informants, Luapula has become the second largest producer of maize in the northern part of the country due to increased usage of agro-inputs. This outcome owes to a variety of factors, none of which are related to the Musika's intervention with Mule-Stus. These include the following: • Depletion of the fish stock due to overfishing, which is leading SHF households to put more emphasis on farming as both a food security and livelihood activity. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy

						based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and certification of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. Thirteen of the 20 or so agro-dealers operating in Luapula have applied to participate in the FISP e-voucher scheme being rolled out in Mansa and Samfya Districts with an expected coverage of about 20,000 farmers across the two districts. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. • Improved road infrastructure, which reduces the time and cost to transport goods to the North from major commercial centers (e.g., Lusaka). • Operations of other donor-funded programmes promoting improved on-farm performance by SHFs, including PLARD II, S3P, SUN, SAPP, and CASU. Mule-Stus has contributed to the growth in supply. Mule-Stus estimates that it sold 67 metric tonnes of maize seed during 2015-2016 compared to less than 60 metric tonnes during 2013-2014 and less than 20 metric tonnes during 2010-2011. According to key informants, Mule-Stus accounts for around 80% of total seed sales in the province and sells as much as three times the number of irrigation pumps as all other competitors combined. Finally, all key informants all agree that Musika played a critical role in facilitating Mule-Stus' emergence and expansion within Luapula. According to key informants, "Without Musika, it would have been impossible to do all of this with bicycles." What also differentiates Mule-Stus from its competitors is the personal commitment Mule-Stus has to the farmers in the region. According to one key informant, for example, "Mule-Stus is not just interested in getting money from farmers. Others don't go to the field because they went into this business only for the money. In comparison, Mule-Stus wants to keep his customers and build relationships with the farmers." ***Additionality**: There is no additionality. This outcome is independent of the Musika* Mule-Stus *intervention.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika* Mule-Stus *intervention.*
Aside from its work with Mule-Stus, Musika has been active in Luapula providing capacity development for agro-input dealers and linking dealers	Musika Mule-Stus PAO DOs	C	2	3	3	Musika has been active in Luapula providing training to various agro-dealers and linking them to other market actors up and down the value chain. For example, Musika has been involved in linking SHFs to agro-dealers offering a wide variety of inputs and linking agro-dealers to agro-firms (e.g., MRI, Pannar Seeds). For example, Musika has helped negotiate with seed

with SHFs and agro-firms.	Agro-dealers					companies on behalf of local agro-dealers in which they stock and sell seed on behalf of the seed company. The following quotes from agro-dealers interviewed for the endline evaluation demonstrate the types of contributions Musika has made to market growth through these types of efforts. "Reaching out to farmers instead of waiting for them to come and buy inputs is a new and effective method of conducting business Musika has helped us develop." "Prior to Musika linking up the input suppliers and the agro-dealers, only very few input suppliers were willing to work with agro-dealers for lack of trust. This has since been dealt with and there has been significant change such that almost all input suppliers are working with a good number of agro-dealers." "Before attending the Musika workshop, I could go one week without selling anything, but now I am able to sell something every day on account of the skills learned during the workshop. Daily sales now average between K100 and K200. Also, because of being short-listed for the e-voucher system, I have started stocking more inputs so I can get a fair share of the market." (Musika also helped the agro-dealer get shortlisted for the e-voucher scheme.) Musika has also been active working with the Ministry of Agriculture to sensitize and train agro-input firms to participate in the FISP scheme. A number of key informants interviewed during the endline cited training received by Musika as being important in improving their capacity to participate in the e-voucher scheme and linking them to agro-input dealers and other market actors. ***Additionality***: The agro-input dealers in Luapula may have received this type of support from one or more of the other donor-funded programmes operating in Luapula, but this cannot be known. As is, Musika appears to have catalyzed the dealers' activity in the agro-input market. ***Outcome Contribution***: The benefits received by the other agro-dealers in terms of increased market outreach and sales via capacity development and market linkages likely occurred largely as a result Musika support.
The expansion of the FISP e-voucher scheme is expected to lead to a significant growth in the supply of agro-inputs in Luapula. The GoZ has, therefore, taken steps to identify, train and certify a relatively large number of agro-input dealers to meet the expected increase in demand.	Musika Mule-Stus PAO DOs Agro-dealers	C	3	1	2	FISP has been operating in Luapula since 2002; however, it has been plagued by administrative problems related to, for example, inaccurate targeting and lax controls in creating farmer lists (e.g., prevalence of 'ghost' farmers on the list who did not exist). The FISP e-voucher is intended to address these and other problems. On the supply side, the Zambian Ministry of Agriculture is identifying a set of agro-dealers via a tendering process, training them and then certifying them to provide inputs under the e-voucher scheme. Selected agro-dealers are provided a point of sales machine, which is linked to the GoZ national payments system, which functions similarly to a credit/debit card terminal at a retail store. Given that most agro-input dealers are located in population centers (e.g. lacking the type of

						distribution network Mule-Stus has created), the Ministry of Agriculture is actively seeking out agro-dealers operating, or willing to operate, in marginal rural areas. To qualify as a certified agro-dealer under the FISP e-voucher scheme, the agro-dealers must have a physical storefront (e.g. store or shed) and access to the mobile phone network. ***Additionality**: There is no additionality. The e-voucher scheme implementation in Luapula would have occurred in the absence of the Musika Mule-Stus intervention.* ***Outcome Contribution**: While the implementation and any expansion of the FISP e-voucher scheme are independent of Musika, it has contributed to these outcomes through its training of agro-input dealers operating in Luapula with the aim of increasing their capacity to participate in the scheme.*
Notwithstanding positive trends in the Luapula agro-input market, there remain significant challenges to growing the market.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	R	4	1	1	There remain a number of challenges to growing the agro-input market in Luapula Province. These challenges include the following: • Low level of awareness and adoption of 'modern farming practices.' SHFs in Luapula have had comparatively little exposure to modern farming methods, including the use of agro-inputs. • Poor rural road infrastructure. Despite improvements in the highway infrastructure connecting larger cities/towns, roads to rural communities remain poor and can be inaccessible during the rainy season. • Poor distribution outreach. Most agro-input dealers operate from storefronts in larger cities/towns and do not have distribution networks reaching marginal rural areas where the majority of SHFs live. • Lack of markets: Aside from FRA maize purchases, there are relatively few crop aggregators operating in Luapula meaning that, in many cases, farmers do not have a ready market for their crops, or alternatively they are forced to sell at low prices at the farm gate to 'briefcase buyers' or to pay to transport their goods to market. • The depreciation of the Kwacha was also mentioned frequently as an external event that has influenced the rate of agricultural activity in the region due to its adverse impact on input prices. Mule-Stus' distribution network addresses each of the above challenges via its method of bringing information and products directly, or closer to SHFs via its rural distribution outlets and agent network. ***Additionality**: There is no additionality. This outcome is independent of Musika's work with Mule-Stus.* ***Outcome Contribution**: There is no outcome contribution. This outcome is independent of the Musika* Mule-Stus' *intervention. However, Musika's* Mule-Stus' *intervention has potential to*

						address and overcome many of the existing market constraints to growing the agro-input market in Luapula Province.
Mule-Stus has significantly increased its sales and outreach in Luapula Province.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	C	3	3	2	Key informants estimate Mule-Stus' current market outreach at around 5,000-8,000 farmers, up from an estimated 1,000-2,000 farmers in 2010-2011. In terms of sales, Mule-Stus estimates that it sold 67 metric tonnes of maize seed during 2015-2016 -- , accounting for approximately 80% of total seed sales in the province – compared to less than 60 metric tonnes during 2013-2014 and less than 20 metric tonnes during 2010-2011, and it estimates an even greater sales increase for the 2016-17 growing season. Mule-Stus stocks and sells agricultural inputs (seeds, chemicals, hoes, irrigation equipment, etc.) from a variety of firms, including MRI, Pannar, ZamSeed, ATS, and Pioneer. According to key informants, Mule-Stus is also the largest seller of other agricultural inputs in the province, including selling as much as three times the number of irrigation pumps as all other competitors combined. Key informants agreed that Mule-Stus' success to date had been notable, even the fact that it is selling as much seed as it is in a region that has long been dependent on the FISP for input support and with relatively little history of private sector provision of farming inputs. ***Additionality**: Mule-Stus likely would not have established its distribution network in Luapula when and to the extent it has without Musika support. Musika was the catalyst for the establishment of the Mule-Stus distribution network in Luapula and thus has indirectly catalyzed its subsequent actions to grow its sales and outreach.* ***Outcome Contribution**: Mule-Stus' distribution network has already generated a relatively large volume and value of sales and, by all accounts, is poised to grow further during the 2016-17 growing season. While Musika's support to Mule-Stus has played an important contributory role in the growth of Mule-Stus' sales, it has played a less important role than Mule-Stus' own business initiative.*
Mule-Stus continues to look for opportunities to expand its farmer network; as well as to diversify into other agricultural activities so as to offset the seasonal nature of seed and other farm input sales.	Musika Mule-Stus	C	4	3	2	For example, Mule-Stus is running an outgrower scheme for beans with 25 farmers in Mutanda, 50 farmers in Milambo, 32 farmers in Kawambwa and 17 farmers in Nsonga under a forward contract with ETC International. It is currently considering plans to establish a rice and millie-meal processing plant in Nchelenge, diversify into the livestock feed market within Luapula and expand its operations into the Central Province. ***Additionality**: Mule-Stus likely would not have established its distribution network in Luapula without Musika support. Musika was the primary motivator for the establishment of the Mule-Stus distribution network in Luapula and thus has indirectly catalyzed its subsequent actions to grow its sales and outreach.* ***Outcome Contribution**: While Musika's support to Mule-Stus has played an important*

						contributory role in the growth of Mule-Stus' sales, it has played a less important role than Mule-Stus' own business initiative.

Contribution Story

With Musika support, Mule-Stus has created the most extensive distribution network of any other agro-input dealer in Luapula. Without Musika support, it is unlikely that Mule-Stus would have created such an extensive distribution network nor adopted any business strategy with anywhere near the same potential for reaching large numbers of SHFs in Luapula. At the same time, Mule-Stus has also taken its own business initiative to expand its sales and has plans for further expansion, both beyond any support it has received from Musika. On balance, Mule-Stus' own business initiative appears to be the primary factor contributing to its growth in input sales in Luapula Province.

Also contributing to this outcome are a number of facilitating environmental factors, which combined have made, or are making, Luapula a more favorable market for the creation of an agro-input distribution network. These factors include: the transition in Luapula from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Luapula a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme, which requires a network of certified agro-dealers to meet the anticipated increase in SHF demand for agro-inputs; and the presence of other donor-funded agriculture support programmes, including PLARD II, S3P, SUN, SAPP, and CASU.

Causal Package

Strong Contributor: Mule-Stus' own business initiative

Contributor: Musika support; Environmental conditions, which are having the effect of transforming Luapula into a potential agricultural production center

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika Mule-Stus intervention was a likely necessary component of the causal package

Outcome 7: Demonstration effect encourages other market actors to crowd-in the agro-input market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The agro-input market in Luapula Province is growing. According to key informants, nearly every major agro-input dealer operating in Zambia has moved into Luapula over the past 2-3 years. Notwithstanding, this growth appears to be driven by a variety of factors unrelated to Musika's intervention with Mule-Stus.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	R	3	1	1	The number of agro-input dealers entering and operating in Luapula has grown considerably. For example, the number of seed companies operating in the province has grown from one only a few years back (Zamseed) to over six today, with around 15 maize seed varieties alone now being sold in the province. Agro-chemical companies have also entered the market in growing numbers and are establishing operations in 'major' population centers throughout the province. A number of factors are driving this growth, of which Musika's intervention with Mule-Stus appears to be one of the less important. These factors include the following: • The existence of other agro-support programmes, which are, similar to Musika, promoting SHF agricultural production in the province. These programs include those listed below. ○ Program for Luapula Agriculture and Rural Development-Phase II (PLARD II) financed by the Finnish government. ○ Smallholder Productivity Production Programme (S3P) financed by IFAD and implemented jointly with the Zambia Ministry of Agriculture. ○ Scaling Up Nutrition (SUN) financed by the UN Food and Agriculture Agency (FAO). ○ The Smallholder Agribusiness Promotion Programme (SAPP) financed by IFAD. ○ Conservation Agriculture Scaling Up project (CASU) financed by the European Commission and FAO. • Transition in Luapula from a predominantly fishing-based economy to a more agricultural-focused economy, as many of the predominant fisheries in the province are becoming over-fished. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and

						registration of agro-input dealers to meet the expected increase in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. ***Additionality**: The agro-input dealers entering and operating in Luapula would likely have done so and in the same timeframe irrespective of Musika's intervention with Mule-Stus.* ***Outcome Contribution**: The growth in the agro-input market in Luapula is proceeding apace irrespective of Musika's intervention with Mule-Stus.*
Some key informants claim that a demonstration effect is occurring, citing the Conservation Agriculture Scaling Up (CASU) project as an example.	Musika Mule-Stus DOs Agro-dealers SHFs	C	1	1	1	According to some key informants, a Ministry of Agriculture number (2-4) of agro-dealers have adopted aspects of Mule-Stus' model, including increasing their physical presence in rural communities and providing extension services to SHFs. One example cited of a potential demonstration effect is the FAO and EU-funded CASU project (in collaboration with the Zambia Ministry of Agriculture), which, similar to Mule-Stus, is linking agro-input dealers to SHFs. Unfortunately, the evaluation team was not able to verify whether the cited changes were occurring and to what degree Musika/Mule-Stus influenced them. ***Additionality**: The evidence for this finding was sufficiently weak (with regards to Mule-Stus' possible influence) that no conclusion with regards to additionality is possible.* ***Outcome Contribution**: The evidence for this finding was sufficiently weak (with regards to Mule-Stus' possible influence) that no conclusion with regards to outcome contribution is possible.*
Other key informants (including Mule-Stus) deny the existence of any demonstration effect or any broader influence of Musika and Mule-Stus on the agro-input market in Luapula Province.	Musika Mule-Stus PAO Agro-dealers SHFs	R	2	1	1	Other key informants insist that, for the most part, agro-input dealers <u>are not</u> changing the way they do business. Moreover, to the extent that they are changing—for example by increasing their presence in rural communities and/or providing extension services to SHFs—this is occurring irrespective of Musika and Mule-Stus. ***Additionality**: If this evidence is accurate, the agro-input dealers entering and operating in Luapula would have done so and in the same timeframe irrespective of Musika's intervention with Mule-Stus.* ***Outcome Contribution**: If this evidence is accurate, the growth in the agro-input market in Luapula would be proceeding on pace irrespective of Musika's intervention with Mule-Stus*
Among those agro-input dealers entering and operating in Luapula, none have so far set up a distribution network reaching out to marginal rural areas similar to what Mule-Stus is doing	Musika Mule-Stus PAO DOs	R	3	1	1	The distribution model Mule-Stus developed and implemented with Musika support – establishing distribution outlets in remote rural areas and providing extension services around them – has not been replicated (in any form) by other agro-input dealers in Luapula. Rather, the prevailing business model is to locate distribution outlets (stores) in population centers within the province. At the same time, however, anecdotal evidence does suggests that some agro-

with Musika support.	Agro-dealers SHFs					input dealers are attempting to expand the sales and extension outreach to SHFs living in remote rural areas, although none so far to the extent that Mule-Stus has done. ***Additionality**: As no other agro-input dealer appears to have replicated the Mule-Stus distribution model to date, there is no additionality.* ***Outcome Contribution**: As no other agro-input dealer appears to have replicated the Mule-Stus distribution model to date, there is no outcome contribution.*

Contribution Story

There is at best unverified anecdotal evidence suggesting that Musika's intervention with Mule-Stus in Luapula Province has produced a demonstration effect, as evidenced by a wider-scale adoption of Mule-Stus' farmer outreach model by other agro-input dealers. This evidence is contradicted by other sources of evidence asserting that the large majority of agro-input dealers in the province continue operating the traditional way; e.g., out of storefronts located in urban/population centers and that, to the extent some agro-input dealers are seeking to expand their sales and extension outreach to SHFs, they are doing it on their own business initiative irrespective of the Musika/Mule-Stus intervention. Thus to the extent agro-input dealers are entering the market, other general external factors appear to be contributing to this outcome, more so than any potential demonstration effect. These general environmental factors include: the transition in Luapula Province from a fishing-dominant economy to one increasingly focused on agricultural production; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Luapula a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme, which requires a network of certified agro-dealers to meet the anticipated increase in SHF demand for agro-inputs; and operations of other agricultural support programmes working to promote increased on-farm production and income among Luapula SHFs, including PLARD II, S3P, SUN, SAPP, and CASU.

Causal Package

Contributor: Favorable external factors

Sufficiency & Necessity

The causal package was sufficient to induce entry and growth in the Luapula agro-input market by non-supported agro-input dealers, but it was insufficient to induce entry and growth in the Luapula agro-input market due to a demonstration effect of Musika's Mule-Stus intervention

The Musika Mule-Stus intervention was a likely unnecessary component of the causal package

Outcome 8: Mule-Stus scales-up its distribution network

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Mule-Stus has created the most extensive distribution network of any agro-input dealer in Luapula Province.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	C	4	3	3	Leveraging Musika support, and by dint of the owners entrepreneurial drive, Mule-Stus has established a significant market presence in Luapula Province with a distribution network larger than any other agro-input dealer operating in the province. In addition to the four portable containers and shed supported by Musika, Mule-Stus operates out of ten fixed-site shops covering most districts in the province in Mansa, Chembe, Mwense, Kawambwa, Kaputa, Chiengi, Samfya and Nchelenge (in Kashikishi) together with a network of three extension workers (each with his own motorbike) based in Mansa, Kawambwa and Kaputa and 25 sales agents. Mule-Stus continues to look for opportunities to expand its farmer network; as well as to diversify into other agricultural activities so as to offset the seasonal nature of seed and other farm input sales. Currently, for example, Mule-Stus is running an outgrower scheme for beans with 25 farmers in Mutanda, 50 farmers in Milambo, 32 farmers in Kawambwa and 17 farmers in Nsonga under a forward contract with ETC International. It is currently considering plans to establish a rice and millie-meal processing plant in Nchelenge, diversify into the livestock feed market within Luapula and expand its operations into the Central Province. Key informants agreed that Mule-Stus' success to date had been notable, even the fact that it is selling as much seed as it is in a region that has long been dependent on the FISP for input support and with relatively little history of private sector provision of farming inputs. ***Additionality**: Musika was a catalyst in Mule-Stus' decision to establish its distribution network in Luapula Province. Thus even if we assume that Mule-Stus would have expanded its distribution network once it entered the market; Musika played a key role catalyzing Mule-Stus' decision expand its distribution network.* ***Outcome Contribution**: Musika was a contributor in the creation of Mule-Stus' distribution network in Luapula province. What expansion Mule-Stus has been able to achieve since then*

						owes directly to Musika's in this regard thus making Musika an important contributor to this outcome, although a less important contributor than Mule-Stus' own business initiative.

Contribution Story

With Musika support, and as a result of the owners entrepreneurial drive, Mule-Stus has created the most extensive distribution network of any other agro-input dealer in Luapula. This distribution network includes four portable containers and a shed (all provided by Musika), Mule-Stus operates out of ten fixed-site shops covering most districts in the province in Mansa, Chembe, Mwense, Kawambwa, Kaputa, Chiengi, Samfya and Nchelenge (in Kashikishi) together with a network of three extension workers (each with his own motorbike) based in Mansa, Kawambwa and Kaputa and 25 sales agents.

In the background to this intervention are a number of facilitating environmental factors, which combined have made, or are making, Luapula a more favorable market for the creation of an agro-input distribution network. These factors include: the transition in Luapula from a fisheries-dominant economy to an agriculture-dominant economy; a wealth of natural resources (plentiful rainfall, many year-round water sources, abundant land) that make Luapula a natural, yet untapped, center of agricultural production; favorable government policies, in particular the introduction of the FISP e-voucher scheme, which requires a network of certified agro-dealers to meet the anticipated increase in SHF demand for agro-inputs; and the presence of other donor-funded agriculture support programmes, including PLARD II, S3P, SUN, SAPP, and CASU.

Overall, however, the primary factor contributing to Mule-Stus' own-source investments appears to be its own business initiative.

Causal Package

Primary Contributor: Mule-Stus' own business initiative

Strong Contributor: Musika support

Facilitating Contributor: Favorable external factors

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika Mule-Stus intervention was a likely necessary component of the causal package

Assumption #1: Mule-Stus focuses on both sales and extension services and gives due attention to each

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The Mule-Stus distribution network focuses on both sales and extension services with the latter playing a key role in Mule-Stus' business and expansion strategy.	Musika Mule-Stus	C	4	Although Mule-Stus has established numerous storefront sales outlets, its rural outreach via its distribution hubs and agent network is a key component of its distribution network. This operation and success of its distribution network in turn depends heavily on the provision of extension services to SHFs.

Conclusion

The assumption is valid. By all the evidence, Mule-Stus is fully committed to its current strategy of twinning sales outreach with extension services with the latter being seen as critical to increase SHF demand for the inputs sole by Mule-Stus.

Assumption #2: Mule-Stus supports and monitors the performance of its distribution network

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
Mule-Stus is highly satisfied with the results of its work with Musika and is fully committed to continuing to build its distribution network in Luapula.	Musika Mule-Stus	C	3	Mule-Stus' commitment is evidenced by the investments it has made in expanding its network in Luapula, including setting up fixed-site retail stores and adding to its network of rural field agents.
Mule-Stus has established, with Musika assistance, a management/monitoring structure in Luapula, which includes a regional HQ in Mansa and branch offices in Chembe, Mwense, Kawambwa, Kaputa, Chiengi, Samfya and Nchelenge (in Kashikishi).	Musika Mule-Stus	C	1	The organizational structure Mule-Stus has set up in Luapula with Mansa as the regional HQ and branch offices in Chembe, Mwense, Kawambwa, Kaputa, Chiengi, Samfya and Nchelenge (in Kashikishi), appears to provide an effective mechanism allowing Mule-Stus to monitor and manage its operations in Luapula. Nonetheless, the evaluation team was not able to ascertain during the fieldwork how effectively this organizational structure was functioning in practice.

Conclusion

The first part of this assumption, that Mule-Stus supports its distribution network in Luapula, appears by all accounts to be valid. The second part of this assumption, that Mule-Stus monitors the performance of its Luapula distribution network, also appears to be valid, judging largely by the organizational structure it has set in place to manage and monitor this distribution network. Given, however, the evaluation team's inability to verify how well this organizational structure was working, this latter conclusion can only be stated tentatively.

Assumption #3: Expanding the distribution network is profitable for Mule-Stus

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
According to Mule-Stus, its distribution network is generating increased profits for business, although it was not specific what the profits earned were.	Mule-Stus	C	2	The Mule-Stus distribution network appears to be delivering an unspecified increase in profits for the business. Mule-Stus' continuing efforts to expand the network further indicate that it views the strategy as a profitable one.
Although sales do not necessarily translate into profits, the sales achieved to date and projected for the 2016-17 growing season bode well for the profitability of the Mule-Stus' operations in Luapula Province.	Musika Mule-Stus	C	2	Key informants estimate Mule-Stus' current market outreach at around 5,000-8,000 farmers, up from an estimated 1,000-2,000 farmers in 2010-2011. In terms of sales, Mule-Stus estimates that it sold 67 metric tonnes of maize seed during 2015-2016 -- , accounting for approximately 80% of total seed sales in the province – compared to less than 60 metric tonnes during 2013-2014 and less than 20 metric tonnes during 2010-2011, and it estimates an even greater sales increase for the 2016-17 growing season. Mule-Stus is working towards providing agricultural inputs to at least 80% of the targeted 20,000 SHFs ear-marked for the FISP e-voucher in Mansa and Samfya districts in 2016-17 growing season. According to key informants, Mule-Stus is also the largest seller of other agricultural inputs in the region, including selling as much as three times the number of irrigation pumps as all other competitors combined.

Conclusion

While it is too early to determine whether this assumption is true, the early indications are promising. Mule-Stus has so far generated impressive increases in input sales through its expanded distribution network. It expects to continue this favorable trend during the 2016-17 growing season. Sales achieved to date and projected for the 2016-17 growing season are also favorable indicators of the potential profitability of the Mule-Stus distribution network. Unfortunately, profit figures were not available to the evaluation team, nor was it able to confirm the sales figures reported by Mule-Stus. Thus any conclusion about the profitability of Mule-Stus' distribution network can only be stated tentatively at this point.

Assumption #4: Women benefit similarly to men

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The Musika Mule-Stus intervention includes no aspects designed specifically to benefit women.	Musika Mule-Stus	N	4	Mule-Stus estimates that about 35% of its client farmers are women. Most activities undertaken by Mule-Stus, with or without Musika support, are gender neutral, at least in their design if not in their impact. SHFs are presented the same messages and offered the same products regardless of sex. According to Mule-Stus, however, those messages are packaged and presented to challenge the idea of Ministry of Agriculture dominance in agriculture. Nonetheless, for the most part, men and women are treated equally and offered the same products together with the same messages. Depending on one's point of view, this is either a positive outcome (assuming in the past women were treated less preferentially than men) or a neutral outcome.
The sale and use of agricultural inputs that reduce the on-farm labour required for weeding disproportionately benefit women and children relative to men.	Musika Mule-Stus	C	4	Women play numerous roles in the agricultural value chain. Among these roles, weeding the fields is one of the most prominent. Weeds are a particular problem in Luapula's relatively wet climate, and women devote a large share of their on-farm labour (relative to men) weeding the fields. Children can also be heavily involved in weeding, often taking them out of school. The increased use of herbicides thus offers potentially large benefits for both women and children by significantly reducing their on-farm labour requirements.

Conclusion

This assumption has proven valid in terms of intervention design and in terms of the business strategy adopted and scaled-up by Mule-Stus with Musika support and on its own initiative. All activities supported by Musika or otherwise implemented by Mule-Stus are gender neutral in design. Nonetheless, to the extent that the increased use of herbicides and other agro-inputs among SHFs decreases the on-farm labour requirements in areas where women play disproportionately important roles, as in the case of weeding, women stand to benefit more relative to men. This is similarly true of children. Increased use of agro-inputs that reduce the labour demands on children also stand to generate significant benefits for children, such as by reducing the amount of time they are removed from school to work in the fields.

Assumption #5: Business environment remains conducive to growth in the agro-input market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
To date, the business environment has been highly conducive to the growth of the agro-input market in Luapula Province.	Musika Mule-Stus PAO DOs Agro-dealers SHFs	C	4	A variety of external factors have jointly contributed to creating a favorable business environment in Luapula for the growth of the agro-input market. These factors include the following: • The existence of other agro-support programmes, which are, similar to Musika, promoting SHF agricultural production in the province. These programs include those listed below. ○ Program for Luapula Agriculture and Rural Development-Phase II (PLARD II) financed by the Finnish government. ○ Smallholder Productivity Production Programme (S3P) financed by IFAD and implemented jointly with Ministry of Agriculture. ○ Scaling Up Nutrition (SUN) financed by the UN Food and Agriculture Agency (FAO). ○ The Smallholder Agribusiness Promotion Programme (SAPP) financed by IFAD. ○ Conservation Agriculture Scaling Up project (CASU) financed by the European Commission and FAO. • Transition in Luapula from a predominantly fishing-based economy to a more agricultural-focused economy, as many of the predominant fisheries in the province are becoming over-fished. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. Coupled with this is the introduction of the FISP e-voucher scheme in Luapula, which necessitates the establishment and registration of agro-input dealers to meet the expected increase

				in demand for agricultural inputs by benefitting SHFs. • Favorable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, center of agricultural production. The above external factors appear, for the most part, to be relatively stable in that they represent longer-term trends thus making them more likely to remain sustainable over time. They are, however, susceptible to a variety of economic (e.g., unfavorable shifts in the general economy or exchange rates), climate (e.g., unfavorable shifts in rainfall patterns) or political (e.g., changes in Ministry of Agriculture policy) factors that could result in corresponding unfavorable shifts in the general business environment.

Conclusion

So far, the assumption remains valid and reflects a number of favorable, longer-term (and thus presumably more sustainable) trends that bode well for the future. The assumption, however, is vulnerable to unexpected economic, climate or political shocks that can potentially stall or even reverse the favorable trends contributing to the current positive business climate.

Annex 10: Contribution Analysis Zammilk

CONTRIBUTION ANALYSIS OF THE MUSIKA ZAMMILK INTERVENTION

Goal 1: Reduced poverty

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's intervention with Zammilk is contributing to reduced poverty among SHFs.	N/A	N	1	1	1	The evaluation methods were not appropriate to measure changes in SHF poverty levels. It is, moreover, too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of the Musika Zammilk intervention. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether the poverty status among affected SHFs has changed since the beginning of the Musika Zammilk intervention. In addition, there are a large number and wide variety of other potential factors, aside from the intervention, that affect changes in SHFs' poverty status. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in SHF poverty status relative to the intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 2: Smallholder farmers increase income

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is limited anecdotal evidence that SHFs have improved their on-farm or household income as a result of selling milk to Zammilk.	Zammilk Musika District and Provincial Officers SHFs	C	1	1	1	Farmers and Musika staff report little or no change in income at the time of endline fieldwork. At the time of endline fieldwork Zammilk report that they are purchasing approximately 620 liters of milk at their processing plant. Milk is purchased from about 80 different farmers at 4 Kwatcha per liter. Each farmer sells an average of 8 liters of milk per day. This equals Kw 32 per day of an average of ZMW 960/month (approx. USD 100 / month). These figures are gross revenue and do not include any costs of delivery or consideration of opportunity costs. The main alternative market for milk is 'sour milk". Key informants suggest that If farmers sell 'sour' milk then values increase to 6 ZMW per liter but volumes fall to by approx. 50% as liquid is lost in the souring process. The evaluation team, however, was unable to verify if these developments had led to an increase in income, and if so by how much. Milk production in Western Province is seasonal as shown in the following monthly purchase volumes for the Mongu Dairy Cooperative (MODACO) in 2016 Jan 3,434, Feb 2,862, March 801, Apr 329, May 207, June 420, July 62, Aug 458 and Sept 363 Liters. Endline fieldwork was performed in October at the end of the dry season. Milk yields are low at this time and rise rapidly in the wet season (November to April). Milk production will rise in the

						wet season and farmers are expected to increase supplies to Zammilk. If this happens then significant income gains could arise. Zammilk is expecting some farmers to achieve income levels of ZMW5,000 (USD 500) per month in the wet season. The Ministry of Livestock Field Officers confirmed this potential. ***Additionality**: The anecdotal nature of the evidence, its general nature and the lack of verification for the evidence makes it inappropriate to claim any Musika additionality for this outcome..* ***Outcome Contribution**: At the time of endline fieldwork there was very little outcome contribution.*

Contribution Story

At the time of endline fieldwork the Zammilk project has not contributed to a significant increase in farmer incomes.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 3: Smallholder farmers increase milk supply

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Milk supply is significantly below processing capacity. SHFs are beginning to increase milk supply to the Zammilk Milk Processing Plant. Milk supply	Musika Zammilk	C	3	3	3	The Zammilk Milk Processing Plant opened in December 2015 with a capacity of over 2,000 liters per hour. Initial milk processing volumes were low as reported in the Independent Evaluation Annual Review 2016. Since then Zammilk reports a gradual rise in milk supply from farmers.

continues to follow seasonal patterns.						May: average 60 liters / day July: average 180 liters / day Aug: average 250 liters / day Sept: average 500 liters / day Oct (average at time of endline fieldwork): 588 liters per day Milk supply is following seasonal patterns with low production in the dry season (April to Nov) that increases into the wet season (Nov to March). Senior Zammilk managers feel large-scale farmers offer the best potential for increasing milk supply. Larger farmers, usually retired professionals of civil servants are increasingly looking to invest. 'Larger retired farmers looking to invest have more potential to supply us' Zammilk Senior Manager. Three of these type of farmers are currently supplying Zammilk. One farmer with 17 dairy cows reported a recent doubling of milk sales to Zammilk. He 'now sells more milk at Kw 4 /liter than he used to on the local market at Kw 6 / liter'. Musika has been providing further support to encourage farmers to increase milk supply. In July / August 2016 Musika hired an influential person from Western Province to sell the Zammilk idea to farmers. A team of 9 people led by the Honourable Mr Imenda were hired as catalysts for change. These people visited Musika in Lusaka to discuss the Zammilk milk supply challenge and also visited Namwala, Southern Province to see an example of what is possible. Four of these people then went to Western Province and talked to communities encouraging them to supply milk to Zammilk. This represented a second round of funding following initial support to the milk processing plant. Five local radio programs were also supported under this funding. Sefula Women's Group report being encouraged to enter the dairy market as part of 'my village and development' promoted by wealthy individuals in Lusaka supported by Musika. This is an example of 'Mbuya ya luna' – where wealthy people from Western Province living elsewhere encourage local people to invest in businesses such as milk. This group had been supplying Zammilk for two months at the time of endline fieldwork. ***Additionality**: Current milk supply is significantly below expectoration. Evidence shows farmers beginning to supply Zammilk. Zammilk and Musika have catalyzed this development.* ***Outcome Contribution**: A small rise in milk supply has occurred. Zammilk and Musika have contributed to this small increase.*

Zammilk offers advantages to SHFs over other buyers, which make it a relatively attractive option for SHFs to increase milk supply.	Musika Zammilk District Officials Farmers	C	3	3	3	Zammilk offers a reliable monthly payment to farmers that key informants see as attractive. Dairy Cooperatives are commonly reported as making payments to farmers irregularly or not at all. Zammilk price levels are above national averages (4 ZMW / liter as opposed to 3.5 ZMW nationally) but below the price paid by Western Province Dairy Cooperatives (5 KMW / liter). ***Additionality**: Evidence shows farmers beginning to supply Zammilk. Given previous disappointments with Coop the small supply increase may not have happened without the intervention. Zammilk and Musika have catalyzed this development.* ***Outcome Contribution**: A small rise in milk supply has occurred. Zammilk and Musika have contributed to this small increase.*
Small holders milk production practices remain traditional	MODACO Sefula Women's Groups Farmers Provincial / District Officials	R	3	1	1	Key informants commonly report that farmer's practices remain traditional with milk produced from beef animals that are kept according to seasonal migratory patterns. 'Sour' milk remains a prominent use for milk that allows a longer storage period in the local environment and is consumed mixed in maize flour. Efforts to move farmers to more commercial approaches that would increase milk supply are rarely gaining traction. Sefula Women's Groups report trying supplementary feed from Ultravetis but they felt it did not think this worked. One large-scale farmer interviewed during endline fieldwork reported regular use of commercial feed. They still only treat cattle if they are sick and do not use preventative medicines or vaccines. Farmers commonly use own bulls for breeding. While farmers are often aware of, and interested in Artificial Insemination (AI), the cost and previous experience is leading to them taking a cautious approach. ***Additionality**: The majority of farmers remain performing their traditional practices. At the time of fieldwork the intervention had not moved many of these farmers to change their behaviour.* ***Outcome Contribution**: The intervention has not managed to contribute to the desired outcome in a significant manner.*

Contribution Story

The Zammilk project has not significantly contributed to an increase in milk supply at the time of endline fieldwork. There is significant potential for this situation to improve as the wet season arrives and seasonal milk production increases. At the time of endline fieldwork the milk processing plant had been open from December 2015 to October 2016. Milk production is seasonal in Western Province. The plant opened in the period of high production. At this time the plant failed to purchase high volumes of milk as reported in the Independent Evaluations 2016 Annual Review performed in February 2016. The initial Musika funded concept was for the Dairy Cooperatives to aggregate milk and supply Zammilk. It has not been possible for sustainable

arrangements to be negotiated between these parties. Fieldwork shows cooperatives offer farmers a higher price than Zammilk buy often fail to pay farmers. This has led to farmer dissatisfaction with Cooperatives.

The dominance of traditional breeds that produce low levels of milk and the nomadic herding patterns used has challenged efforts to increase the supply of milk particularly in the dry season. Farmer's previous fresh milk marketing experience has continued to contribute to low volumes of supply. Farmer's payment experience with Mongu Dairy Cooperative (MODACO) and other milk buying cooperatives has lead to farmers being unenthusiastic when starting to supply Zammilk. Zammilks pricing policy of paying a lower price than cooperatives but having reliable payment is expected to take time to prove itself.

Currently Zammilk is working on routes with transporters and the number of collection points is increasing. Altogether the supply of milk is much lower than anticipated (the processing plant has a 2,500 liter per hour capacity and is receiving approximately 620 liters per day. There is significant potential for milk supplies to increase during the wet season. Unless herd composition and cattle management practices change significantly milk supply will remain seasonal.

Causal Package

Primary Contributor: Traditional breeds and husbandry practices

Contributor: Farmers previous experience with dairy cooperatives and the breakdown in institutional arrangements that has led to cooperatives not supplying Zammilk

Sufficiency & Necessity

The Musika intervention has not yet significantly caused an increase in milk supply by small-scale farmers. This may change in the coming wet season however Zammilk may target larger scale farmers as its most suitable suppliers.

Outcome 4: Demonstration effect encourages other SHFs to copy practices adopted by Zammilk assisted SHFs (e.g. improve their dairy heard and milk production)

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Key informants and focus group participants report that the Zammilk	SHFs	R	3	1	1	No evidence of a demonstration effect has been found by the Independent Evaluation. Key informants commonly report farmers following traditional patterns of cattle husbandry and

Intervention has failed to develop a demonstration effect, as farmer practices remain traditional.	Dairy Cooperatives Provincial and District Officials Novatec					management. Farmers at Tukongote Dairy Cooperative report local (mainly beef) breeds are kept using a traditional migratory system. Cattle are kept on a wide flood plain far away from milk storage and processing unit in the dry season. When the rain comes cattle are moved to higher ground. Fodder becomes harder to access on the higher ground due to over crowding. This leads to the high variation in seasonal supply reported above. Farmers at Namushakende Dairy Coop also report smallholder farm practices are traditional. Sefula Womens Group report farm practices have not changed. Traditional migratory patterns are followed. Livestock inputs remain traditional in terms of health products, feed and breeding. The Provincial Livestock Officer reports traditional practices remain dominant. A Novatec representative also reports farming practices are traditional with little change. Farmers show interest to improve traditional breeds through use of improved bulls and AI. Tukongote Dairy Cooperative report that AI has been tried before in 2009 and 2012 when 5 members tried the approach – all failed to conceive. Also more recent AI was attempted with Ultravetis. Five cows were tried and all failed. A Musika representative felt small holders are becoming increasingly interested supplying milk and changing their practices due to the presence of Zammilk, promotion and extension. Endline fieldwork supports this observation at low levels. The PVO reports one of two farmers changing their farming practices by using improved breeds (Jersey and Friesian). A larger scale Mongu farmer also thought some other farmers are increasingly crossing their traditional borani breeds with dairy bulls (Friesian and Jersey). He thinks these farmers will increase the supply of fresh milk in future. Tukongote Dairy Cooperative report Zambeef / Zammilk and the Gov. Livestock Officer as providing training to improve animal health / farming practices and report litle change. One farmer member is reported as moving his animals closer to the milk collection center; about 3 km closer. He has exotic breeds and produces 16 liters per day. Another farmer reported trying Zero grazing – this was done in 2013/14 before the Zammilk plant started. Feed problems led to him stop this practice. Another farmer also tried zero grazing but couldn't transport the feed (cut grass) from the plain. ***Additionality**: There is little evidence of SHF changing practices or other farmers copying these*

						practices in significant numbers at the time of Endline fieldwork. There is no evidence for additionality at the time of endline fieldwork. ***Outcome Contribution**: There is no evidence of SHF copying and thus no evidence for any outcome contribution from the Zammilk.*

Contribution Story

The Zammilk initiative in Western Province has not yet achieved significant change in farmer practices. At the time of endline fieldwork there had been no demonstration effect leading to other farmers copying promoted practices.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 5: Market demand for milk increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Opening the Zammilk milk processing plant has increased the demand for milk in Western province.	Zammilk Musika District Officials SHF	C	4	3	3	Opening the Zammilk processing plant has increased the demand for milk in Western Province. Zammilk offers to buy at 4 ZMW per liter with reliable payment at the end of the month of delivery. As reported above, purchase volumes have been significantly below capacity. The intention was to process fresh milk at the plant and transport this to other parts of Zambia for sale. Currently low volumes of sour milk are processed and transported to Chisamba, Lusaka. Key informants report that Zammilk is now the main buyer of milk in the province. Three dairy cooperatives were also buying milk during 2015 to 2016. Two of these continue to

						buy milk at very low levels at the time of endline fieldwork and one has not operated since early 2016. Local informal markets remain for fresh and sour milk. No consistent evidence has been found of changes in these markets. ***Additionality**: Zammilk has expanding the market for milk in Western Province. Musika support has been a key catalyst supporting this development.* ***Outcome Contribution**: Musika's support has been the primary factor contributing to Zammilk building the processing plant.*

Contribution Story

Musika has supported Zammilk to build a milk processing plant with a processing capacity of over 2,000 liters per hour. This suggests a potential daily demand of over 14,000 liters per day. At the time of fieldwork Zammilk was the main effective market for fresh milk buying approximately 600 liters of milk per day (less than 5% of capacity). Musika funding has been a primary factor contributing to the creation of the Zammilk milk market. Musika remains a key supporter of Zammilk. At the time of fieldwork Musika was providing technical support to Zammilk assisting finding solutions to milk transport challenges. Musika was also providing further funding to support construction of milk collection points. Zammilk reported its attention over 2015 /16 has been focused on its Chisamba milk processing plant, close to the urban consumption centers of Lusaka and the Copperbelt. This organizational attention to other areas of the business has reduced Zammilks contribution to the Western province plant.

Causal Package

Strong Contributor: Zammilks interest in securing milk to supply markets in the rest of Zambia

Primary Contributor: Musika support has had a primary role in supporting Zammilk to build a processing plant and buy milk

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika Zammilk intervention was a necessary component of the causal package

Outcome 6: Demonstration effect encourages other market actors to crowd-in the milk market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The presence of Zammilk has encouraged one other market actor to crowd in. This actor supports access to dairy cows though a specific financing instrument.	Zammilk Musika ZANACO	C	3	4	4	The creation of the Zammilk processing plant provides a market for farmer's milk. Zammilk is building a reputation for reliable payment to farmers and the market offered has potential to expand. At the time of endline fieldwork one example of another market actor entering the market system supported by Zammilk was ZANACO. ZANACO are working on a 'loan a cow' initiative nationally and with Zammilk in Western Province to improve the dairy herd. The system works whereby an emergent farmer or cooperative have an account with ZANACO. A dairy heifer is given to the farmer or cooperative. It is expected that the cow will produce at least 40 liters of milk per day. Cows are brought from Chisamba and Southern Province. Zammilk is essential in the relationship as the milk produced must be sold though a running contract with a reputable buyer (Zammilk). Zammilk will then make a regular payment to ZANACO from the farmers or cooperatives monthly payment (15% of cows value per year) until the value of the cow has been repaid. The animal is seen as the collateral for the loan. The initiative is currently work in progress and no dairy cows have yet been delivered. Plans are to achieve a minimum of supplying a cow to eight farmers and they expect to start at Limulunga Royal Village; Namushakende, Sefula and Mongu. ZANACO will give up to 8 dairy animals per farmer. ZANACO report that they would not be doing this initiative in Western province if Zammilk were not present. It is recognised that Ultravetis is working with Zammilk to increase farmer's knowledge and use of animal health products (i.e. deworming and feed supplements) and AI that have potential to increase milk yields. This relationship is seen as falling under the Contract Agreement condition

						for Zammilk to work with other commercial service providers in the area to facilitate access by dairy farmers to improved nutritional and genetic products and not be an example of crowding in. ***Additionality**:* The presence of Zammilk provides a reliable buyer for ZANACO to build into its 'loan a cow' initiative. It is unlikely that ZANACO would attempt this program in Western Province if Zammilk were not present. There are no other obvious organisations in Western Province that could provide the financial systems necessary for the 'loan a cow' initiative to function successfully. ***Outcome Contribution**:* The Musika supported Zammilk intervention is the primary factor contributing to the expected entry of the ZANACO 'loan a cow' scheme.

Contribution Story

One example of crowding in existed at the time of endline fieldwork. ZANACO is entering the market for financial products to support farmers acquire dairy cows through its 'loan a cow' program. ZANACO is considered highly unlikely to have begun implementing this initiative without the presence of the Musika supported Zammilk processing plant.

Causal Package

Strong Contributor: Zammilks interest in securing milk to supply markets in the rest of Zambia

Primary Contributor: The presence of the Musika supported Zammilk milk processing plant has been a primary contributor to ZANACO beginning its 'loan a cow' programme in Western Province.

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika Zammilk intervention was a necessary component of the causal package

Output 7: Farmers knowledge of dairy production improves

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Farmer's knowledge remains largely traditional with Zammilk working with a relatively small number of farmers to source supplies.	Zammilk District Officials Farmer groups	R	3	1	1	Zammilk, Ultravetis, Musika and local Gov. Veterinary and Livestock Officers are working to improve knowledge of dairy production. At the time of endline fieldwork evidence of improvements in knowledge was anecdotal. Key informants, including senior Zammilk manager's recognized that small holder farming practices remained largely traditional. If knowledge levels are improving, there is little evidence of farmers applying that knowledge. At the time of endline fieldwork Zammilk reports working with 8 active farm groups and three individual farmers to supply fresh milk. Zammilk is involved in rigorous extension and outreach programme to reach more smallholder farmers to start supplying milk to Zammilk. Zammilk extension is focused on securing current reliable milk supplies that meet quality and health standards. Addressing dairy production is viewed as important; hence the involvement of Ultravetis and the promotion is its animal health products and AI service. However, Zammilk along with other stakeholders recognize that smallholder practices are traditional subsistence approaches governed by local culture and see larger farmers as having the best potential to apply new knowledge. ***Additionality**:* There is no evidence that Musika's support to Zammilk has improved farmer's knowledge of dairy production to the point that farmers are applying this knowledge. ***Outcome Contribution**:* The intervention has not managed to contribute to the desired outcome in a significant manner.

Contribution Story There is no evidence suggesting that Musika's intervention with Zammilk in Western Province has produced the desired increase in farmer's knowledge of dairy production to the point that farmers have applied this knowledge. **Causal Package** There has been no applied increase in dairy farmers production knowledge. **Sufficiency & Necessity** There has been no applied increase in dairy farmers production knowledge.

Output 8. Zammilk constructs, manages and maintains a milk processing facility in Mongu and buys milk

Evidence	Source	Confirming/ Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Zammilk has constructed a milk-processing factory in Mongu with a capacity of over 2000 liters per hour.	Musika Zammilk Physical verification	C	4	3	4	Endline fieldwork shows that Zammilk has constructed a milk processing plant in Mongu. At the time of fieldwork the plant appeared to be well managed and maintained. Construction of the milk processing plant was significantly delayed. The plant came into operation in December 2015. The original contracted completion date was intended to be May 2014 (see Grants Contract Grant Agreement Number: 8400-13-03). Delays are reported as in the Musika 2015 First Quarter Reports as "after considerable delays in equipment procurement and in securing

						permission from ZEMA for Zammilk to develop a dairy processing facility in Mongu, both challenges were resolved by the end of 2014 and during the first quarter of 2015 the upgrading of the building assigned to house the processing facility was initiated and the relevant staff to operate the facility were recruited. It is anticipated that operations will start within the second quarter." Musika 2015 Quarter One further reports that "the delayed implementation by Zammilk is negatively impacting Musika's return on investment considering the promotional efforts made and the large numbers of smallholder farmers willing to participate." Zammilk identified the following factors as leading to delays in establishing the plant: i. Time taken to obtain Govt approval for the plant i. Delayed start up – finding and upgrading facilities, finding (internal) funding outside of Musika, getting equipment to load / unload machinery, instillation needed resources i.e. gas that had to come from Lusaka i. Challenges with Zammilk expansion in Chisama – more management attention was given to this (Production has recently doubled) ***Additionality**:* Musika's support to Zammilk has been a significant catalyst in building the plant. It is unlikely that Zammilk would have built the plant without Zammilk support, however this cannot be fully ruled out as Western province has a large cattle herd. ***Outcome Contribution**:* The Musika support is the primary factor contributing to Zammilk building the milk processing plant.
Zammilks purchasing volumes are significantly lower than the milk processing plants capacity.	Zammilk Musika District Officials	R	4	1	1	As discussed above, Zammilk was buying approximately 600 liters of milk per day for a processing plant with a capacity of over 2000 liters per hour. ***Additionality**:* Musika's support to Zammilk has not yet produced the intended levels of milk purchases. ***Outcome Contribution**:* T Musika's support to Zammilk has not yet produced the intended outcome in terms of levels of milk

						purchases.
Milk purchases from existing dairy cooperatives have failed to arise as intended in Grant Contract	Dairy Cooperatives Zammilk Musika District Officials Sefula Womens Group SHFs	R	4	1	1	It was initially intended that Zammilk buy milk from three existing dairy cooperatives with cold chain facilities provided by a previous EU project. These supply arrangements have not been successfully formed. Districts Officials report 'a lot of wrangling and confusion' with the Mongu based dairy cooperative, MODACO and 'poor sensitization regarding the already existing structures on the ground; they should have sat down with all the stakeholders to assess and agree on how to operate, and build on the existing structures'. The Mongu DVO suggested Zammilk's grading scheme with a price premium for better milk qualities also caused confusion, disagreement and disappointment. Price appears to have been a major issue involved in agreement negotiation. The MODACO Chairman felt the Zammilk buying price should be higher to allow the three dairy cooperatives with cold chain facilities to supply milk to Zammilk. The dariy cooperatives also faced their own management issues. Sefula (and other farmers) reported MODACO) – but 'were not treated well'. MoDaCo were reported as only paying for half the milk delivered and limiting the amount the community could supply during peak production periods. As a result of the failure to secure milk supplies from dairy cooperatives Zamilke now buy from farmers or farmer groups. Musika Western Province staff now report a 'competitive relationship exists between it and Zammilk'. ***Additionality:*** Musika's support to Zammilk has not yet produced the intended levels of milk purchases. ***Outcome Contribution:*** Musika's support to Zammilk has not yet produced the intended outcome in terms of levels of milk purchases.
Zammilk, with Musika support, is building milk collection centers and developing transport services to collect milk from farmers.	Zammilk Musika District Officials SHFs	R	4	1	1	At the time of endline fieldwork Zammilk, with Musika support, was working to address milk transport to the processing plant. It takes three hours for fresh milk to go sour in Western Province temperatures. At the time of endline fieldwork, Zammilk was contracting transporters to collect the milk from designated collection points. This was challenging as many smallholders keep cattle in remote areas. Transport issues were reported by some

						groups as having stopped them supplying Zammilk. Farmers suggest the remote 'difficult to get to locations' and low milk volumes collected probably make it uneconomic for Zammilk to collect. The Provincial Veterinary Officer suggested 'Zammilk is using more fuel than the milk it is collecting'. Transport and milk collection have been significant challenges for Zammilk. DVO Fieldwork observation suggests Zammilk is targeting farms near tarmac roads closer to the milk processing plant. To help address this issue Musika have agreed to support three milk collection tanks of 1,500 liters each. They are currently assessing sites for these tanks. This is part of a third round of funding for the Zammllk initiative following on from the original plant construction. ***Additionality**:* Musika's support to Zammilk has not yet produced the intended levels of milk purchases. ***Outcome Contribution**:* Musika's support to Zammilk has not yet produced the intended outcome in terms of levels of milk purchases.

Contribution Story

Zammilk has constructed a milk-processing factory in Mongu with a capacity of over 2000 liters per hour. Construction of this plant experienced significant delays. At the time of endline fieldwork milk purchases at the plant were significantly below capacity. Delays in construction were caused by the time taken to obtain Gov. approval for the plant and delays relating to internal priorities within Zammilk. It was initially intended to source milk from three dairy cooperatives that had cooling storage tanks. The negotiation of supply arrangements with these dairy cooperatives failed, as the parties were unable to agree price structures. The internal management arrangements of the dairy cooperatives are also suggested as making them unreliable suppliers. As a result of dairy cooperatives not supplying milk, Zammilk is working directly with farmers and farmer groups to buy milk. At the time of endline fieldwork, transport distances and costs are contributing to limited milk purchases. Zammilk, with Musika support, are working on transport arrangements and plan to install collection tanks at selected sites to profitably allow improved milk collection.

Causal Package

The following elements contributed to the observed outcome:

Strong Contributor: Failure to negotiate intended arrangements with dairy cooperatives to supply milk. High transport cost, especially in dry season when production volumes are low, that reduces the profitability of milk purchases. Musika support played a key role in getting the processing plant built.

Contributor: Delays in opening,

Conclusion

The Musika support was necessary for Zammilk to build and operate the processing plant

The causal package has been insufficient to produce the desired result in terms of levels milk buying

Output 9. Zammilk expands it extension service by recruiting, supervising and managing the field extension staff to provide information to farmers

Evidence	Source	Confirming/ Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Zammilk has provided intermittent extension services to farmers.	Musika Zammilk Farmers	R	3	1	1	Since opening the processing plant Zammilk employed one extensionist. This extensionist was employed for about 8 months from October 2015. He was active at the time of the independent evaluation 2016 Annual review. At the time of the endline study the extensionist had been dismissed for 'misconduct' and not replaced. During the endline field visit, the plant manager was performing the extension role. Endline fieldwork suggests the plant managers field visits were focused on securing supplies by addressing aggregation and transport issues. Zammilk was reported as in the process of recruiting a replacement extensionist.

						The Provincial Livestock Officer felt Zammilk was addressing improved husbandry, de worming and feed supplementation. Zammilk staff emphasized 'more extension is required to increase farmer awareness of what Zammilk offers.' Farmers suggest the quality of extension has been inconsistent. Near Mongu, farmers report a Zammilk extensionist originally visited him and agreed to see his machines. This person then did not return. Then the Zammilk manager returned and they talked of diary feed. This led to him supplying Zammilk with fresh milk. After this Novatek visited from Lusaka and 2 to 3 months later he started to use their feed. He almost pulled out as he felt the feed was expensive and the milk price was too low. A Musika representative highlighted difficulties providing extension for firms. This key informant pointed out that both Ultravetis and AgriServe have had challenges in providing extension. There are 'very few extension professionals for livestock in Western Province and those that are present are taken by Gov.' ***Additionality**: Musika's Zammilk intervention has failed to provide a distribution or extension network.* ***Outcome Contribution**: Musika's Zammilk intervention has not contributed to an outcome related to distribution or extension.*

Contribution Story Zammilk has provided intermittent extension services to farmers. Zammilk employed one extensionist for a limited period of time since the opening of the milk processing plant. The plant manager was actively visiting farmers to address transport and aggregation issues at the time of endline fieldwork and Zamilk was recruiting a replacement extensionist. Farmers report that the previous extensionst did not always meet his commitments. Contributing factors to the situation are that Zammilk initially recruited an inappropriate employee who was removed due to misconduct. This employee has not been immediately replaced and the plant manager has temporarily filled the role and focusing on addressing transport and collection issues. **Causal Package** Primary Contributor: Poor recruitment processes and not replacing staff in a timely manner. Contributor: Organisational priorities not prioritizing extension. **Conclusion** The Musika Zammilk initiative has insufficiently expanded its extension service by recruiting, supervising and managing field extension staff to provide information to farmers. Musika support has not been sufficient to achieve the desired outcome.

1. Assumption #1: Zammilk focuses on the developing the performance of its processing plant

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
Zammilk did not focus on the developing the performance of its processing plant.	Zammilk Musika	R	4	Zammilk and Musika representatives point out hat Zammilk attention has been focused on areas outside of its Western Province plant. This has negatively effected the time taken to build the plant, provide extension and increase its milk-purchasing. At the same time that Zammilk was building the Mongu plant it was also expanding its milk processing facility at Chisamba approx. 30 kilometers outside of Lusaka. Zammilk management report that in 2016 milk processing at Chiwsamba doubled. Zambeef, Zammilks parent company, also experienced a budget cuts and cash flow shortages in 2014 to 2016.

				The Commonwealth Development Corporation injected USD 60 million into Zambeef in 2016. The value of the Kwatcha also contributed to company cash flow shortages. Zammilk senior management report that internal cash flow shortages have contributed to slow implementation of the milk processing plant in Western Province.

Conclusion

The assumption did not hold. Zammilk and Musika representatives report Zammilk had other priorities during the period of Musika support. Zammilk business priorities were better or seen as more important outside of Western Province.

Assumption #2: Purchasing and processing milk in Western Province is profitable for Zammilk

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
There is no evidence to suggest the Zammilk processing plant is profitable.	Musika Zammilk	N	3	No evidence was available to the independent evaluation to show that the Zammilk plant will be profitable. The main investors Zammilk and Musika continue to invest in the initiative. However there is a lack of available analysis showing that the plant can be profitable at what input / output prices. Musika report that the project was 'initially based on the fact that the livestock numbers (in Western Province) make it viable and previous efforts at milk marketing were constrained by a lack of market where farmers lost a lot of milk'.

Conclusion

This assumption is unproven as no evidence is currently available to the independent evaluation that proves of disproves profitability.

Assumption #3: Women benefit from the intervention equally to men

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The Musika Zammilk intervention includes no aspects designed specifically to benefit women.	Zammilk Farmers District Officials	N	4	The Zammilk intervention treats women equally to men. Zammilk report having identified barriers to women's involvement that include traditional norms/beliefs that men tend to cattle whilst women concentrate on smaller livestock. These barriers have not yet been addressed. Zammilk estimate that 5% of their milk suppliers in Western Province are women and recognize that men will directly benefit more from the processing plant. District officials' report that while women can own cattle, men control and manage them in the local culture. Women don't make decisions when it comes to the animal, e.g. to sell the animal. Hence, district officials suggest, benefits will go mainly to men. Zammilk does not target women and farmers report most if not all interaction is with males. Musika representatives report the emphasis is on getting companies doing business and that this is difficult enough in Western province. Once companies are established inclusion issues can be addressed. One women producer group has been formed in 2016.Impacts should favour women in this group. The 'Mbuya ya Luna' initiative encouraged the participation of women in this example. The intervention entered by talking to men first in Aug 2016. Since then women have become more involved. Men are reported as still keeping the animals but women group members are involved in milk sales.

Conclusion

This assumption is invalid. Zammilk project design does not include elements specifically targeting women. These are considered necessary if benefits are to be equal as men dominate access and control over cattle in Western province. Any direct benefits are most likely to accrue to men first with accrual to women dependent on intra-household

asset distribution. One exception exists where the Sefula Women's Group supply Zammilk. This group was facilitated by the 'Mbuya ya Luna' initiative.

Assumption #4: Business environment remains conducive to growth in the milk market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
To date, the business environment has been relatively conducive to the growth of the milk market in Western Province.	PAO DOs Agro-dealers	C	2	Available evidence suggests the business environment has been sufficient to allow the growth of businesses. More broadly Western Province has been relatively stable with no unfavorable shifts in the general business environment. Road infrastructure in the west and south of the province has also improved and it is now possible to connect directly by road to Angola.

Conclusion

So far, the assumption remains valid and reflects a general long-term (and thus presumably more sustainable) trend that bode well for the future. The assumption, however, is vulnerable to unexpected economic, climate or political shocks that can potentially stall or even reverse the favorable trends contributing to the current positive business climate.

Annex 11: Contribution Analysis GroAfrica

CONTRIBUTION ANALYSIS OF THE MUSIKA GROAFRICA INTERVENTION

Goal 1: Reduced poverty

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The initiative for GroAfrica to buy cassava and supply brewers started operation in September 2016. While there is no evidence to prove any change, it is very unlikely that poverty had been influenced by the time of endline fieldwork one month later.	GroAfrica	N	4	1	1	It is too early in the intervention cycle to observe any changes in poverty that may be occurring as a result of the Musika GroAfrica intervention. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is very unlikely that the poverty status among targeted SHFs has changed since the beginning of the Musika GroAfrica intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 2: Smallholder farmers increase income

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is anecdotal evidence that the price premium offered by GroAfrica is beginning to increase farmer's income.	GroAfrica Zambia Breweries District and Provincial Officers SHFs	C	2	3	2	The evaluation methods were not appropriate to measure changes in on-farm or household income. However, at the time of endline fieldwork GroAfrica was paying a price premium to farmers. It is reasonable to suggest that farmers selling available cassava would receive a boost to their income in these circumstances. GroAfrica had been actively buying cassava for one month at the time of endline fieldwork. A premium price was being paid of 1.4 ZMW / kg (approx. USD 140 / MT) for the dried cassava. Market prices at the time ranged between ZMW 0.5 to 0.08 per kilogram around Mansa and the Programme Against Malnutrition (PAM) reports buying similar cassava at 1.00 ZMW / kg. Key informants generally agreed that given the short time frame in which the intervention had been implemented, it was unrealistic to expect a significant increase in income. Key informants expected farmers incomes to rise and made the following unsubstantiated estimates: Senior Agricultural Officer – 70% rise Block Supervisor - between 30% and 40% rise Cooperative Secretary – approx. 30% Farmer groups reported that an impact on income is yet to be seen given that this intervention has just started. Female respondents at Munchini Village felt farmers were

						looking forward to selling more cassava in the coming season due to the ready market (provided by GroAfrica). Three women at Munchini Village had so far sold 80 x 40kg bags of cassava to GroAfrica. The price for the cassava was at first pegged at K1.20/kg but was increased to K1.40/kg. None of the men in the Munchini group had sold their cassava; hence their income was unchanged. At a Lukangaba Multipurpose Cooperative 4 men had sold cassava to GroAfrica and their income had increased. Women at this cooperative reported that the intervention had not yet started yielding results. GroAfrica has long been trying to stimulate cassava markets in Luapula where cassava is a traditionally grown crop given high soil acidity in the province. In 2014 Musika had agreed to support GroAfrica in the supply of cassava to the Government of Zambia for bioethanol. Arrangements with Gov. were not finalized and no progress was made the time frame of the independent evaluation. In 2016 Musika agreed to support GroAfrica through provision of equipment, training and technical advice to help it supply cassava to Zambian Breweries. GroAfrica has begun buying cassava to supply a Zambia Breweries processing plant in Ndola. Zambian Breweries requires additional cassava to replace sorghum in its Eagle beer. Zambian breweries report the government has provided incentives to promote cassava production by reducing exercise tax on eagle beer to 10% from 40%. This has increased cassava uptake in the preparation of eagle beer from 5% previously to 40% currently. *Additionality: Any Musika additionality for this outcome is questioned as Zambian Breweries demand for cassava increased significantly resulting from a Gov. tax change. Zambian Breweries may have arranged supply of cassava through other aggregators and GroAfrica may have simply been fortunate to be 'in the right place at the right time' as initial attempts to supply bioethanol to the Gov. stalled. However, Musika did facilitate linkage between Zambian Breweries and GroAfrica knowing the organisations had similar interests. Musika support has acted as a catalyst for something that a market actor would have undertaken but on a different timeframe.* *Outcome Contribution: Musika support is one of a number of factors that is contributing to the observe outcome. Musika support has facilitated linkage and helped GroAfrica procure equipment and build a supply network. However, the commitment and drive of GroAfrica and the end market growth presented by Zambian Breweries are driving the outcome.*

Contribution Story

At the time of endline fieldwork the GroAfrica project had just begun to buy cassava and increase farmer incomes. Hence, any income increases were suggested as small and accruing to a low number of farmers as cassava purchases had only been in operation for one month. GroAfrica was targeting total purchases of 1,135 MT from farmer groups with each group supplying approximately 25 MT (500 by 50 kg bags) in 2016. The total gross value at a farm gate level is estimated to be USD 158,900 (1,135 MT x USD 140 / MT). Actual figures achieved could not be verified. A key-contributing factor leading to GroAfrica's cassava purchases is the significant increase in demand from Zambian Breweries. A change in Government taxation policy has led to an increase in cassava requirements for Zambian Breweries Eagle beer brewed in Ndola. Zambian Breweries were looking to source cassava from Luapula; it is a logical choice as the province is a traditional source of cassava related to its low soil ph. The presence of GroAfrica may have been fortunate as its earlier efforts to source cassava for bioethanol purposes had stalled. Zambian Breweries had performed a scan of potential suppliers and identified GroAfrica. Zambian Breweries then approached Musika to verify / confirm GroAfricas suitability. As a result, Musika facilitated meetings between Zambian Breweries and GroAfrica. Zambian breweries are considered as highly likely to have sourced cassava from Luapula either with GroAfrica or another aggregator. Musika support is seen to have accelerated arrangements as it linked organisations with similar interests (Zambian Breweries and GroAfrica). Musika's financial support is suggested as catalyzing GroAfrica's field activities. Without this support GroAfrica may have been slower in beginning procurements and / or procured lower volumes. Zambian breweries increased demand for cassava is seen as the primary contributor to increasing procurement in Luapula, and any corresponding rise in farmers income. With GroAfricas provincial presence and commitment is seen as a strong contributor playing a key role in producing the observed outcome. Musika have played a contributing role facilitating arrangements and funding field operations.

Causal Package

Primary Contributor: Zambian Breweries increased demand for cassava

Strong Contributor: GroAfrica's drive and determination to bring markets for cassava to Luapula,

Contributor: Musika support to GroAfrica

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika GroAfrica intervention was a necessary component for the causal package allowing it to occur within the given timeframe.

Outcome 3: Smallholder farmers increase cassava supply

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Farmers have sold available cassava to GroAfrica in response to GroAfrica entering the market and offering a price premium.	Luapula Regional Research Station, Senior Agricultural Officer, Block Supervisor CEO, Coop Secretaries Headman PAM SHFs	N	4	1	1	At the time of endline fieldwork smallholder farmers were growing cassava using traditional methods of slush and burn fields, creating mounds and using traditional varieties. The crop takes between 3-4 years to mature. The Musika intervention has not affected cassava production given that the traditional cassava variety farmers are harvesting takes a minimum of three years to mature. Munchini Village Farmers (men) report that 'given that the purchases of cassava were only for a few weeks and ending in October, farming practices had not yet been engaged upon hence it was too early to assess how they (farm practices) would be affected'. Lukangaba Multipurpose Cooperative (women) report 'nothing much had taken (no changes in production practices) place given that the intervention had just began in the month of October itself. Intervention has not yet started yielding results *Additionality: GroAfrica has purchased available cassava and there has not been sufficient time for producers to show a production response. There is therefore no additionality.* *Outcome Contribution: Farmers are yet to increase the supply of cassava through changing production practices or increasing land allocated to cassava as the GroAfrica has only been purchasing cassava for one month. At the time of endline fieldwork the outcome was yet to occur.*
Farmers are expected to increase production in the longer term (2 to 4 years)	SHFs Block Supervisor PAM	C	2	1	1	Farmers report that they are likely to increase the supply of cassava in future seasons as a result of GroAFrica's entry into the market. Lukangaba Multipurpose Cooperative (women) and Munchini Village Farmers (men) report farmers are expected (not done yet) to increase their cassava hectares in the 2016/17 season (while at the same time reduce their maize hectares) as well as use improved cassava varieties. Farmers report this is as a result of cassava market created by GroAfrica. Other key informants (Block Supervisor) report other contributing factors to increased interest in cassava. These are:

						1. Increases in the price of fertiliser have pushed more farmers from maize to cassava production. 2. Effects of climate change – the province experienced dry spells, which affected beans, another cash crop. 3. Increase in the incidence of pests e.g. Tuta absoluta. Cassava guarantees some harvest even with these factors at play since it is a low input drought tolerant crop. 4. Continued delays by the Food Reserve Agency (FRA) to pay farmers (by the time of the endline fieldwork, FRA had not yet paid farmers for their 2015/2016 maize sales). An IITA initiative is also promoting cassava production in the province. Additionality: *The desired outcome change had not occurred at the time of endline fieldwork. If the outcome is achieved a range of contributing factors are expected to influence the result.* Outcome Contribution: *The desired production response outcome has not yet been achieved.*

Contribution Story

GroAfrica had been purchasing cassava for approximately one month in Luapula. As cassava takes 2 to 4 years to mature depending on variety, there has been insufficient time to produce the desired outcome. Farmers have increase supply in terms of cassava that was already mature or available for sale irrespective of the GroAfrica inititive. More time is required to produce the desired long-term supply response of farmers increasing production by planting more cassava. At the time of fieldwork farmers report the intention of doing this as opposed to actual planting.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 4: Demonstration effect encourages other SHFs to copy practices adopted by GroAfrica assisted SHFs (e.g. improve their cassava production)

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The intervention has had too little time to develop a demonstration effect.	SHFs, Senior Agricultural Officer, Coop Secretary, Coop Vice Secretary, Headman Coop Vice Secretary	N	4	1	1	Farmers within the cooperatives targeted by GroAfrica had not had sufficient time to change their production practices, as discussed above, at the time of endline fieldwork. There has therefore been insufficient time to encourage other farmers through a demonstration effect. Farmers and key informants report strong interest from other producers to increase cassava production in future in response to the market opportunity provided by GroAfrica. This desired response had not occurred at the time of endline fieldwork. For example the Lukangaba Multipurpose Cooperative (men) report 'other SHFs have not yet had sufficient time to copy. The cassava market has prompted farmers to want to take advantage of the situation starting from the next agricultural season. Nearly everyone would like to increase their hectares (double)'. *Additionality: The desired outcome change had not occurred at the time of endline fieldwork. There is therefore no additionality.* *Outcome Contribution: The desired production response outcome has not yet been achieved. There was therefore no contribution at the time of endline fieldwork.*

Contribution Story

At the time of endline fieldwork there had been no demonstration effect leading to other farmers copying promoted practices.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 5: Market demand for cassava increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The entry of GroAfrica as a buyer has increased market demand for dried cassava in Luapula.	GroAfrica Zambian Breweries SHFs	R	3	2	2	GroAfrica aimed to buy about 1,135 metric tons of dried cassava in 2016 and projects to buy approx. 6,000 metric tons of dried cassava per year in future. Zambian Breweries (ZB) reports that the Musika funding to GroAfrica did not influence the decision to set up the cassava plant that will use cassava. This decision was made based on a study ZB undertook in 2014 to investigate areas with sustainable cassava production. Luapula was found to be such an area and a decision was made to set up a plant in Mansa. This decision was made in January 2016 and tendering for partners such as GroAfrica was done in August of the same year. ZB report performing an assessment about: (1) which institutions were on the ground in Luapula province; (2) The level of their knowledge about the province; (3) The seriousness of their work culture; (4) The kind of activities they were involved in; (5) The extent to which they were interacting with farmers. That assessment pointed ZB to GroAfrica ZB then went to Musika to find out whether they knew of anyone in Luapula who could help them buy cassava. Musika also recommended GroAfrica. Musika then called for a meeting in which they officially linked up GroAfrica and ZB. Zambian breweries report aiming to buy 1,800 metric tons of dried cassava for their Ndola plant in 2016. When their planned Mansa plant in Luapula is operational, the volume will increase to 12,000 metric tons. Zambian breweries report that the equipment for the Luapula factor has been ordered and the land where the factory will be built in Mansa has already been

						secured. Farmers at Munchini Village welcomed the market opportunity offered by GroAfrica. Respondents appreciated buying arrangements whereby 'when a farmer has a minimum of 50 x 40kg bags of cassava, GroAfrica went to collect it from their doorstep. Also, payment for purchases was done on the spot.' Additionality: Zambian Breweries have expanded market demand for dried cassava and contracted GroAfrica to aggregate cassava for them. The primary motivator for this increased demand has been Zambian Breweries. Musika can be seen as an accelerator of this process though the provision of funding for equipment and vehicles. If GroAfrica was not present, or had not been contracted by Zambian Breweries it is considered highly likely that another service provider would have been used. Outcome Contribution: The desired outcome has been achieved as GroAfrica has commenced dried cassava purchases in 2016. The primary contributor to this action has been the Zambian Breweries purchase contract, without which the market for cassava would not have grown. GroAfrica has physically gone to farmers via producer cooperatives to buy dried cassava. Musika has accelerated, and therefore contributed to this process by subsidizing GroAfricas activities and facilitating their linkage to farmers in Luapula.

At the time of endline fieldwork the GroAfrica project had just begun to buy cassava and increase farmer incomes. GroAfrica was targeting total purchases of 1,135 MT in 2016. A key-contributing factor leading to GroAfrica's cassava purchases is the significant increase in demand from Zambian Breweries. A change in Government taxation policy has led to an increase in cassava requirements for Zambian Breweries Eagle beer brewed in Ndola. Sourcing cassava from Luapula is a logical choice as the province is a traditional source of cassava related to its low soil ph. The presence of GroAfrica may have been fortunate as its earlier efforts to source cassava for bioethanol purposes had stalled. Musika facilitated meetings between Zambian Breweries and GroAfrica. However, it is unclear if Zambian Breweries would have used another aggregator if it had not chosen to work with GroAfrica. Zambian breweries are considered as highly likely to have sourced cassava from Luapula either with GroAfrica or another aggregator. Tentatively, Musika support is seen to have accelerated arrangements as it linked organisations with similar interests (Zambian Breweries and GroAfrica) potentially accelerating cassava purchases. Musika's financial support is suggested as catalyzing GroAfrica's field activities. Without this support GroAfrica may have been slower in beginning procurements and / or procured lower volumes. Zambian breweries increased demand for cassava is seen as the primary contributor to increasing procurement in Luapula, and any corresponding rise in farmers income. With its strong commitment GroAfrica has been a strong contributor to the outcome.. Musika have contributed though meeting facilitation and financing to this outcome.

Causal Package

Primary Contributor: Zambian Breweries increased demand for cassava

Strong Contributor: GroAfrica's drive and determination to bring markets for cassava to Luapula,

Contributor: Musika support to GroAfrica

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika GroAfrica intervention was a *necessary* component for the causal package allowing it to occur within the given timeframe.

Outcome 6: Demonstration effect encourages other market actors to crowd-in the cassava market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence of a demonstration effect encouraging other market actors to crowd in.	GroAfrica, Senior Agricultural Officer, Block supervisor, CEO SHFs Coop Secretary, Coop Vice Secretary, Headman	N	4	1	1	Implementation of GroAfrica purchases has had insufficient time to cause a demonstration effect encouraging other market actors to crowd into the cassava market. Key informants consistently report that the organisations affected are cooperatives (farmer groups though which purchases are arranged), GroAfrica and Zambian Breweries. This is logical, as implementation had taken place for one month at the time of the endline survey. No evidence was found to suggest 'crowding in' may or may not happen in future. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

There was no evidence of a demonstration effect encouraging other market actors to crowd-in the cassava market at the time of endline fieldwork.

Causal Package

N/A

Sufficiency & Necessity

N/A

Output 7: Farmers knowledge of cassava production improves

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Farmers are more knowledgeable of the new market for cassava and new cassava varieties.	GroAfrica SHFs Block Supervisor	C	1	3	2	Female SHFs at Lukangaba Multipurpose Cooperative report that farmer's knowledge has changed. Farmers are reported as appreciating new cassava varieties that give an advantage over the traditional ones. GroAfrica report that they are encouraging farmers to plant new cassava varieties in 2017. The company has been working in partnership with ZARI who have been providing new varieties, which GroAfrica has been promoting. GroAfrica report new varieties can achieve upto 56 MT/ha as being recorded under farmers' conditions. These varieties are also reported as early maturing (18 months as opposed to between 36-48 months for the traditional varieties). A Block supervisor reported that cooperatives' capacities have been built and a more knowledgeable farming community now exists which appreciates the need to diversify away from maize production. A Senior Agricultural Officer felt the private sector (GroAfrica) was supplementing government extension service. Baseline fieldwork results showed IITA had been training farmers on the processing of cassava and ZARI were promoting early maturing variety for cassava in 2014. As seen below (Output 9) GroAfrica's extension focused on cassava processing to enhance quality, improved varieties and increasing the area grown. It is therefore concluded that farmer's knowledge of cassava production has not improved due to current the GroAfrica initiative. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

Evidence shows that farmer's knowledge of cassava production has not improved. GroAfrica had only been active for one month at the time of endline fieldwork. In this time GroAfrica had focused on cassava processing to enhance quality, promoting improved varieties and encouraging farmers to increase the area of cassava grown.

Causal Package

N/A

Sufficiency & Necessity

N/A

Output 8. GroAfrica buys cassava from farmers for onward sale to breweries

Evidence	Source	Confirming/ Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
GroAfrica began buying dried cassava though cooperatives in September 2016.	GroAfrica Zambian Breweries SHFs	C	4	3	2	GroAfrica started buying dried cassava from farmers in September 2016. Buying was through cooperatives with GroAfrica supplying the cassava to Zambian Breweries. It was planned that each cooperative would supply 500 by 50 kg (25 MT) cassava by the end of October 2016. It is intended that GroAfrica procure a total of approximately 1,300 MT of dried cassava in 2016 at 140 ZMW per kg (approx. USD 140 per MT giving a total turnover of approx. USD 182,000 in 2016). ***Additionality****: The Musika funding has catalyzed GroAfrica's procurement of cassava from farmers where GroAfrica* might have undertaken the activity but on a different timeframe. ***Outcome Contribution****: Musika support is one of a number of factors that contribute to the observe outcome.* Musika support facilitated GroAfrica's linkage to Zambian Breweries.

Contribution Story

GroAfrica started buying cassava from SHFs in September 2016 and planned to buy approximately 1,300 MT of dried cassava from farmer groups with each group supplying 500 by 50 kg bags at a value of around USD 140 / MT. In 2014 GroAfrica intended to supply cassava to the Gov. of Zambia under a biofuel initiative. This arrangement was not implemented. A key-contributing factor leading to GroAfrica's cassava purchases is the significant increase in demand from Zambian Breweries. A change in Government taxation policy has led to an increase in cassava requirements for Zambian Breweries Eagle beer brewed in Ndola. Sourcing cassava from Luapula is a logical choice as the province's is a traditional source of cassava related to its low soil ph. The presence of GroAfrica may have been fortunate as its earlier efforts to source cassava for bioethanol purposes had stalled. Musika facilitated meetings between Zambian Breweries and GroAfrica. However, it is unclear if Zambian Breweries would have used another aggregator if it had not chosen to work with GroAfrica. Zambian breweries are considered as highly likely to have sourced cassava from Luapula either with GroAfrica or another aggregator. Tentatively, Musika support is seen to have accelerated arrangements as it linked organisations with similar interests (Zambian Breweries and GroAfrica) potentially accelerating cassava purchases. Musika's financial support is suggested as catalyzing GroAfrica's field activities. Without this support GroAfrica may have been slower in beginning procurements and / or procured lower volumes. Zambian breweries increased demand for cassava is seen as the primary contributor to increasing procurement in Luapula, and any corresponding rise in farmers income. GroAfrica and Musika have contributed to this outcome.

Causal Package

Primary Contributor: Zambian Breweries increased demand for cassava

Strong Contributor: GroAfrica's drive and determination to bring markets for cassava to Luapula, Musika support to GroAfrica

Contributor: Musika facilitation and financial support

Sufficiency & Necessity

The causal package was sufficient to produce the outcome

The Musika GroAfrica intervention was a necessary component for the causal package allowing it to occur within the given timeframe.

Output 9. GroAfrica trains lead farmers and agents

Evidence	Source	Confirming/ Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
GroAfrica has focused on buying cassava and not training lead farmers and agents.	SHFs Headman	N	3	1	1	At the time of endline fieldwork there was no evidence that GroAfrica was training lead farmers and agents. Given the short implementation time frame GroAfrica was focused on buying cassava. GroAfrica announced the partnership with Zambian Breweries as starting on July 27th 2016. Working closely with the Ministry of Agriculture (District Agriculture Coordinator's Office - DACO) extension activities which were limited to: (a) Sensitization on the kind of cassava they wanted in terms of how to process it to enhance quality; (b) Sensitization about improved cassava varieties which farmers were to be encouraged to start growing from the 2016/17 agricultural season; (c) The need to increase the area grown by linking farmers up to a cassava mechanization programme Focus group results and field level key informant show farmers suggesting more training in cassava production is required. *Additionality: The desired change had not occurred at the time of endline fieldwork. There is therefore no additionality.* *Outcome Contribution: The desired training had not yet been achieved at the time of endline fieldwork. There was therefore no contribution at the time of endline fieldwork.*

Contribution Story There was no evidence of a GroAfrica training lead farmers and agents at the time of endline fieldwork. **Causal Package** N/A **Sufficiency & Necessity** N/A

2. Assumption #1: GroAfrica focuses on developing the aggregation and supply of cassava to a processor

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
GroAfrica is focused on purchasing cassava for supply to Zambian Breweries.	GroAfrica Zambian Breweries Gov. Officials SHFs	C	4	GroAfrica as remained committed to bring a market for cassava to Luapula. Initial attempts to supply Gov with biofuel were frustrated. When a market opportunity did arise through the contract with Zambian Breweries, GroAfrica has responded quickly and implemented a purchasing programme.

Conclusion The assumption is valid. At the time of endline fieldwork GroAfrica was focused on purchasing cassava. By all the evidence, GroAfrica is fully committed to fulfilling the 2016 contract with Zambian Breweries and working with farmers to develop future supplies for this end market.

Assumption #2: Purchasing cassava in Luapula Province is profitable for GroAfrica

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
There is project analysis to prove that GroAfrica's purchasing of cassava will be profitable.	Musika GroAfrica	N	2	No evidence in the form of financial analysis was available to the independent evaluation to show that GroAfrica's purchases of cassava will be profitable to the organization. (Zambian Breweries is paying GroAfrica ZMW 1.60 per kg as well as ZMW 0.8 for supply chain costs per kg). GRoAfrica is buying cassava at ZMW 1.40 per kg. This suggests that GroAfrica should make a profit if it can manage its supply chain costs to within ZMW 0.8 per kg. There is a lack of available analysis showing the financial implications to GroAfrica. Asked GroAfrica for information 22nd Dec 2016
The GroAfrica case study is a 'proof of concept' contract that should prove profitability.	Musika	N	2	Musika report that GroAfrica has been given a 1,000 MT / year aggregation contract from Zambian Breweries, which is intended to act as a 'proof of concept' contract and is very unlikely to be profitable in itself. On the basis that the contract is fulfilled, and awareness has been built and a pipeline of production established, Zambian Breweries will increase purchases to 6,000 MT / year. This is the target both sides are aiming at prior to Zambian Breweries establishing its own processing facility in Mansa. Musika assume that at these volumes there is a viable business for GroAfrica.
Contact terms suggest the price paid by Zambian Breweries should be profitable to GroAfrica	Zambian Breweries	N	2	Zambian Breweries' price for cassava that is paid to GroAfrica is ZMW 1.60/kg plus supply chain costs estimated at about K0.80 per kg. If GroAfricas costs prove to be below ZMW 0.80 / kg a profit should be made as the purchase price is ZMW 1.40 / kg.

Conclusion

This assumption is unproven as no evidence is currently available to the independent evaluation that proves of disproves profitability. The 2016 initial contract with GroAfrica is intended to act as a 'proof of contract' testing longer-term profitability.

Assumption #3: Women benefit from the intervention equally to men

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
Women are less likely to benefit from the programme as (i) they grow less cassava than men; and (ii) they are less likely to be engaged by the programme.	Munchini Village Farmers (women) Lukangaba Multipurpose Cooperative Block Supervisor Senior Agricultural Officer Headman	R	3	GroAfrica buys cassava from men and women. At the time of endline fieldwork cassava purchasing was being done through cooperatives. Focus Group Discussions with women highlight the point that inclusion of women in the GroAfrica cassava market was mainly dependent on their numbers in the cooperatives. Women could benefit if they were in the cooperative. However, women are less likely than men to be cooperative members. Key informants also suggest men benefit more from the intervention due to their higher level of membership in cooperatives. Female cooperative membership is about 30% - 40% of the total. A local head man suggested Farmer focus group meetings also consistently pointed out that men have bigger cassava fields than women, hence men could sell more and benefit more from the cassava market intervention. GroAfrica could not identify any specific well thought out interventions and strategies that target women, any identified barriers to the inclusion of women, any changes regarding how women are treated as clients or any differences in the way the program works with men compared to women Government observers did not think there were differences in the way the programme worked with men compared to women.

Conclusion
This assumption is invalid. GroAfrica project design does not include elements specifically targeting women. These are considered necessary if benefits are to be

equal between the sexes. Men benefit more than women as: (i) men are more likely to members of cooperatives, through which GroAfrica works; and (ii) men grow larger areas of cassava than women and can supply more. Direct benefits are most likely to accrue to men first with accrual to women dependent on intra-household asset distribution.

Assumption #4: Business environment remains conducive to growth in the cassava market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
To date, the business environment has been conducive to the growth of the cassava market in Luapula Province.	PAO DOs SHFs	C	4	A variety of external factors have jointly contributed to creating a favorable business environment in Luapula for the growth of agriculturally related markets. These factors include the following: • The existence of other agro-support programmes, which are, similar to Musika, promoting SHF agricultural production in the province. These programs include those listed below. ○ Program for Luapula Agriculture and Rural Development-Phase II (PLARD II) financed by the Finnish government. ○ Smallholder Productivity Production Programme (S3P) financed by IFAD and implemented jointly with Ministry of Agriculture. ○ Scaling Up Nutrition (SUN) financed by the UN Food and Agriculture Agency (FAO). ○ The Smallholder Agribusiness Promotion Programme (SAPP) financed by IFAD. ○ Conservation Agriculture Scaling Up project (CASU) financed by the European Commission and FAO. ○ ZARI / IITA support to cassava • Transition in Luapula from a predominantly fishing-based economy to a more agricultural-focused economy, as many of the predominant fisheries in the province are becoming over-fished. • GoZ policy emphasis on transitioning Zambia from mining dependence to an economy based more prominently on agricultural production. • Favourable rain and weather patterns, plentiful year-round water (lakes, rivers and streams), and abundant agricultural land, which make Luapula a natural, yet untapped, centre of agricultural production. The above external factors appear, for the most part, to be relatively stable in that they represent longer-term trends thus making them more likely to remain sustainable over time. They are, however, susceptible to a variety of economic (e.g., unfavorable

				shifts in the general economy or exchange rates), climate (e.g., unfavorable shifts in rainfall patterns) or political (e.g., changes in Ministry of Agriculture policy) that could result in corresponding unfavourable shifts in the general business environment.

Conclusion

So far, the assumption remains valid and reflects a general long-term (and thus presumably more sustainable) trend that bode well for the future. The assumption, however, is vulnerable to unexpected economic, climate or political shocks that can potentially stall or even reverse the favorable trends contributing to the current positive business climate.

Annex 12: Contribution Analysis AgriServe

CONTRIBUTION ANALYSIS OF THE MUSIKA AGRISERVE INTERVENTION

Goal 1: Reduced poverty

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence as to whether or how Musika's intervention with AgriServe is contributing to reduced poverty among SHFs.	N/A	N	1	1	1	The evaluation methods were not appropriate to measure changes in SHF poverty levels. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

It is not known, nor was the evaluation methodology sufficient to measure, whether the poverty status among affected SHFs has changed since the beginning of the Musika AgriServe intervention. In addition, there are a large number and wide variety of other potential factors, aside from the intervention, that affect changes in SHFs' poverty status. These factors are mostly unaccounted for by the evaluation methodology, such that it is not possible to identify them or estimate their contribution to any changes in SHF poverty status relative to the intervention.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 2: Smallholder farmers increase income

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is no evidence that SHFs have improved their on-farm or household income as a result of the AgriServe Project	AgriServe Musika NASLA SHFs	R	3	N/A No contribution	1	Key informants and farmers did not identify any increase in farmer's income. This is consistent with the finding that the AgriSreve did not achieve its intended outputs of outcomes. ***Additionality**: There is no additionality.* ***Outcome Contribution**: There is no outcome contribution.*

Contribution Story

The AgriServe project has not contributed to increased farmer income as the project did not achieve its intended outputs and outcomes.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 3: Smallholder farmers increase on-farm yields

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
There is limited anecdotal evidence that SHFs will improved their yields, or more generally on-farm performance, as a result of inputs purchased and/or extension training received from the Musika supported Agri Serve project.	Musika AgriServe Nasla DOs SHFs	C	1	3	N/A	Some of the key informants interviewed during the endline evaluation cited the use of AgriServe Artificial Insemination by farmers. Numbers are low. AgriServe reports inseminating 40 animals in Lukulu (60 to 70% conception rate) and synchronizing 20 cows in Shangobo and 10 cows in Mangango. As calves had not been borne at the time of end-line fieldwork it was too early to tell if on farm yields had improved. Key informants did not did not identify any other increases in on farm yields as a result of the AgriServe initiative. AgriServe have opened a shop at the location of an outlet supported with Musika support. This shop had been open for one week at the time of endline fieldwork. This shop has been opened by AgriServe without Musika support and is considered as outside of the evaluated initiative. ***Additionality**: Limited anecdotal evidence was found for potential increases in on-farm yields if artificially inseminated cows rear calves. This service was provided by AgriServe when intended project outputs had failed or were failing. It is considered probable that AgriServe may have undertaken this activity but on a different timeframe without Musika support.* ***Outcome Contribution**: No yield related outcome was found during endline fieldwork.*

Contribution Story

The AgriServe project has not contributed to increased on farm yields at the time of endline fieldwork. There is limited potential for currently pregnant artificially inseminated cows to provide some increase in on farm yields.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 4: Demonstration effect encourages other SHFs to copy practices adopted by AgriServe assisted SHFs

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Key informants and focus group participants report that the AgriServe Intervention has failed to develop a demonstration effect.	Musika AgriServe Agro dealers PAO DOs Nasla SHFs	R	3	1	1	Key informants report that the AgriServe project failed to demonstrate intended practices to farmers. This was due to the failure of the franchise business model and the absence of mobile veterinary assistants who were supposed to demonstrate the intended practices that other farmers could have copied. ***Additionality**: There is no evidence of SHF copying and thus no evidence for additionality by AgriServe.* ***Outcome Contribution**: There is no evidence of SHF copying and thus no evidence for any outcome contribution by AgriServe.*

Contribution Story

SHFs in Western Province Luapula have not copied from the AgriServe initiative. AgriServe failed to demonstrate new ways of doing things for long enough for copying to occur.

Causal Package

N/A

Sufficiency & Necessity

N/A

Outcome 5: Market demand for animal health products in previously under-served markets increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Evidence suggests, SHF demand for animal health products in Western Province is growing owing to a variety of factors unrelated to Musika's support to AgriServe.	AgriServe PAO DOs Agro-dealers SHFs	C	3	1	1	Some key informants report increased use of animal health products in Western Province with some farmers are changing their behavior with increased use of vaccines and medicines. Evidence of increased demand includes the Senanga District Livestock Officer (DLO) reports that in the past 90% of all cattle used to be condemned due to liver fluke – now approx. 85% of cattle are condemned in Senanga Abattoirs. The DLO also reports increasing numbers of farmers visiting him to ask advice on drugs and animal inputs. He directs these farmers to the agro dealers in Senanga. NASLA also report that liver fluke infection has reduced by 10% for cattle slaughtered at the abattoir. This equates to approx. 60 animals per month. Sales weights have also improved for animals using inputs. These animals are most likely to come from neighboring farmers who the abattoir works with most closely. The Mongu District Veterinary Officer reports that agro dealers are successfully promoting products expanding demand. The Provincial Veterinary Officer reports commercial beef farmers mindset is slowly changing quoting a Ministry of Fisheries and Livestock survey shows calf mortality is declining as access and use of drugs increases. The growth in demand for animal health products is supported by the growth in agro vets providing products. However, there is a lack of quantitative data to support this development. Potential contributing factor to this growth are increased local demand for boiler and

						layer chickens, increased demand for beef, extension provision by other providers (Gov., NGOs and Private Sector actors) and knowledge spreading from other parts of Zambia of the benefits of using animal health products. Increased buyer interest is seen for beef coming from outside buyers such as Nasla and Zambeef. Farmers at Senanga report - Main market is for beef. Prices have increased: 2014 – 10 to 11 ZMW per kg deadweight 2016 – 16 to 17 ZMW per kg deadweight Contributing factor for the rise in beef price is that animals are becoming scarce. Farmers from Shangombo and Senanga suggest some increase in beef sales as food insecurity has worsened. Also increasing demand for beef from Lusaka and Institutional buyers i.e. Nasla is selling to the Zambian Army. The AgriServe initiative is unlikely to have contributed to the growth in demand as its planned franchises closed and veterinary assistants / extensionists left. ***Additionality**: Any growth in demand for animal health / veterinary inputs among SHFs in Western Province has occurred largely without Agri Serve involvement.* ***Outcome Contribution**: Any growth in market demand for animal health / veterinary inputs in Western Province is the product of numerous factors outside of Musika's intervention with Agri Serve.*
Sales for vet inputs are rising in urban centers (Mongu and Senanga). Sales are though a growing number of agro dealers that have not been supported by AgriServe.	Kalu Agro Shop Limpo Agro Vet Patmas Business Solutions Ziezi Tabo Agro dealer District Livestock Officer Senanga DVO Mongu Kambo Agri Vet Shop	C	3	1	1	Government representatives report that the animal health result chain has changed with increased private sector activity and a reduced role for Gov. More agro vets / agro dealers are now present buying drugs from Lusaka and supplying farmers for deworming, sulfur drugs, tetracycline and spray treatments. Chickens (broilers and layers) are a strong growth market. The DVO in Mongu reports that 'Farmers are realizing the importance of taking care of their animals and their benefits and they are now able to buy' Government still 'guides' farmers providing advice on which animal health products to use. One government representative reported that 'farmers are benefitting because the drugs are readily available and affordable (better prices) because there are several players on the market' A Musika representative reported that the animal health products market for poultry has

	Provincial Vet Officer Suzman					expanded, vitamin supplements, stress packs, treatment of Newcastle Disease and feed all are available here – broilers are growing most with some growth in layers. Rate of perceived change in the levels of farmers increasing purchases vary i.e. some agro dealers and Government representatives report – 'gradual' change. Other traders report that 'the market has mushroomed there are now three (animal health) outlets in my street where there were none.' AgriServe employees report farmers tend to use agro vets who supply smaller more affordable pack sizes. ***Additionality**: Any growth in demand for animal health / veterinary inputs among SHFs in Western Province has occurred largely without Agri Serve involvement.* ***Outcome Contribution**: Any growth in market demand for animal health / veterinary inputs in Western Province is the product of factors outside of Musika's intervention with Agri Serve.*
Small holder farmers have not changed their practices related to purchase of vet inputs and services	FGD Farmers Senanga Musika (Livestock Rep) NASLA (for small scale farmers)	R	2	1	1	Some observers and farmers themselves report that farm practices remain traditional and attitudes are conservative. Knowledge is generally limited to knowing about one or two general multi purpose medicines. These farmers have not changed their practices and are not buying additional inputs or services. Use of AI services by smallholder farmers is low. During AgriServe focus group discussions with farmers, only one farmer had heard of AI in a FGD in Senanga. His experience was with Government AI in 2012. He was told he could choose a strong cow and pay ZMW 200 for the service. He felt his animals were not strong enough for AI and it was not tried. Gov. has introduced bulls in the past. Cows conceived but the calf and / or the cow died. ***Additionality**: Any growth in demand for animal health / veterinary inputs among SHFs in Western Province has occurred largely without Agri Serve involvement.* ***Outcome Contribution**: Any growth in market demand for animal health / veterinary inputs in Western Province is the product of factors outside of Musika's intervention with Agri Serve.*

Contribution Story

Smallholder farmer demand for animal health / veterinary inputs in Western Province has grown over the time of the Agri Serve / Musika intervention. There are a number of factors contributing to this growth. These lie outside of Musika's support to AgriServe and include increased local demand for boiler and layer chickens, increased demand for beef cattle, extension provision by other providers (Gov., NGOs and Private Sector actors) and knowledge spreading from other parts of Zambia of the benefits of using animal health products.

Causal Package

Contributor: Favorable market environment for end products such as broilers, eggs and beef, extension provision by other service providers, and the spread of knowledge from other parts of Zambia

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika AgriServe intervention was not a component of the causal package

Outcome 6: Market supply of animal health inputs in previously under-served markets increases

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The number of agro dealers supplying veterinary and animal health products in Western Province has increased.	PVO DOs Suzman Hardward Agro-dealers	C	3	3	1	Key informants consistently report increasing numbers of agro dealers selling animal health products in Mongu and Senanga. This has occurred at the same time as the AgriServe franchise outlets failed. Suzman Hardware store, a location for one AgriServe franchised outlet reported three agro dealers opening nearby, when the Musika supported outlet closed. Contributing factors to the growth in market supply by agro dealers a response to rising demand (as discussed above i.e. rising demand for animal products, extension by others and growing farmer knowledge) with favorable government policy stimulating the market and reducing animal input provision though civil servants. ***Additionality**:* Given the large cattle population in Western province, the animal health products market can be seen as attractive to animal product suppliers. AgriServe might

						have attempted to supply this market without Musika support but on a different timeframe. ***Outcome Contribution**:* The Musika supported AgriServe intervention has not contributed to any change in market supply that has occurred over the last two years (2014 to 2016).
AgriServe continues to look for opportunities to develop sales of its products in Western Province.	AgriServe Musika Nasla	C	3	3	2	AgriServe opened a shop selling animal health product one week before endline fieldwork. This shop was on the same site as a previous franchise arrangement with Nasla Abattoir. The shop was reported as funded only by AgriServe. This shows AgriServe continue to see maket supply potential and are investing accordingly. AgriServe is also working with Musika support on another initiative based on supplying animal health products at mobile treatment centers. ***Additionality**:* Agriserve continues to seek ways of establishing a distribution network in Western Province both with and without Musika support. AgriServe remains motivatored to invest both with and without Musika support. ***Outcome Contribution**:* The Musika supported AgriServe intervention has not contributed to any change in market supply that has occurred over the last two years (2014 to 2016).

Contribution Story

Market supply of animal health and veterinary products in Western Province has expanded through increasing numbers of agro- dealers supplying these products. This growth has occurred while the Musika supported AgriServe franchised outlets. The AgriServe initiative has therefore not contributed to the growth in market supply that has occurred over the past two years (2014 to 2016). Contributing factors to the growth in market supply are suggested as a response to rising demand (i.e. rising demand for animal products, extension by others and growing farmer knowledge) with favorable government policy stimulating the market and reducing animal input provision though civil servants.

Causal Package

Contributor: Supply responding to rising demand for animal products with favorable government policy stimulating the market and reducing animal input provision though civil servants

Sufficiency & Necessity

The causal package was sufficient to produce the observed outcome

The Musika AgriServe intervention was not a component of the causal package

Outcome 7: Demonstration effect encourages other market actors to crowd-in the animal health input market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
The AgriServe project did not create a demonstration effect as intended outlets failed to function.	AgriServe PAO DOs Agro-dealers SHFs	R	3	1	1	While the number of agro- dealers operating in Western Province has grown this has not been due to the Musika supported AgriServe intervention. As reported above, the planned Agri Serve franchised outlets did not operate for a sufficiently long time to create a crowding in effect. Senior AgriServe staff members were disappointed outlets had not functioned, as planned and only one shop had been open for a week at the time of endline fieldwork. ***Additionality**: There was no demonstration effect. The agro dealers entering and operating in Western Province have done so in the same timeframe with out functioning AgriServe outlets.* ***Outcome Contribution**: The growth in the animal input market in Western Province has proceeded irrespective of Musika's intervention with AgriServe.*

Contribution Story

There is no evidence suggesting that Musika's intervention with AgriServe in Western Province has produced a demonstration effect. Key informants commonly recognize this finding. Increasing numbers of agro dealers are also commonly recognized by key informants as entering the Western Province Animal Health market over the time period of the AgriServe intervention. The Musika supported AgriServe initiative has not contributed to this growth.

Causal Package

There was no demonstration effect.

Sufficiency & Necessity

There was no demonstration effect.

Box 8. Farmers knowledgeable of veterinary inputs and services and where to buy them increases

Evidence	Source	Confirming/ Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
Smallholder farmer's knowledge of where to buy veterinary inputs and services remains at low levels. Smallholder farmers continue to use traditional animal health practices and remedies.	Limpo Agro Vet Patmas Business Solutions AgriServe District Livestock Officer Senanga DVO Mongu Musika Regional Rep District Livestock Officer Senanga Kambo Agri Vet Shop Farmers NASLA Provincial Vet Officer AgriServe Field Officer	R	3	1	1	Smallholder farmer's knowledge of veterinary inputs and services remains low. Traditional patterns of seasonal migration, low use of animal health products (feeds and treatments), improved breeds and high infestations of liver fluke remain key constraints. Farmers joining focus group meetings reported that nothing had changed in the last two years. Most farmers felt they do not use animal health products, as they cannot afford them. Farmers that had heard of AgriServe products suggested that pack sizes were too big and only suitable for large numbers of animals. Smallholder farmers reported they could not afford the larger pack sizes. With Musika support AgriServe trained veterinary assistants to teach farmers about their products. Government recruited these AgriServe employees soon after they had been trained. They were therefore only active in the field for a short period of time. No evidence was found to suggest they had improved smallholder farmer's knowledge. Importantly, these staff members were not replaced quickly. AgriServe had two sales agents in place at the time of endline fieldwork. One agent had been in place for 6 months and was reported as inactive having made no sales. The second agent had been in place for one week at the time of endline fieldwork.

						Stakeholders emphasized that farmers need knowledge to increase use of animal health products and encouraged AgriServe to go out and engage farmers. The AgriServe Senanga sales agent present at the time of endline fieldwork did not speak the local language and felt that his motorbike was not good enough to visit farmers. It remains questionable if this person will be able to enhance farmer's knowledge. ***Additionality**: Musika's Agriserve intervention has failed to increase small-scale farmers knowledge.* ***Outcome Contribution**: Musika's Agriserve intervention has not contributed to the knowledge levels of small-scale farmers*.
Farmer's knowledge remains largely traditional and traditional mindsets prevail.	AgriServe DLO Senanga	R	2	1	1	Some observers point to little change in farmers applying new knowledge to their farmers. Reasons for this include ownership structures. Owners tend to live in urban centers with little contact to herdsmen. Herdsmen require authority from owners, usually meaning both parties have to be made aware of new practices before they are applied. Some farmers are reluctant to apply new medicines and health products due to previous experience (around Mongu) where vaccination led to animal death. Farmers mindsets also present challenges when trying to get them to apply leaning. Western province has received significant levels of donor funding as a result farmers ask 'what have you brought for us'. This makes them reluctant to purchase inputs for use on their animals. ***Additionality**: Musika's Agriserve intervention has failed to increase farmers knowledge.* ***Outcome Contribution**: Musika's Agriserve intervention has not contributed to the knowledge levels of farmers*.
Larger scale commercial farmers, particularly for beef and chickens (boilers and layers), knowledge of veterinary inputs and service and	Limpo Agro Vet Patmas Business Solutions AgriServe	C	3	1	1	As discussed above agro-dealers are growing in the Western Province towns of Mongu and Senanga. Numbers of outlets have increased and farmers are reported as having increased awareness.

where to buy them has increased. These farmers are increasingly using agro dealers to source veterinary inputs.	District Livestock Officer Senanga DVO Mongu Musika Regional Rep Ultravetis Local Rep Suzman					Ministry representatives commonly report agro dealer success in promoting products. Ultravetis suggest the main markets are for broiler chicken and cattle de-wormers. AgriServe Mongu Field staff felt farmer's knowledge is increasing as they become more aware of specific drugs for particular illnesses (i.e. knowledge of spraying and tick treatment). Other agro dealers confirm increased interest, particularly in chicken products. Larger scale and commercial farmers have increased knowledge due to extension from the Ministry of Livestock, NGOs and Zammilk. Radio promotions by Ultravetis are also reported as increasing knowledge. NASLA emphasized that it is larger-scale commercial farmers neighboring their abattoir who are increasingly knowledgeable and are buying animal health inputs. These farmers see the Nasla feed lot and ask why the cattle grow so quickly. These farmers are then directed to the Nasla shop. Anecdotal evidence suggests the changing behavior of these farmers is contributing to the reduced levels of liver fluke infestation seen at the abattoir. ***Additionality**: While knowledge levels of larger scale farmer's have increased the Musika's Agriserve intervention has not accelerated or catalyzed any increases in this knowledge.* ***Outcome Contribution**: Musika's Agriserve intervention has not contributed to the change indicated in larger scale commercial farmers knowledge.*

Contribution Story

There is no evidence that Musika's AgriServe intervention has created any effect on farmer's knowledge and where to buy them. Changes found in farmers knowledge of veterinary inputs and services and where to buy them is the result of other actor's initiative.

Factors influencing the failure of the intervention to influence its desired outcomes include:

(i) The loss of trained veterinary assistant extension staff to Government recruitment
(ii) Organizational priorities and arrangements. AgriServe had stronger business opportunities elsewhere compared to Western Province. AgriServes Western province operations had long decision-making times resulting in extension staff not being quickly replaced. Replacements also appear to be non-functioning. Cost of extension visits also deterred prioritization of Western Province. If visits are arranged from Lusaka it cost approximately Kw 2,000 to 3,000 to visit Western Province. This cost often does not justify the increased revenues arising from the visits.
(iii) Attitude, capacity and management of remaining staff. The current AgriServe sales agent in Mongu constantly reports in as sick or unable to travel. The Senanga AgriServe sales agent does not speak the local language and feels his motor bike is not reliable enough to meet farmers in their communities

Additional factors:

(i) Weather patterns contribute to change – AgriServe extensionists report that the dry season is the only time travel is possible onto the plain to meet farmers.
(ii) The movement of nomadic farmers makes arranging training visits difficult.
(iii) Cattle ownership structures where owners live in urban areas where herds are kept on the plain and looked after by traditionally minded herders.
(iv) Farmers 'mindsets' expecting free drugs and medicines
(v) Previous experience using medicine that has failed

Causal Package

The following elements contributed to the observed outcome:

Primary Contributor: The loss of trained staff stopped the desired increase in farmer's knowledge.

Contributor: Organisational priorities and the long distances made communication and regular contact difficult leading to lack of effective staff replacement.

Facilitating Contributor: Attitude, capacity and management of remaining staff that was insufficient to engage and teach farmers.

Conclusion

The Musika AgriServe initiative failed to achieve the desired outcome.

Box 9. AgriServe expands its distribution and extension network

Evidence	Source	Confirming/ Refuting	Strength of Evidence	Additionality	Outcome Contribution	Explanation
AgriServe had one shop open at the time of endline fieldwork. This shop had been open for one week and the time of fieldwork. Previous AgriServe franchise outlets faced administrative and financial challenges and did not function for long periods of time. Veterinary assistants linked to franchised outlets were lost to a Government recruitment program.	AgriServe Musika NASLA Suzman	R	3	1	1	The AgriServe proposal was based on establishing franchised outlets to distribute animal health products. Each outlet should have had a trained veterinary field assistant responsible for building farmers knowledge through extension provision. The franchise model failed and veterinary assistants left shortly after they were trained. The franchises failed due to cash flow management issues. Under the Agriserve system franchises had to pay the supplier (AgriServe) within 30 days. This was usually not achieved leading to late or non-existent stock replenishment. One franchisee reported the failure of the franchise was caused by: 1. Package sizes were too large at the shop. Farmers want smaller package sizes that are cheaper. Other Agro dealers offer this. 2. Pricing was higher than the competition – Agriserve prices were higher and they argued that the products were of better quality. Products were more targeted to larger commercial farmers where as other agro dealers target the small holder. AgriServe did not change their product mix. 3. No one was permanently in place – the shop was often unattended AgriServe experience shows the franchise model was inappropriate. At the time of endline fieldwork, AgriServe had one shop open using a different business model. Under this model the

						shop premise was rented from Nasla and AgriServe managed the sales business alone. This shop stocked animal health products that were sold in large containers most suitable for large-scale producers. The Ministry of Livestock recruited trained AgriServe veterinary field staff members. The package offered by the Government was sufficiently attractive to take all trained Agriserve staff in Western Province. AgriServe has been slow to replace the lost staff and appears to have done so with inexperienced, inappropriate and / or poorly motivated people. Veterinary assistants were important for sales. AgriServe reported that when Veterinary Assistants were in place sales per month averaged Kw 40,000. Without extension sales per month averaged Kw 4,500. AgriServe sales agents present at the time of endline fieldwork were not providing extension to farmers. AgriServe senior staff members report that the Mongu sales agent has made no sales in the last six months. The sales agent also reported that he was unable to visit farmers due to ill health and a broken motorbike. The Senanga sales agent had been in post for one week at the time of endline fieldwork. This agent was yet to begin the provision of extension. The agent did not speak the local language and complained his motorbike was not in sufficient condition to visit farmers. It is questionable how effective this agent will be in providing extension services. ***Additionality**: Musika's Agriserve intervention has failed to provide a distribution or extension network.* ***Outcome Contribution**: Musika's Agriserve intervention has not contributed to an outcome related to distribution or extension.*

Contribution Story

It is commonly recognized that AgriServe has not expanded its distribution and extension network with Musika support.

Factors influencing the failure of the intervention to influence its desired outcomes include:

(i) The failure of the franchisee model used with the intention of expanding AgriServes distribution network. This model had re-payment requirements that were not be met by franchisees. Selection of franchises may have been inappropriate and expected revenues may have been over estimated.

(ii) The loss of trained staff to Government recruitment stopped extension provision. Staff replacement was slow. Only one of the four lost staff was replaced. This person had been in post for six months and had not sold any products.

(iii) Organizational priorities and arrangements. AgriServe had stronger business opportunities elsewhere compared to Western Province. Staff and outlet replacement have not been priorities for AgriServe in Western province. Long decision-making times, lack of timely follow-up visits and a lack of timely management decisions are reported. Cost of extension visits also deterred prioritization of Western Province. If visits are arranged from Lusaka it cost approximately Kw 2,000 to 3,000 to visit Western Province. This cost often does not justify the increased revenues arising from the visits.

(iv) Attitude, capacity and management of remaining staff. The current AgriServe sales agent in Mongu constantly reports in as sick or unable to travel. The Senanga AgriServe sales agent does not speak the local language and feels his motor bike is not reliable enough to meet farmers in their communities

(v) Product size and cost may have been inappropriate for the market

Causal Package

Primary Contributor: The loss of trained extension staff and the failure of the franchise distribution point models.

Contributor: Organisational priorities and the long distances making communication and regular physical contact difficult.

Facilitating Contributor: Attitude, capacity and management of remaining staff

Conclusion

The Musika AgriServe initiative failed to achieve the desired distribution and extension network.

Assumption #1: AgriServe focuses on both sales and extension services and gives due attention to each

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The AgriServe did not replace trained staff or revise the terms of franchise agreements quickly enough to maintain an adequate distribution network and extension service.	AgriServe Musika	C	2	AgriServe did establish a distribution network and extension service. However, when this network began to fail with franchise problems and the loss of staff AgriServe there is little evidence that AgriServe acted quickly to make adjustments. Franchise arrangements were not changed to find a way of making them work and replacement staff were not quickly hired. Some key informants suggest AgriServe had better business opportunities elsewhere and prioritized these. Agricultural input markets are recognized to have grown significantly in other parts of Zambia between 2014 and 16. Focusing business attention on faster growing easier to reach markets areas is logical. ArgiServe field staff point to long communication and decision times that also contributed to a slow response. However, AgriServe is not seen to have focused on sale and extension sufficiently in Western Province and the assumption is seen to have not held.

Conclusion
The assumption did not hold. Available evidence suggests AgriServe had other priorities, as business opportunities were better outside of Western Province.

Assumption #2: AgriServe monitors the performance of its distribution network

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
AgriServe did monitor the performance of its distribution network but was unable to find solutions to problems with its franchise agreements.	Musika Mule-Stus	C	3	AgriServe informed the Impact Evaluation 2016 annual review of problems with its distribution network and provided information about how it was trying to refresh two of the franchises. AgriServe senior managers were aware of franchise problems showing that they were monitoring distribution network performance.

Conclusion

This assumption is valid, that AgriServe were monitoring the performance of the franchises that formed the backbone of the supported distribution network.

Assumption #3: Expanding the distribution network through franchise arrangements is profitable for AgriServe

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The AgirServe distribution network was based on franchised outlets selling animal health products. The franchised arrangements had multiple challenges that failed and the model was abandoned.	AgriServe Musika Suzman Nasla	C	4	AgirServe abandoned the franchise model following many reported financial management problems. Problems are reported with payment requirements in terms of necessary sales thresholds and the timing of repayments. Some franchises suggest sales were too low to meet required re-payments and that stock was not sold within the sell by date due to a lack of sales staff and inappropriate products (i.e. pack size was too large and products were more expensive than alternative outlets). All evidence shows that the franchise arrangements were not profitable for AgriServe.

Conclusion
The assumption that expanding the distribution network through franchise arrangements would be profitable for AgriServe did not hold.

Assumption #4: Women benefit similarly to men

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
The Musika AgriServe intervention includes no aspects designed specifically to benefit women.	Musika AgriServe	N	4	Review of program design does not include any aspects designed to specifically benefit women. While the program has failed to work with farmers of either sex, implementers stated that men and women were treated equally. Key informants did not identify any specific measures that were used to engage women. To specially engage women, a program in Western Province where cattle farming is dominant focused on animal health would require specific activities to engage women given the dominance of men in cattle husbandry.

Conclusion

Both men and women have not benefited from this intervention. If benefits had been delivered it is expected that they would have been biased towards men, given men's dominant position in cattle husbandry. For the assumption to be valid, intervention design should have included specific components and strategies to ensure benefits accrue similarly to men and women.

Assumption #5: Business environment remains conducive to growth in the agro-input market

Evidence	Source	Confirming/Refuting	Strength of Evidence	Explanation
To date, the business environment has been conducive to the growth of the animal health market in Western Province.	PAO DOs Agro-dealers	C	3	Available evidence suggests the business environment has been sufficient to allow the growth of businesses selling animal health products in Western province. Government Staff and Agro Dealers themselves report growth in the number of agro dealers selling animal health products. More broadly Western Province has been relatively stable with no unfavorable shifts in the general business environment. Road infrastructure in the west and south of the province has also improved and it is now possible to connect directly by road to Angola.

Conclusion

So far, the assumption remains valid and reflects a general long-term (and thus presumably more sustainable) trend that bode well for the future. The assumption, however, is vulnerable to unexpected economic, climate or political shocks that can potentially stall or even reverse the favorable trends contributing to the current positive business climate.

Annex 13: Case Study Sustainabiilty

WII

The prospects for WII sustainability appear, on balance, to be favourable. The rapid growth in the market in terms of clients and premiums collected is rapidly nearing the breakeven point and may surpass it as early as the 2016-17 growing season. More market actors are entering the market, although they continue to do so only with donor support. The Pensions and Insurance Authority (PIA) has proposed a regulatory framework for the micro insurance (and WII) market (done without Musika support), which although stalled at present, offers potential for providing a stabilizing effect to facilitate continued market growth. In the meantime, the PIA has issued a temporary ruling allowing insurers to bundle WII with life policies, which is an important innovation to reduce the co-variant risk of WII and increase its profit margins.

There are, however, risks to market sustainability. One risk is how future weather patterns affect the supply and demand characteristics of the market. For example, prolonged adverse rainfall may depress supply by increasing pay-outs over time and reducing profitability for insurers. On the flip side, prolonged favourable rainfall may depress perceived need and demand for WII among SHFs. Another risk is how the various market actors manage basis risk moving forward. It is clear by this point that monitoring satellite rainfall data must be paired with some kind of field verification. How market actors manage this, so as to keep the cost of delivering WII reasonable (one of its primary advantages compared to multi-peril insurance), while at the same time reasonably matching losses perceived by SHFS and aggregators, will be an important determinant of future market growth.

Also potentially affecting sustainability is the number of insurance companies who ultimately choose to enter the market. At the moment, most insurance companies are choosing to wait on the side-lines and observe. It is not known how many insurance companies the market can absorb (e.g., Risk Shield estimates about three insurance companies is the right number), and if 'too many' enter the market, it may end up slicing the market pie too thinly thus affecting market-wide profitability.

A final risk to market sustainability has to do with the fluctuating number of smallholder farmers working with aggregators, who are the primary distribution mechanism for delivering WII to date. This risk is highest in cases where farmers move in and out of certain crops depending on market conditions. In the case of cotton, for example, SHFs are highly sensitive to the price of cotton, and the costs of switching in and out of cotton production are low.

Hypothesis 6.1: The Musika-supported market actors are acting on their own initiative to scale-up and adapt their product offerings (e.g., WII with credit life). Musika support has made important contributions in setting this process in motion, but it is proceeding ahead at a reasonably rapid pace outside of Musika support.

Hypothesis 6.2: Non-supported actors — such as the WFP, ILO, IFC, and FAO – are likewise entering the market and helping to grow it on both the demand and supply sides (although in the latter case, they are working primarily with Musika-supported organisations). This

evidence for dynamic sustainability, however, appears to be happening largely due to the initiative of these other actors as opposed to in response to a demonstration effect created by Musika.

Hypothesis 6.3: Among support providers, the three Musika-supported organisations continue to dominate the supply side of the market and are thus continually interacting (one or more at a time) with other market actors. This is creating the conditions in which joint learning and positive feedback loops can occur.

ATS

The prospects for ATS support to be sustainability appear, on balance, to be favourable. The rapid growth in the Northern Province agro-input market in terms of market participants, farmer outreach and input sales have put the market on the path toward sustainable systemic change. The implementation of the e-voucher scheme in Northern Province will presumably help accelerate and solidify this process. The ATS distribution network, and in particular its network of around 100 SSPs, demonstrates the possibilities for achieving significant market scale, including into more remote rural areas, via a (presumably) commercially sustainable business model.

Hypothesis 6.1: The costs of creating such a distribution network are high and require investments in capital (e.g., vehicles), staff (both retail and field), and distribution points (fixed and/or mobile). It is unlikely that many commercial agro-input dealers have the resources (either own-resources or access to credit) to make these investments, and thus some donor involvement will probably still be required for an indefinite period or the gains achieved to date may not be sustained. For example, ATS stated explicitly that without Musika support buying down its costs and risks, its presence in the Northern Province would be much attenuated than what it is today (e.g., shipping up products to be sold through stockists in fixed store fronts in urban centres).

Another concern about the potential sustainability of the ATS intervention is the sustainability of its SSP network, which depends, among other things, on the ability of SSPs and sub-SSPs to earn a reasonable income from their work. Already, some concerning issues have arisen related to the adequacy of the payment structure and the size of the catchment areas served. This is, moreover, the one assumption underlying the ATS intervention results chain that so far has not demonstrated its validity in practice and which constitutes possibly the greatest threat to the long-term sustainability of the intervention. Performing some market systems analysis around the SSP model would be helpful to enhance its structure and increase the potential for sustainability.

Hypothesis 6.2: Non-supported actors are likewise entering the market and helping to grow it. This evidence for dynamic sustainability, however, appears to be happening largely due to the initiative of these other actors abetted by favourable market conditions as opposed to in response to a demonstration effect created by Musika.

Hypothesis 6.3: Feedback loops are being created via the joint partnerships between ATS with Pioneer, Seed Co, Omnia and Jedo, particularly where they are doing joint trainings together. The fact that farmers are increasing input purchases – including herbicides, improved seeds and fertilizer is suggestive of changing farmer practices.

Mule-Stus

As with ATS, the prospects for Mule-Stus outcome sustainability appear favourable, dependent on its wider markets and future donor support. The rapid growth in the market in terms of market participants, farmer outreach and input sales have put the market on the path toward sustainable systemic change. The implementation of the e-voucher scheme in Luapula will presumably help accelerate and solidify this process. The Mule-Stus distribution network demonstrates the possibilities for achieving significant market penetration, including into more remote rural areas, via a (presumably) commercially sustainable business model.

Hypothesis 6.1: The costs of creating the Mule-Stus distribution network are high and require investments in capital (e.g., vehicles), staff (both retail and field), and distribution points (fixed and/or mobile). (The following key informant quote is relevant here: " . . . it would have been impossible to do all of this with bicycles.") It is unlikely that many commercial agro-input dealers have the resources (either own-resources or access to credit) to make these investments, and thus some donor involvement will probably still be required for an indefinite period or the gains achieved to date may not be sustained.

Hypothesis 6.2: Non-supported actors are likewise entering the market and helping to grow it. This evidence for dynamic sustainability, however, appears to be happening largely due to the initiative of these other actors abetted by favourable market conditions as opposed to in response to a demonstration effect created by Musika.

Hypothesis 6.3: Feedback loops are being created via the joint partnerships between Mule-Stus and wholesale input providers, particularly where they are doing joint trainings together. Farmers are increasing input purchases – including improved seeds and fertilizer that is suggestive of changing farmer practices.

<u>Zammilk</u>

The Zammilk case study had low outcome levels at the time of end line survey. Prospects for sustainability depend on achieving milk processing breakeven volumes. By October 2016, the milk processing plant had consistently operated below 5% of capacity since opening in November / December 2015. It is assumed that these levels do not exceed required breakeven volumes. Milk processing volumes are expected to improve in the October to May high milk production rainy season. Sustainability will depend on exceeding breakeven volumes over the long term. It is expected that a supply side response (farmers delivering more milk) will be required, particularly in the dry season.

Hypothesis 6.1: At the time of end line fieldwork, Zammilk was working to facilitate change by boosting milk-processing volumes. It was doing this with continuing Musika support. It is still too early to tell if intended changes will be achieved or it they can be maintained and scaled-up after programme support is withdrawn.

Hypothesis 6.2: No evidence was found of Zammilk achieving dynamic sustainability through 'copying' or 'crowding in'. Non-assisted dairy cooperatives were struggling to maintain milk collection volumes. Zammilk was actively seeking other sources of milk supply, and existing dairy cooperatives are unlikely to benefit or 'crowd in' as a result of the intervention. Other milk processers are seen as unlikely to enter Western Province. Potential exists for dairy cattle input providers to 'crowd in' to the dairy market system. Ultravetis is currently active in this space with Musika support. Similarly, potential exists for cattle farmers to 'copy'

successful Zammilk milk suppliers. At the time of end line fieldwork, farmers were largely adopting a 'wait and see' approach with regard to changing their farm practices. ZANACO Bank is planning to enter the dairy market system. It would not be able to do this without Zammilk's presence. This change is seen as sustainable if Zammilk can achieve break-even milk volumes and continues buying milk in Western Province.

Hypothesis 6.3: There was no evidence found during end line fieldwork indicating that positive feedback loops were occurring.

GroAfrica

The GroAfrica intervention had produced low outcomes levels at time of end line survey. Prospects for sustainability depend on the Zambian Breweries contract. If GroAfrica can supply Zambian Breweries profitably, then the current cassava aggregation arrangement should prove sustainable. Sustainability also depends on the success of the beverages Zambian Breweries produces from cassava and Zambian Breweries' satisfaction with GroAfrica's performance. If Zambian Breweries used another supplier, it is likely that cassava growers in Luapula would still benefit from the increased demand. It is too early in the intervention cycle to determine static and dynamic sustainability or the development of feedback loops.

AgriServe

The AgriServe intervention has not produced any sustainable outcomes.

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