

Platform
for Agricultural
Risk Management

Managing risks
to improve farmers'
livelihoods



Zambia

Final Report

Holistic approach
to risk management:
new opportunities
for investment in agriculture

September 2019





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Foreword

The Platform for Agricultural Risk Management (PARM), is an outcome initiative of the G8-G20 discussions on agricultural growth and food security. It was officially launched in December 2013 as a multi-donor partnership between the European Commission (EC), French Development Agency (AFD), Italian Agency for Development Cooperation (AICS) and hosted by the International Fund for Agricultural development (IFAD). The German Federal Ministry for Economic Cooperation and Development (BMZ) through KfW Development Bank also contributes to ARM investments through a strategic partnership with NEPAD. PARM aims to generate, facilitate and increase access to and exchange of knowledge to make agricultural risk management (ARM) an integral part of policy planning and investment for food and agricultural sector of developing countries. PARM's activities focus on eight sub-Sahara African countries – Cabo Verde, Cameroon, Ethiopia, Liberia, Niger, Senegal, Uganda and Zambia.

Zambia officially became a PARM-focused country in June 2016, following an official request made through Zambia's Ministry of Finance. PARM road map in the country was developed and agreed jointly with the Government of Zambia and kicked-off in early 2017 which included the integration of the findings of the World Bank risk assessment study into the PARM county process, the provision of technical support and strengthening of capacities of the different actors with the final objective of ensuring the integration of ARM into the national strategies and investments plan.

This report presents the main outcomes of the joint process. The report is structured into 4 sections: (i) summary of the main achievements, the process timeline and the expectation moving forward on ARM in Zambia; (ii) outcomes from the country-level risk assessment and prioritization conducted by the World Bank, which has been integrated into PARM process; (iii) outcomes from the feasibility studies on ARM tools for investment; and (iv) capacity development and knowledge-sharing on ARM in Zambia. The report provides an executive summary of the main reports, which full studies and background reports are available on [PARM Library](#) .

The Zambian MoA largely contributed to the implementation of all the studies supported by PARM and has been the leading partner of all the activities of the joint process. IFAD, NEPAD, the World Bank and many other development partners, stakeholders, experts and institutions also supported the process in different moments and aspects, of which their contributions are recognized in the related documents.



Contents

List of abbreviations and acronyms	7
1. Overview	
Main Achievements in Zambia	10
Timeline of the ARM process in Zambia.....	15
The Way Forward.....	17
2. Prioritizing risks	
Increasing Agricultural Resilience through Better Risk Management in Zambia (World Bank Agricultural Sector Risk Assessment), <i>Abstract</i>	20
Agricultural Risk Profile of Zambia, <i>Country risk profile</i>	22
3. Finding the right tools	
3.1. Information systems for ARM	
Feasibility study for investment to improve agricultural risk information for meso-level stakeholders, <i>Executive summary</i>	30
3.2. Warehouse receipt systems	
Feasibility study for investment to enhance warehouse receipt systems and align with the food reserve agency's strategic plans, <i>Executive summary</i>	36
4. Developing capacities and sharing knowledge	
Capacity development on agricultural risk management, <i>Country strategy note</i>	40
E-library: studies, reports and other knowledge products.....	42



List of abbreviations and acronyms

AFD	French Development Agency
AICS	Italian Agency for Development Cooperation
AMIC	Agricultural Market Information Center
ARM	Agricultural Risk Management
ASRA	Agricultural Sector Risk Assessment
BRAVA	Building Resilience and Adding Value to Agriculture
CAADP	Comprehensive Africa Agriculture Development Programme
CD	Capacity Development
CSA	Climate-Smart Agriculture
DFA	District Farmer Associations
DGCS	Direzione Generale Cooperazione allo Sviluppo (Italian Development Cooperation)
EC	European Commission
E-SAPP	Enhanced Smallholder Agribusiness Promotion Programme
ETG	Export Trading Group
FAO	Food and Agricultural Organisation of the United Nations
FRA	Food Reserve Agency
GDP	Gross Domestic Product
GIZ	German Development Agency
GOZ	Government of Zambia
GPV	Gross Production Value
IAPRI	Indaba Agricultural Policy Research Institute
IFAD	International Fund for Agricultural Development
ISTT	In-Service Training Trust
LASIP	Zambia Agriculture Sector Investment Program
LuSE	Lusaka Securities Exchange
MIS	Market Information System
MoA	Ministry of Agriculture
MoF	Ministry of Finance
NAIP	National Agriculture Investment Plan
NALEIC	National Livestock Epidemiology and Information Centre
NEPAD	Africa Union's New Partnership for Africa Development
NUFAZ	National Union of Small-scale Farmers in Zambia
PARM	Platform for Agricultural Risk Management
PRODIVA	Productive Diversification in African Agriculture and Effects on Resilience and Nutrition
RAS	Risk Assessment Studies
RUFEP	Rural Finance Expansion Programme
SAGIS	South African Grain Information Service
SAS	Sustainable Agribusiness Solutions
SPGRC	SADC Plant Genetic Resources Centre
ToR	Terms of Reference
USAID	United States Agency for International Development
WFP	World Food Programme
WRSs	Warehouse Receipt Systems
ZABs	Zambia Bureau of Standards
ZACA	Zambia Commodity Agency
ZAMACE	Zambian Commodity Exchange
ZANACO	Zambia National Commercial Bank
ZIFLP	Zambia Integrated Forest Landscape Program
ZMD	Zambia Meteorological Department



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1. Overview



Main Achievements in Zambia

Agriculture is one of the key sectors for Zambia's economy. It is a source of livelihoods for the more than 60% of the population that live in rural areas. Even though its contribution to the overall Gross Domestic Product (GDP) is significantly low compared to services and industry, the Government of the Republic of Zambia, in its Vision 2030 prioritizes agriculture-led development in view of the sector's potential to drive economic growth for poverty reduction in all forms, including increasing income, enhancing food security and providing jobs for the poor. Zambia's agricultural sector like many other sub-Saharan African countries is affected by many human and naturally induced shocks with consequences for the sector's growth and productivity. Extreme weather events such as El Nino and La Nina, droughts, dry spells and floods are increasingly becoming frequent. Other risks relating to plant and animal diseases, price volatility, trade restrictions, post-harvest losses, low information and technological capacities, prevail and causes negative impacts to agriculture sector.

Zambia joined PARM in June 2016 as per approval of the Steering Committee, in response to the official letter received through the Ministry of Finance to request PARM's technical support on ARM. This decision officiated Zambia as a PARM country, leading to the implementation of the PARM process from March 2017 to April 2019. The PARM process is a participatory policy engagement process on ARM, which comprise of three main phases: (i) **a risk assessment phase** that focuses on identification, assessment and prioritisation of risks, together with the analysis of risk management gaps within holistic lens; (ii) **a tools assessment phase** where the feasibility of identified management tools is analysed, and specific action plans for investment are proposed; and (iii) **the implementation phase** that consists of integrating specific ARM components, including the identified ARM tools into national policy and investment plans of governments and partners.

In the context of Zambia, **the risk assessment phase** built on the initial agricultural risk assessment implemented by the World Bank. PARM developed a road map in coordination and agreement with the Ministry of Agriculture in order to integrate the findings of the World Bank risk assessment into the PARM process and feed onto the tools assessment phase.

PARM's participatory engagement process in Zambia was therefore marked with three key activities: 1) Capacity development seminar to increase awareness on ARM; 2) Feasibility studies on ARM tools (based on the WB risk assessment study recommendation) and; 3) a High-level policy dialogue/dissemination workshop to officially end the PARM process and solicit financial, technical and institutional support for investment in ARM tools. Key stakeholder groups attracted and engaged with throughout the PARM process include government agencies (of agriculture, finance and others), international development agencies, non-governmental agencies, academic and research institutes, farmers' organisations and the private sector bodies.

The activities delivered in the course of the PARM participatory engagement process in Zambia led to: 1) Bringing ARM to the core of development and agricultural policies; 2) Assessing agricultural risks in Zambia: bringing evidence to improve risk perception; 3) Increasing awareness, strengthening capacities and enhancing partnerships on ARM; 4) Investing in priority tools for better agricultural risk management; and 5) Engaging with the Government, local institutions and development partners.



1. Bringing ARM to the core of development projects and agricultural policies

Today, more than ever, climate change, extreme weather events, together with diseases outbreaks, finance/market volatilities and political fragilities are on the rise with intense consequences affecting the most vulnerable countries. PARM's efforts in Zambia have focused on raising further awareness on risks in the agricultural sector and the management tools to mitigate risks at project level while strengthening the government and its stakeholders' capacities. This effort on ARM created an opportunity for the targeted country stakeholders to increase their knowledge and capacity to respond to various forms of risk likely to hamper the implementation of smallholder farmers livelihoods and food security-related projects.

Also, PARM is committed to promoting the message that investing in ARM is an innovative way to boost investment and enhance growth in the agricultural sector for development. This message empowered the Government of Zambia to appreciate the urgency for ARM and commitment to integrate ARM components into Zambia's 2nd Generation National Agriculture Investment Plan (NAIP), designed under the auspices of the African Union and CAADP. The 2nd Generation NAIP, is expected to align to the country's long-term Vision 2030, the National Development Plan (NDP), Second National Agriculture Policy (SNAP) as well as AU Agenda 2063, AU 2014 Malabo Declaration and the Global Sustainable Development Goals (SDGs). The NAIP II is expected to be informed by a rigorous evidence-based analytical process to inform potential growth areas/priority investment options for the agriculture sector in Zambia. This achievement was a milestone further discussed during the high-level Policy Dialogue Workshop in April 2019.

2. Assessing agricultural risks in Zambia: bringing evidence to improve risk perception

Stakeholders, especially smallholder farmers, often maintain a perceptive information of risks facing the agricultural sector. Such knowledge is good but not adequate for a nuanced analysis of risk and better identification of ARM tools. PARM as a global platform generates and promotes knowledge on risks by implementing country-level risk assessment studies and capitalizing on existing works of its partners.

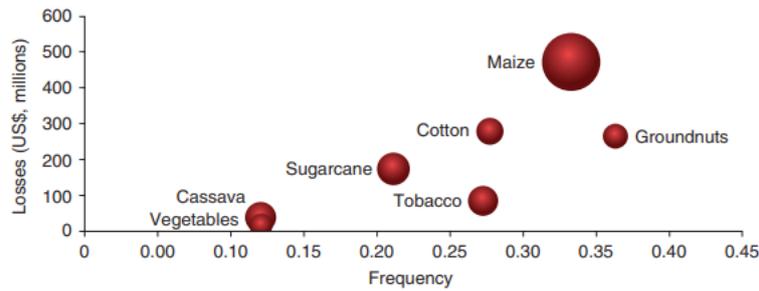
In Zambia, the World Bank delivered a robust Agricultural Sector Risk Assessment (ASRA) "Increasing Agricultural Resilience through Better Risk Management in Zambia" in June 2018. In agreement with the Ministry of Agriculture and in partnership with the World Bank, PARM was requested to build on the knowledge of risks that came out of this study into its tools assessment phase to facilitate the identification of areas of investments. The World Bank study relies on both quantitative and qualitative methods to analyze production, market, and policy-related risks and provides a comprehensive evidence on the current state of risks in Zambia's agricultural sector.

Evidence from the study confirms drought is the most significant risk, resulting in 10% reduction in Zambia's agriculture GDP in the 1990s and crop losses worth \$154 million in 1992. Excessive rainfall and floods are the second highest production risks that have caused 68% fall in cotton production and more than 30% in groundnut and maize in 2002. Pests and diseases such as fall armyworm and the maize stock borer also cause significant losses. Outbreaks of cassava mosaic disease is also common in the key cassava growing areas of Luapula, Central, Western, and Northern Provinces.

Price volatility resulting from international prices cuts are often rapidly transmitted into the local cotton market in Zambia. This was identified as the key market level risk. Maize prices fluctuations from year to year also seem significant, especially when the government intervenes in the market. In addition to the production and market risks, the World Bank RAS provides insightful evidences of how Structural Adjustment Programme affected agri-commodity chains in Zambia.

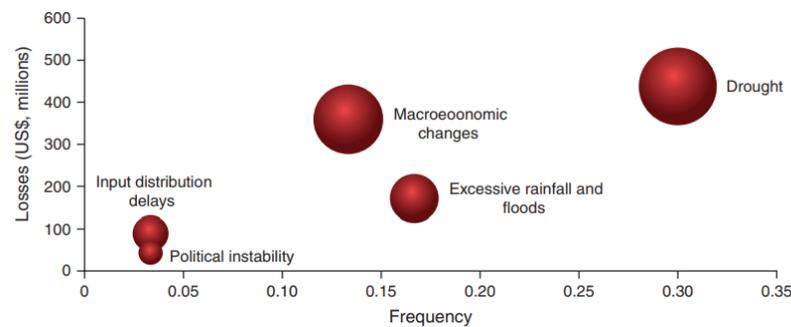
The figure 1 and 2 below, extracted from the World Bank study shows the cumulative value and frequency of losses per specifically identified agricultural commodities and risks in Zambia. These evidences are useful source of information for policy and programme initiative in the agricultural sector. Government and stakeholder now have a better idea of the type of commodity and risk that is worthy of priority attention.

Figure 1: Cumulative Value and Frequency of Losses per Crop (1982–2016)



Source : World Bank 2018¹

Figure 2: Cumulative Value and Frequency of Losses per Risks (1982–2016)



Source : World Bank 2018

Abstract from the World Bank ASRA in Zambia is available under Section 2 of this Zambia Country Final Report.

¹ Braimoh, A., Mwanakasale, A., Chapoto, A., Rubaiza, R., Chisanga, B., Mubanga, N., ... & Obuya, G. (2018). Increasing Agricultural Resilience through Better Risk Management in Zambia. World Bank Washington DC. License: Creative Commons Attribution CC BY 3.0 IGO.



3. Increasing awareness, strengthening capacities and enhancing partnerships on ARM

From its early stage, a priority for PARM in Zambia has been to increase awareness on the comprehensive nature of risks in agriculture, correlations across the value chain and management options. Stakeholders capacities were therefore developed on holistic approach to ARM, which consist of risk identification, assessment and prioritisation, ARM tools identification & implementation, and monitoring & evaluation. It also focuses on pre-production, production, post-production and policy related risks. The approach is an innovative way of thinking about risks in ways that enable stakeholders to generate opportunities out of risk events and not constraints/losses.

PARM in partnership with the Ministry of Agriculture of Zambia and E-SAPP/IFAD Project organised in June 2018, a capacity development training (CD1) on holistic approach to agricultural risk management. The seminar aimed at increasing stakeholders' capacity to analyse risk, identify and understand robust and holistic risk management options. It welcomed diverse stakeholders mostly IFAD/E-SAPP project officers and the extension service officers from the centralized and the decentralized offices of the Ministry of Agriculture and the Ministry of Fisheries and Livestock. Other participants included officials from the Disaster Mitigation Management Unit (under Office of the Vice President), Ministry of Finance, Zambia National Commercial Bank, University of Zambia, Mayfair Insurance, National Union of Small Farmers, and Zambia State Insurance Corporation.

The CD training was held in two days structured along three modules delivered in a combination of lecture, group works and interactive quizzes collaboratively by PARM experts and representatives from ZANACO, Mayfair Insurance and Government policy related office. The training strengthened participants' knowledge of the concepts, types and characteristics of risks, assessment methodologies and elements, management strategies and approaches to handle risks as businesses. The follow-up responses confirmed that participants were keen to apply the knowledge and share it with other stakeholders.

The brief concept note for PARM CD activities for Zambia is available under the section 4 of this Zambia Country Final Report.

4. Investing in priority tools for better agricultural risk management

Based on the risks assessed and the recommendations provided in the World Bank study, PARM in collaboration with the MoA identified two main tools to manage the agricultural risks in Zambia: 1) improving access to agricultural risk information for meso level stakeholders; and 2) enhancing Warehouse Receipt Systems (WRSs) and aligning with the Food Reserve Agency (FRA)'s strategic plans. The studies analysed ARM potentials of each tool and presented proposal for investment – including the implementation approach, cost and indicative budget.

1. A 14M USD 5-year investment proposal to improve access to ARM information, with a focus on three components; 1) modernization of the infrastructure for collecting and disseminating information on price, weather and pests and disease risks; 2) enhancement of the technical and institutional capacity of key government agencies and departments to deliver quality, accurate and timely information; and 3) establishment of an integrated reliable and cost effective web-based information for ARM and early warning.
2. A 20MUSD 5-year investment proposal to address the gaps in Zambia's WRS and FRA's potential for ARM. Specific focus is drawn to 16 identified areas of interventions to address three broader areas of issues; 1) the inconsistency in policy and legislation; 2) Inadequacy of WRS support infrastructure; and 3) the limited enthusiasm of the financial sector to support smallholder farmers and attract private sector investment in ARM solutions. The identification of these issues and accompanying cost to address them was based on recommendations from diverse stakeholder consultations with the private sector, non-governmental organizations, and cooperating partners.

The executive summaries for these two feasibility studies are available under the section 3 of this Zambia Country Final Report.

5. Facilitating dialogue between the Government, local institutions and development partners

From the initial setting up phase, PARM met and held active discussions with key stakeholders from diverse organizations, including NEPAD, FAO, USAID, World Bank, EU, WFP, ZANACO and IFAD-funded projects to discuss synergies on ARM. Partners sustained their interest and showed increasing commitments throughout the joint-process promoting holistic approach to ARM and integration in programmes.

At the PARM Policy Dialogue/Dissemination Workshop in April 2019, stakeholders developed the axes of action plan including a monitoring system to support the implementation of the ARM tools. Panel of stakeholders, including IAPRI, WB, WFP, IFAD, MUSIKA, ZAMACE, AFD, MoA, ETG, DMMU, Madison Insurance, ZILFLP, SAS converged for a discussion on the two investment proposals that came out of the feasibility studies. The MoA expressed its commitment to carry on the discussion with the national stakeholders to solicit financial and technical partnerships for the integration into the new NAIP (2022-2026). Further technical support is also expected from PARM as the platform looks forward to the Horizon/Phase 2.

Bilateral exchange and discussions were held with IFAD Project Managers (E-SAPP and RUFEP) and the design team for BRAVA project. These partners expressed the possibility of integrating PARM process outcomes into their project activities.



The timeline of the Zambia ARM process

1. Launch of PARM process (2016/17)

Preparation for the PARM process in Zambia begun in May 2016 following a correspondence initiated between the Government of **Zambia and the President of IFAD for PARM** to join the IFAD-sponsored Enhanced-Smallholder Agribusiness Promotion Programme (E-SAPP) design mission to Zambia. This was an exploratory mission for PARM to identify possible opportunities to mainstream holistic ARM into the design of IFAD-funded E-SAPP. In June 2016, the Government of Zambia's demand to participate in the PARM process was discussed and approved during PARM's 8th Steering Committee meeting. Months following the approval, the PARM Team organised its **set-up mission** to Zambia in March 2017 with invitation from the Ministry of Agriculture and the Ministry of Finance. The mission was a necessarily first step in the joint process. It led to an extensive discussion with stakeholders, identification of potential synergies on ARM, and development of an outcome road map to facilitate the joint process.

The roadmap to guide PARM process in Zambia was officiated with the CAADP Focal Person (who is based at the Ministry of Planning). A Country Liaison Officer was also identified and later assigned to coordinate activities and manage stakeholder relationships among the diversity of partners involved in the PARM process in Zambia.

2. Risk Assessment Phase (2016/17)

In May/June 2018, a team of experts from the World Bank finalised the study on "*Increasing Agricultural Resilience through Better Risk Management in Zambia*" which analyses the principal agricultural sector risks in Zambia and identifies pathways for ARM. Given the quality and robustness of the study, PARM did not initiate a RAS in Zambia. The Secretariat rather reinforced the dissemination of knowledge from the study and developed a 4-page **agricultural risk profile factsheet** to complement the World Bank's voluminous report.

A **capacity development (CD1) training** support for the IFAD/E-SAPP project officers and other range of stakeholders was organised in June 2018 in Chilanga (near Lusaka) with the support of the MoA. The training aimed at increasing knowledge on the holistic approach to ARM, risk assessment methodology, and ARM tools. Findings from the World Bank ASRA for Zambia were presented to the trainees, who mainly consisted of not only the E-SAPP project officers but also other relevant stakeholders from government agencies, farmers' organizations and private sector.

Zambia also benefitted from **PARM regional knowledge sharing event** held in Lusaka in December 2018. The workshop saw the participation of stakeholders in Zambia, including officials from NUFAZ, MoA, MoF, In-Service Training Trust (ISTT), SPGRC and Sustainable Agribusiness Solutions. Stakeholders shared their experiences on key success factors for capacity development at the farm-level to collect best practices for farmer-friendly impact-oriented CD.

3. Tools assessment Phase (2018/19)

Exchange and discussions with partners in Zambia, following World Bank RAS, led to the decision to launch **feasibility studies** on ARM tools recommended in the World Bank ASRA: 1) improving access to agricultural risk information for meso level stakeholders and smallholder producers in Zambia and 2) enhancing the Zambian Warehouse Receipt Systems (WRSs) and aligning it with the Food Reserve Agency strategic plans.

The tool assessment phase kick-off in September 2018 with the development of the Terms of Reference (ToR) for these two feasibility studies. After the launch of a call for proposal and a competitive selection process, a pool of experts from Kenya and Zambia were selected for the study on ARM information, whereas, the IAPRI, a Zambian-based policy research institute was contracted for the WRSs. The two studies were conducted from November 2018 to March 2019. Final reports were published in July 2019 following the official validation by the MoA.

PARM's **policy dialogue/dissemination workshop** took place in April 2019 allowing the Secretariat to successfully officiate the end of the joint process in Zambia. Findings from the two feasibility studies were presented and validated at the workshop. The results of the entire PARM process in Zambia were also presented to solicit support from Government as well as technical and financial partners to enhance the integration of various components of capacity development training and ARM tools into Zambia's NAIP, E-SAPP and other relevant programmes.



The way forward: matching ARM investment needs with Government priorities and donors' investment plans

The ARM tools investment proposals developed as part of the PARM process are a strong and an attractive package for improving ARM in Zambia. During the Policy Dialogue Workshop in April 2019, the proposals attracted discussions with interest of development partners who are possibly looking forward to investing in the proposed tools or integrate them into already existing programmes. This is an excellent opportunity for the Government of Zambia to lead the implementation of the proposed ARM tools under the support of the development partners.

Also, during the Policy Dialogue Workshop, a bunch of ideas were shared between PARM, the MoA and MoF, basically on opportunities to support the integration of the joint ARM process outcomes into Zambia's National Agriculture Investment Plan 2022-2026 (NAIP II). Particularly, the axes of an action plan as well as the institutional arrangements to support the implementation of the proposed ARM tools were extensively discussed.

Bilateral discussions with partners throughout the process have permitted the identification of key areas of integrating ARM. At the Policy Dialogue Workshop, PARM discussed the ARM investment plans with stakeholders from the donor and international development community including AFD, WB, WFP, GIZ, IFAD and many others. PARM also discussed with IFAD Project Managers (for E-SAPP, RUFEP and BRAVA) regarding the possibility to integrate PARM process outcomes into these projects. The Government of Zambia with its bilateral strategic partners, including NEPAD- CAADP, will monitor the implementation of the proposed ARM tools. PARM, will continue to provide support as a facilitator to assess the interests of technical-financial partners to continue collaboration with the MoA on the possible implementation of the various agricultural risk management tools identified. Particularly, IFAD-funded programme E-SAPP has already integrated the RAS component into its projects and a dialogue has been opened on how to align the identified tools with specific aspects of the programme.



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A woman with her hair braided, wearing a blue and white striped t-shirt and a long yellow skirt, carries a large, heavy bundle of harvested green plants on her back. She stands in a lush green field with banana plants and other vegetation. The background is filled with dense green foliage under a bright sky.

2. Prioritizing Risks



Zambia



Increasing Agricultural Resilience through Better Risk Management in Zambia

Abstract

2018

Study conducted by :

Ademola Braimoh, Alex Mwanakasale, Antony Chapoto, Rhoda Rubaiza, Brian Chisanga, Ngao Mubanga, Paul Samboko, Asa Giertz, and Grace Obuya

Zambia is a country endowed with a large tract of arable land and water resources. The agricultural sector extensively employs the population, feed the nation and contributes to GDP. Between 1990 and 2013, the sector's productivity rose markedly by 170% but its contribution to GDP has recently dropped from 8.2% in 2011 to 5.3% in 2015, in the wake of compounding risks at production, marketing and macro levels. In order to provide solutions to better manage risks in Zambia's agricultural sector, a team of World Bank experts finalised an Agricultural Sector Risk Assessment "Increasing Agricultural Resilience through Better Risk Management in Zambia" in 2018. The study assesses and prioritizes the principal risks facing agricultural sector in the Republic of Zambia. It further analyzes the impacts and identifies risk management solutions. The analysis was based on risks affecting the top 10 agricultural commodities that together make up about 80% of the value of farm production in Zambia. These are beef, maize, sugarcane, cassava, tobacco, cotton, groundnuts, vegetables, chicken, and pork. Recognizing the compounded nature of risk and the multidimensional issues at play in managing agricultural risks, the study adopts a mixed-method approach combining qualitative analysis of the enabling environment risk with quantification of production and trade risks. It also relied on stakeholders consultations and literature reviews to validate the key findings. A follow-up workshop was organised in Chisamba District to discuss and address gaps in risk management.

The findings suggest that **drought** is the most important risk hindering agricultural production related activities, followed by **excess rain and floods**, and **pests and diseases**. On the average, severe drought events were found to occur once every 20 years, whereas smaller localised droughts occur once every 5 years. The worst drought took place in 1992 and led to crop losses worth \$154 million. Drought events affect all commodities except cassava and cotton. The study also reveals the most significant market risk affecting farmers and other actors in the value chain is price volatility resulting from the rapid effects of international price fluctuations. In addition, the introduction of the export ban leads to large carryover stock of maize and impacts the supply rate and farm-gate prices. In terms of enabling environment risks, the study focuses on key macroeconomic policies from 1983 to 2015, and reveal that the Structural Adjustment

Program of the late 1980s and early 1990s, together with the **disbandment policy** on input and marketing subsidies and the privatization of parastatals adversely affect Zambia's agricultural GDP. Similarly, **civil service retrenchment** during the period affects access to agricultural advisory services for various commodity chains. Beyond the efforts made in analysing the policy environment, the study recognises that a precise quantification of policy impacts/losses is difficult to ascertain given the unpredictable changes in the country's macroeconomy, including dramatic fluctuations in the inflation rate and exchange rates.

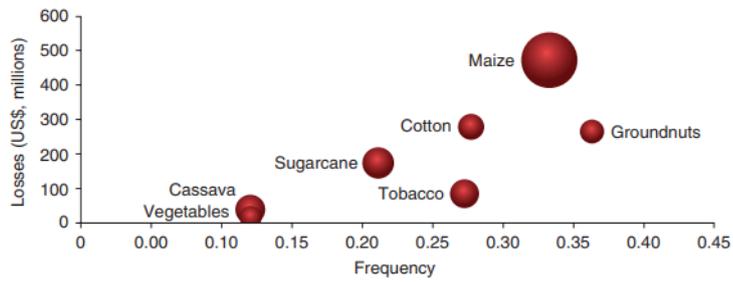
It is important to note that the severity and frequency of these identified risks somewhat vary between agricultural subsectors and between different regions/provinces in the country. The study presents detail information on such sub-sectorial and regional/provincial variations.

Exposure to agricultural risks as well as the consequences can be effectively reduced through a range of risk management systems tailored to the conditions prevailing in the agricultural sector. The study relied on risk prioritization exercises with stakeholder to identify management options to deal with the identified risks. The exercises proposed a myriad of options, including early warning systems, climate-smart farming, Zambia Commodity Exchange (ZAMACE) and warehouse receipt systems, safety net programs, agricultural diversification among others. Considering the potential for cooperation in the implementation and planning of ARM efforts, the study recommends the Government of Zambia and other stakeholders to prioritize three key ARM options in investment strategies; 1) early warning system for food security, 2) climate-smart agriculture and resilience through diversification, and 3) ZAMACE for a shock-responsive safety net.

This report has informed PARM's decision to launch feasibility studies for investment into two potential agricultural market risks management tools. The first, Warehouse Receipt Systems (WRS) connected to the Food Reserve Agency and the Zambia Commodity Exchange (ZAMACE), and the second on Access to Information on Early Warning Systems.

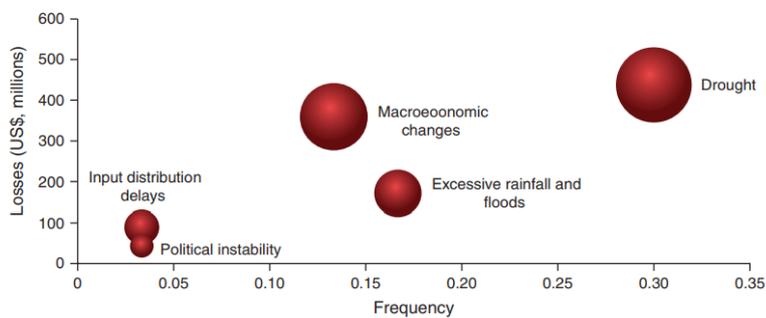


Figure 1: Cumulative Value and Frequency of Losses per Crop (1982–2016)



Source : World Bank 2018

Figure 2: Cumulative Value and Frequency of Losses per Risks (1982–2016)

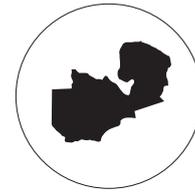


Source : World Bank 2018

The full study report can be downloaded here: [“Increasing Agricultural Resilience through Better Risk Management in Zambia”](#) 

Zambia

Agricultural Risk Profile



What are the key findings?

- ▶ The analysis suggests that production risks are greater than output price risks.
- ▶ A flood disaster occurs every two years, with a drought every decade.
- ▶ Sunflower seeds, sweet potatoes, soybeans, cotton and tobacco are the crops most affected by yield losses.
- ▶ Apart from 1992, yield losses have been relatively low across the period.
- ▶ Sorghum is the crop most affected by output price risks.
- ▶ The price of imported inputs appears a risk, along with a depreciating currency.
- ▶ Basic requirements and political stability have improved and are relatively strong.

What are agricultural risks?

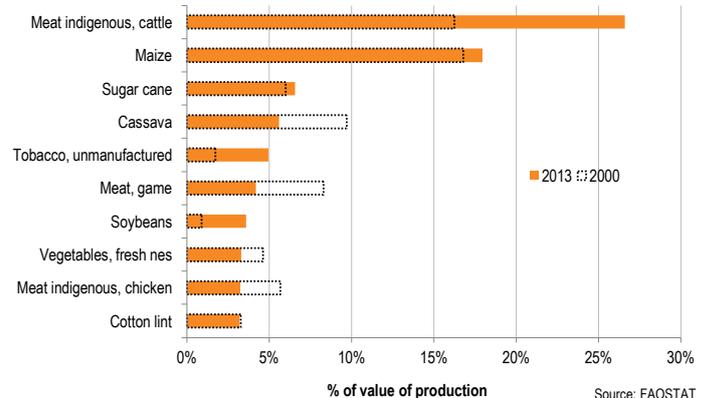
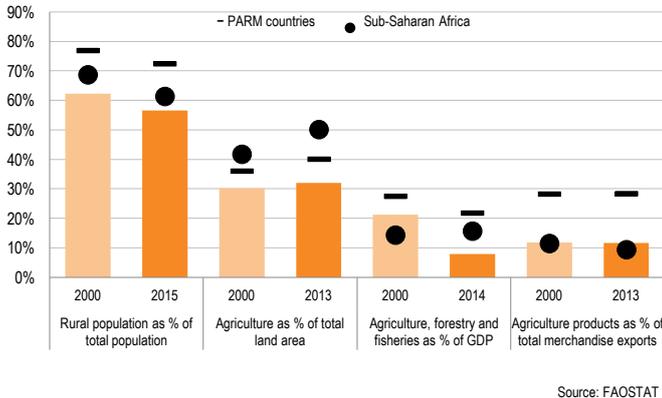
Agricultural risks are uncertain events that cause farmers significant financial loss or other adverse outcomes. They are different from constraints, which are predictable and constant limitations. Risks can negatively affect rural employment and assets, increase food insecurity, and lead to inefficient private and public sector investment. The purpose of the profile is to provide a high-level quantitative analysis of selected risks. It uses a common methodology, drawing on easily available information. As annual national averages are used, local and seasonal variations cannot be observed. This may underestimate production risks as compared to output price risks. The scope of the analysis is also limited by the lack of price and output data for livestock products. Local price data for Zambia was available only for 2005-14, and for four commodities. A detailed country risk assessment requires a much fuller investigation.

What role does agriculture play?

About 57% of the total population of 16.2 million is rural, similar to the share in 1990. While the area in agriculture has risen, the sector's contribution to GDP has fallen considerably. Its contribution to export earnings remains stable but relatively low.

What products are most important?

Cattle meat, maize and sugar cane are the three most important products. The top ten products represent 79% of production in 2013, with all crops accounting for 58%. There has been considerable variation in production trends among the top ten commodities.

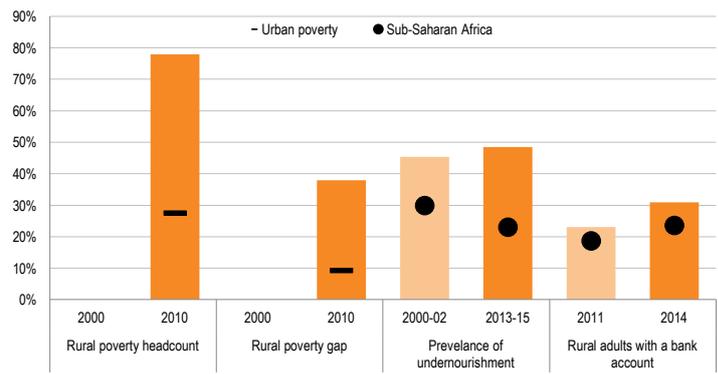
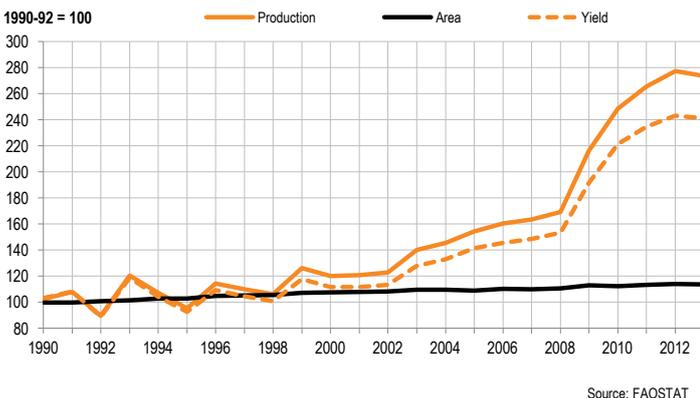


How has the sector grown?

Agricultural output increased by 170% between 1990 and 2013, with most of the increase since 2000. This is primarily due to rising yields (4.4% per annum) compared to a 0.6% increase in land. Both crop and livestock output has risen at similar rates.

How vulnerable are people to risks?

Almost 80% of the rural population are classified as living in poverty. This is much higher than the urban level. The rural poverty gap is also larger. The prevalence of undernourishment has risen since 2000-02, in contrast to most other African countries.





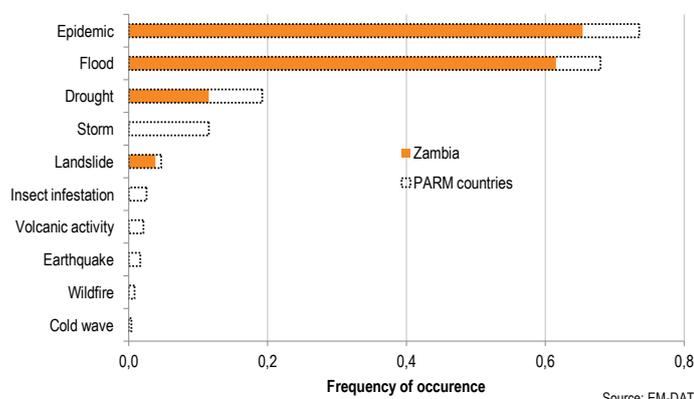
Production risks

What are production risks?

A large number of risks affect agricultural production. These include climate related events (such as droughts, floods and cyclones), outbreaks of pests and diseases, and damage caused by animals, windstorms or fire. The geographic and temporal spread of these impacts can vary significantly. Production risks are mostly associated with yield reductions but can also affect product quality.

How often do major disasters occur?

In the period 1990-2015, epidemics and floods were the most frequent disasters to affect Zambia, occurring once every two years. A major drought is recorded as occurring once every decade. No major storm events or insect infestations were recorded.

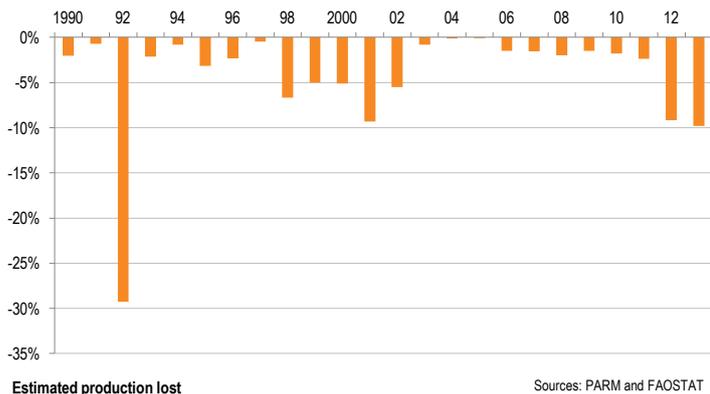


What is the likely impact of future climate change?

The IPCC 5th assessment report concludes that land temperatures over Africa are likely to rise faster than the global land average, particularly in the more arid regions. In Southern Africa, temperatures will rise in all seasons, with an average temperature 3.5-4°C higher than experienced in the late 20th century. Projected rainfall change over most of sub-Saharan Africa is uncertain due to complex topography. However, most models suggest a reduction in rainfall and drier conditions are likely in Southern Africa. Increasing temperatures and changes in precipitation are very likely to reduce cereal crop productivity, and could also adversely affect high-value perennial crops. There is also evidence in Zambia that climate change will increase human health risks, particularly cholera.

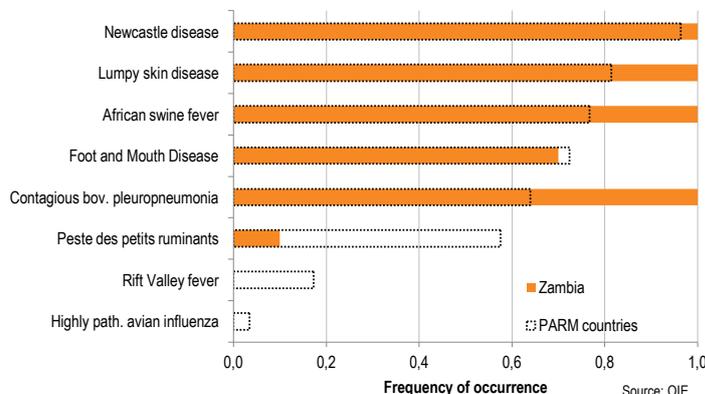
Has the risk varied over time?

Totalling the annual value of production losses for the 12 crops provides an indicative production risk profile for the period. Annual production losses averaged 6%, ranging from 0-29%. The largest loss occurred in 1992 when most of the 12 crops experienced losses.



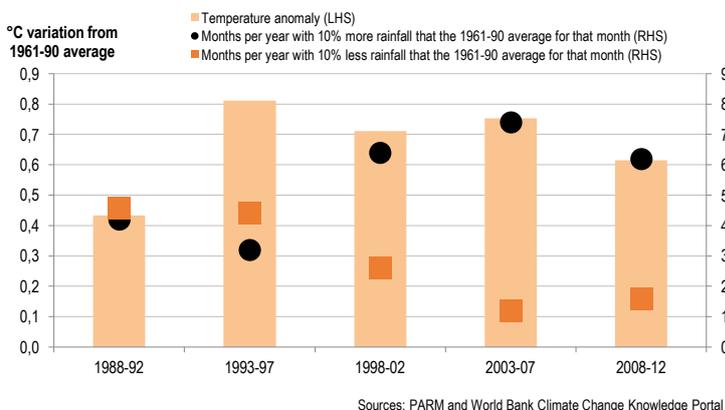
What animal diseases are present?

Of the eight animal diseases analysed over the period 2005-2015, four could be considered endemic. Rift valley fever and Highly pathogenic avian influenza has never been reported. Only in one year has Peste des petits ruminants been recorded as present.



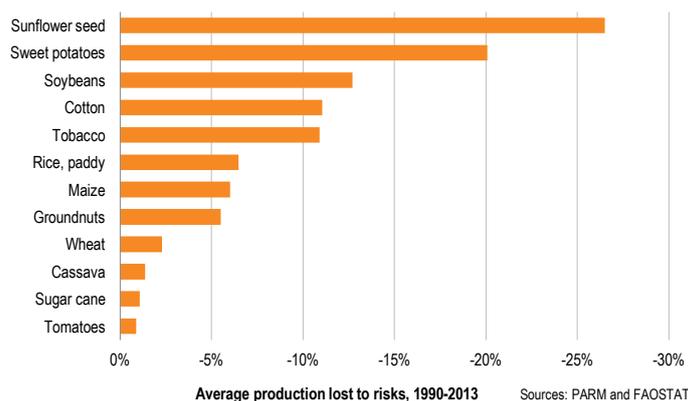
Are weather anomalies increasing?

Temperature levels are higher than the 1961-1990 average, although no upward trend is observed using five-year averages. The number of wetter than average months has risen while the number of drier months has fallen.



Which crops appear most at risk?

Sunflower seeds, sweet potatoes, soybeans, cotton and tobacco are the crops most affected by estimated yield losses. Annual yield losses averaged over 20% of production for the first two (average losses of 60% every 2-3 years).





Market risks

What are market risks?

Market risks are issues that affect the price and availability of outputs and inputs. Commodity markets can have a high degree of volatility caused by changing local and global supply and demand. Producers are concerned about low prices (reducing their income); consumers are worried by high prices (raising their expenditure). Other market risks include exchange rate volatility, which can affect the price of outputs and inputs.

Which products appear most at risk?

Sorghum appears to be the commodity most affected by output price risks, although data for only four commodities and for a limited time period was available. Sorghum had an annual average price loss of almost 9%, an average loss of 30% every 3 years.



How are the product and temporal risks estimated in this profile?

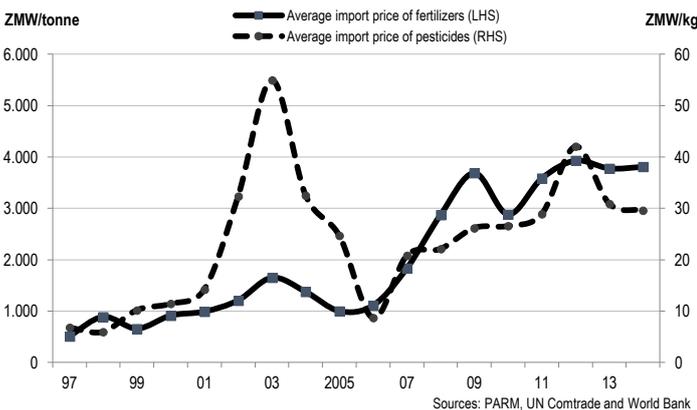
Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.

To calculate product specific risk values, the average yield or price loss below the threshold level and the frequency of these occurrences are multiplied to obtain average production and price loss ratios. This is done for the 12 most important crop and livestock commodities for which data was available.

To calculate the risk profile over time, the individual loss for each respective year are added together across the crop commodities only.

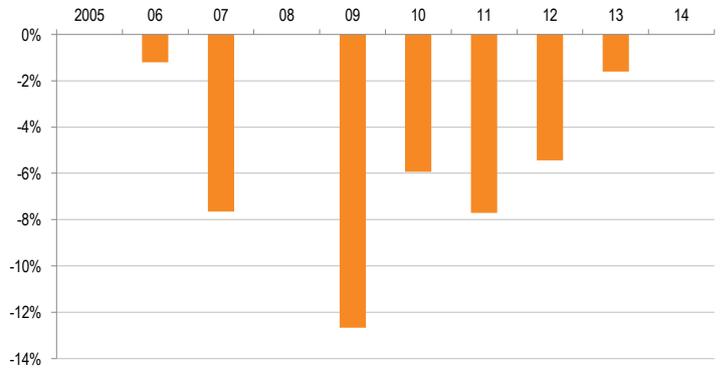
How variable are input prices?

Variations in annual average import prices suggest farmers face some input price risks. Since 1995 import prices have risen by 15% or more at least once every two years for both fertilisers and pesticides.



Has price risk changed over time?

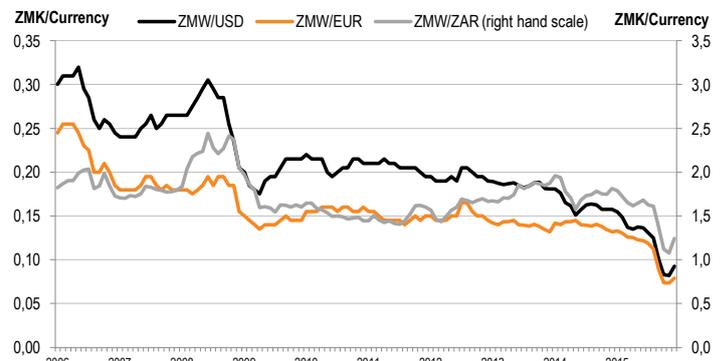
Totalling the estimated revenue lost due to output price risks for the crops provides an indicative market risk profile for the period. The average annual revenue loss is 5%, with a maximum loss of almost 12% in 2009. Output price losses have fallen since then.



Estimated revenue lost Source: PARM and FAOSTAT

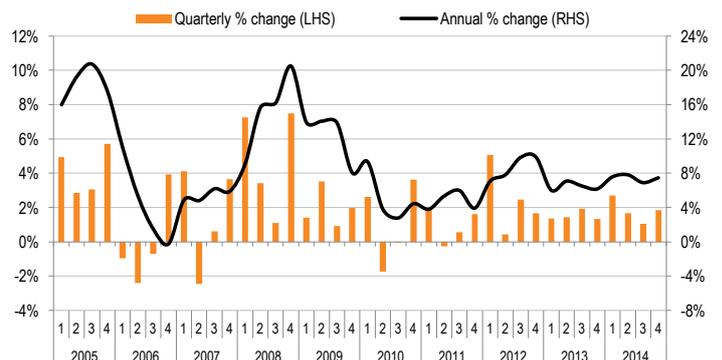
Is there an exchange rate risk?

Zambia's currency, the kwacha (ZMW), has been steadily depreciating against the USD, Euro and South African rand. The downward trend has generally been within a narrow range, although there have been some large falls such as in 2009.



Do food prices vary for consumers?

Over 2005-14, the food component of the consumer price index recorded an average annual increase of 9%. The highest annual rate of 20% was recorded in December 2008. Prices have risen more slowly since 2010 but fluctuate to the same extent.





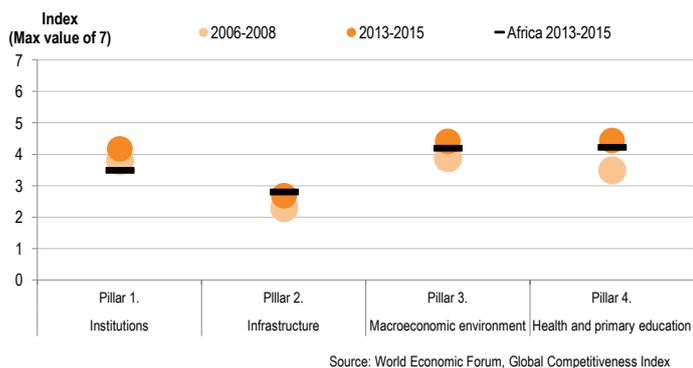
Macro level risks

What are macro level risks?

Macro level risks cover unexpected changes in the broader economic environment in which agriculture occurs. It can include changes in government or business regulations, fiscal and monetary policy settings, external trade restrictions, political instability, corruption, regional conflict and domestic unrest.

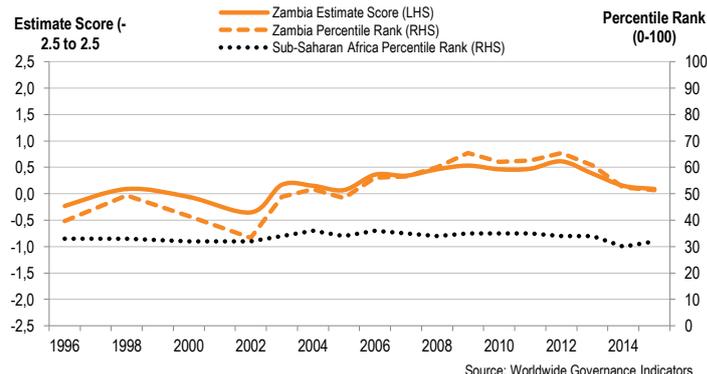
Are basic requirements in place?

Index scores for the basic requirement pillars place Zambia above the African average for three pillars. Index scores have lifted for all four pillars, particularly in health and primary education.



Is the political environment stable?

Zambia scores above the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking shows a slight upward trend over the period, although there has been a noticeable fall since a peak of 65 in 2012.



Overall risk assessment

The PARM process

A detailed risk assessment is carried out as part of the PARM process, in partnership with NEPAD and the relevant African government. It is a rigorous consultation process involving a risk assessment report drafted by international and local experts, followed by a national validation workshop with the participation of stakeholders including farmers, private sector companies and government. Risks are identified at a detailed level, e.g. droughts, raids, etc.

A detailed risk assessment has yet to occur for Zambia. Consequently, the overall risk assessment is conducted at a higher level based on the analysis contained in this profile.

What are the main agricultural risks?

The analysis suggests that overall production risks are greater than output price risks. While output price risks occur more frequently, their severity is not as large as the extent of losses associated with production risks, both on average and in the worst-case scenario recorded.

RISK	VARIABLE	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST-CASE SCENARIO
PRODUCTION	RAW SCORE	0.33	-17%	-54%
	RISK LEVEL	● HIGH	● MEDIUM	● VERY HIGH
OUTPUT PRICE	RAW SCORE	0.38	-14%	-28%
	RISK LEVEL	● HIGH	● LOW	● MEDIUM

What are the linkages between risks?

Managing risks in agriculture is particularly challenging, as many risks are highly correlated, resulting in whole communities being affected at the same time. Impacts on yield that are widespread and have a significant impact on total market supply can have profound effects on market prices. Flooding is a clear example of one risk that can trigger others in Zambia. Not only do floods destroy crops, they can also damage roads and bridges, further limiting the supply of food to the market and aggravating spikes in food prices.

What is PARM? The Platform for Agricultural Risk Management (PARM), an outcome of the G8 and G20 discussions on food security and agricultural growth, is a four-year multi-donor partnership between developing nations and development partners to make risk management an integral part of policy planning and implementation in the agricultural sector. PARM operates a process to achieve this through risk assessment, policy dialogue, tools assessment and capacity development.

PARM Secretariat International Fund for Agricultural Development (IFAD)

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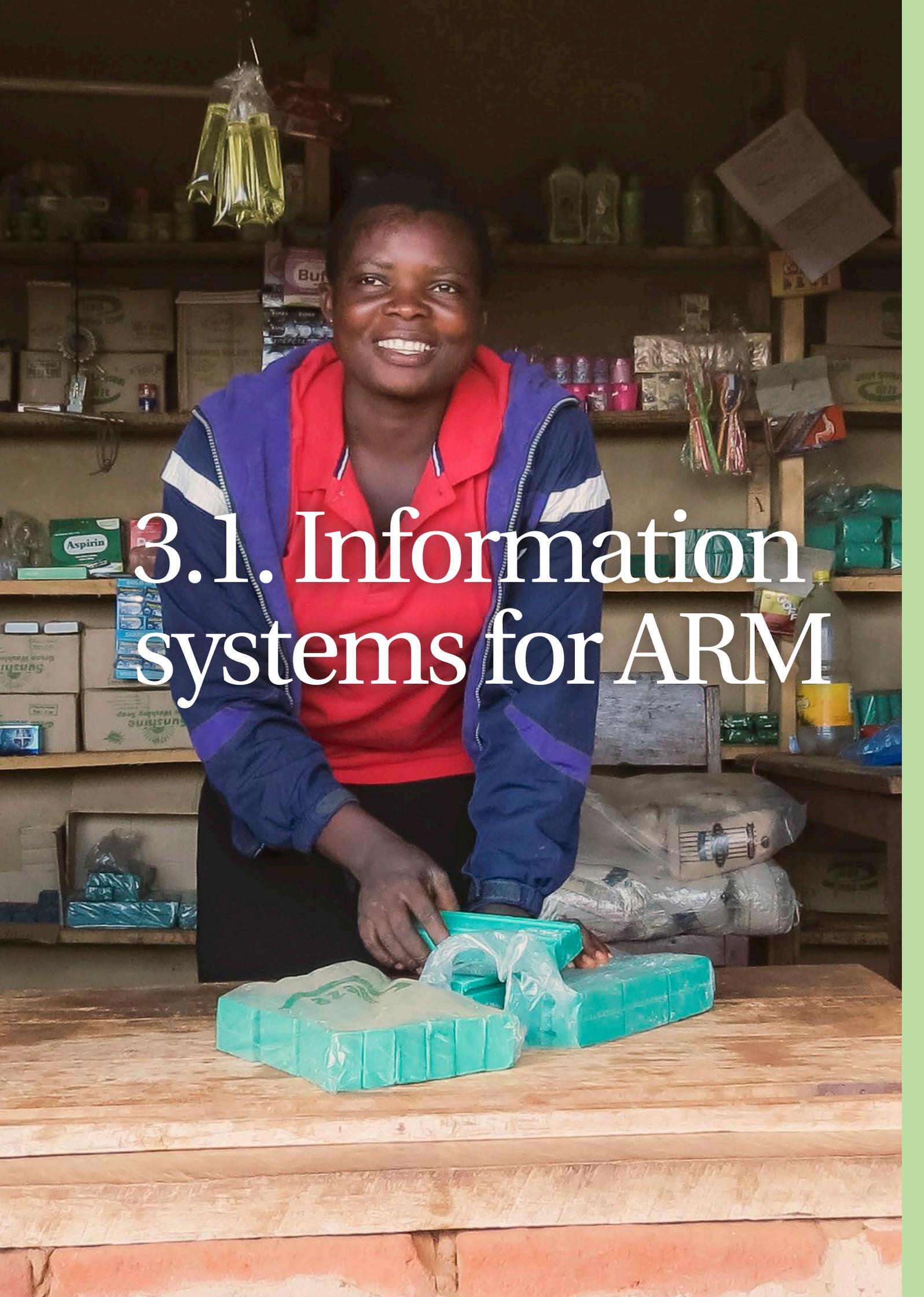
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A close-up photograph of a variety of fresh vegetables. In the foreground, there are several large, orange carrots. To the left, there are several light-colored potatoes, some with small dark spots. A single, bright red chili pepper is prominently placed in the upper right quadrant. In the background, there are yellow and green bell peppers and some leafy greens. The overall lighting is warm, highlighting the textures and colors of the produce. The text "3. Finding the Right Tools" is overlaid in a white, serif font, centered over the middle of the image.

3. Finding the Right Tools



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A woman with a warm smile is working behind a wooden counter in a small, cluttered shop. She is wearing a red polo shirt under a blue and white jacket. On the counter in front of her are several large, rectangular blocks of light blue material, possibly soap or wax, some wrapped in clear plastic. The background is filled with shelves of various goods, including boxes of Aspirin, bottles of oil, and other household items. The lighting is natural, and the overall atmosphere is one of a busy, local business.

3.1. Information systems for ARM



Zambia



Feasibility study for investment to improve agricultural risk information for meso-level stakeholders

Executive summary

May 2019

Study conducted by:

Grace Obuya, Ngao Mubanga and Prof. Idowu Oladele

In collaboration with:

Ministry of Agriculture

Background to the study

This feasibility study focuses on the information on weather variability, pests and diseases, and price volatility, and how they can be effectively tailored to manage risks in the Zambia's agricultural sector. In supporting these efforts, a feasibility study was conducted to improve current agricultural risk information system in Zambia with meso-level operators as the main end user. Meso-level operators are those actors, active along agricultural supply chains that are directly in contact with farmers. They include public and private extension services providers, financial intermediaries, input providers, insurance companies, farmers' organizations, cooperatives, cross-border traders associations; research institutions and grain millers associations among others). Agricultural meso-level operators represent an optimal channel to reach a large number of smallholder farmers and also the bridge to policy makers at macro level.

The study developed recommendations and a corresponding investment plan for an integrated agricultural risk and early warning information system to help the meso-level operators and smallholder farmers to better manage risks related to weather and climate variability, pests and diseases, and price volatility. The study aligns with four key national initiatives in Zambia. The first is the National Agricultural Investment Plan (NAIP) whose objective "to facilitate and support the development of a sustainable dynamic diversified and a competitive agricultural sector that assures food security at household and national levels and maximises the sector's contribution to Gross Domestic Profit (GDP)". The second is the Vision 2030, which aims to ensure an efficient competitive sustainable and export-led agriculture sector that assures food security and increased income. The third is the second National Agriculture

Policy 2016 that focuses on ten strategic objectives that include objectives promoting productivity, promoting R&D, strengthening training, promoting markets (inputs and outputs), private sector participation, nutrition and food security. The last is the Seventh National Development Plan (7NDP) which intends to create a diversified and resilient economy for sustained growth and socio-economic transformation driven, among other, by agriculture.

Survey of Agricultural Risk and Early Warning Information Systems

A number of meso-level operators were purposively sampled to obtain information on access to agricultural risk information for decision making in Zambia. Of this, 18 meso-level-operators responded to the online survey questionnaire and whose responses are analysed in this study. The responses from meso-level operators were supplemented by feedbacks from 35 other informants that participated in interviews in Lusaka and 4 focus group discussions (FGDs) in Gwembe and Chipata districts. Information from official documents was also reviewed to gain an improved understanding of agricultural risk and early warning information needs for meso-level operators in Zambia.

The study investigated and analyzed agricultural data collection methods; monitoring and early warning systems; analysis and reporting; and dissemination methods of agricultural risk and early warning information. Use of new technologies and traditional dissemination channels were investigated. Information needed for weather, pests and market risks was analyzed. The study also



revisited existing information systems and possibilities of converging them into an integrated Agricultural Risk Management (ARM) information systems, easily accessible by meso-level operators and smallholder producers. Relevant best practices and lessons from other countries were also highlighted.

The survey revealed that a majority of the meso-level operators in the agricultural sector fall under the category of Government/Extension when compared to financial services, insurance companies, Farmer Organizations, research institutions, input suppliers, media and NGOs. Information requirements by meso-level operators are closely tied to their mission, goals and objectives as an organization. The information system influences the types of agricultural decision-making by meso-level operators in different ways.

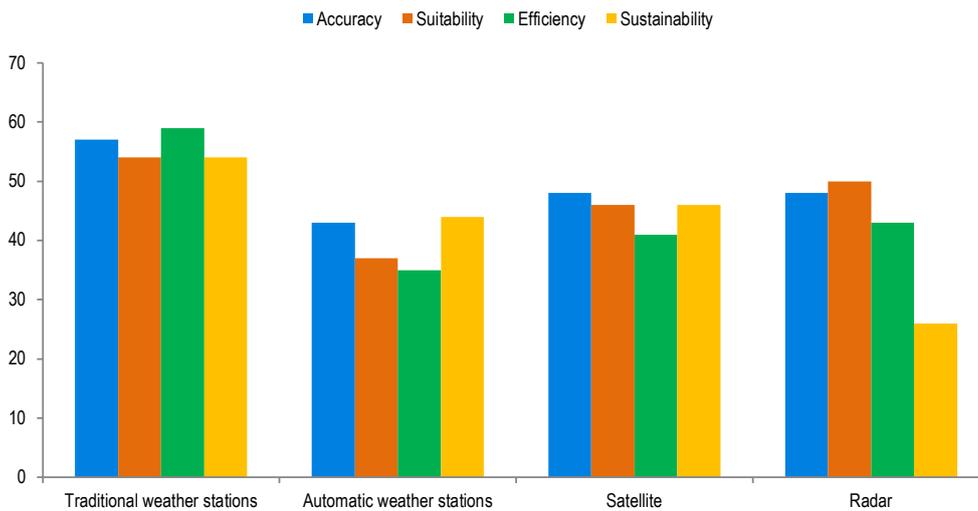
According to survey respondents, extension service providers require the most information across the value chain ranging from pre-cultivation, cultivation, and harvest to, post-harvest information that includes market information to enable them offer appropriate advice to farmers. Insurers and insurance service providers also require similar information as extension service providers to design insurance products. For the design of weather index or area yield index products based solely, or partly on ground data (together with satellite data), rather than in-field assessments, it is also imperative to have access to good quality and quantity of weather and yield data (IFAD 2017)¹. Other financial service providers, particularly those offering agricultural finance products, may require information about production calendars and costs, as well as sales prices.

Table A: Meso-level operators information needs in relation to weather, price, and pest and diseases

	Information needs	Extension services	Finance / insurance	Input suppliers	Farmer organizations	Research institutes	NGO	
Weather	Accurate weather information	X	X		X		X	
	Agroweather information	X		X	X		X	
	Timely weather information	X	X	X	X		X	
	Rainfall	X	X		X	X	X	
	Flood	X	X		X	X	X	
	Temperature variations	X	X		X		X	
Market	Availability of agricultural inputs and services		X	X	X		X	
	Access to quality inputs		X	X	X	X	X	
	Marketing subsidies,		X	X	X		X	
	Export ban		X	X	X		X	
	Agricultural insurance participants		X	X	X		X	
	Agricultural markets participants		X	X	X		X	
	Crop storage facilities and participants		X	X	X		X	
	Informal credit and savings club		X	X	X		X	
	inputs prices		X	X	X		X	
	Remunerative output markets		X	X	X		X	
	Agricultural policies		X	X	X	X	X	
	Pests and diseases	Contagious disease of livestock	X		X	X	X	X
		outbreaks of animal disease	X	X	X	X	X	X
Prevalent pests		X	X		X	X	X	
Prevalent diseases		X	X		X	X	X	
Incidence of pest		X	X		X	X	X	
Incidence of diseases		X	X		X	X	X	
Life cycle of pests		X			X	X	X	
Hosts for pest and diseases		X			X	X	X	
Animal welfare law		X		X	X	X	X	
Cost of pest control		X	X		X	X	X	
Cost of disease control		X	X		X	X	X	

Source: Field survey

¹ Generally, to meet commercial insurer and reinsurer requirements, ideally 20 to 30 years of daily, reliable weather observations are required with only a small percentage of the total dataset missing. The data need to be available at the level of disaggregation appropriate to the product and the set Unit Area of Insurance.

Figure A: Ratings of Weather Data Collection Methods (%)


Source: Field survey

Majority of meso-level operators in the study indicated that traditional weather stations were more suitable, efficient and sustainable than radar², satellite³, and automatic weather stations, reflecting traditional weather station is the most prevalent data method for agricultural risk management. Several extension workers have not yet been equipped with skills required to handle data from modern instruments such as satellite data and automatic weather stations.

They are most familiar with working with data obtained from traditional weather. Data collection method for pests and diseases is still paper-based across Zambia's 109 districts. The prevalence of traditional methods in Zambia has implications for the skills and capacity of the meso-level operators as well as their judgment of other data methods.

In terms of preparedness and response by meso-level operators in managing agricultural risks at the sector, local, sub-national and national levels, the study showed that preparedness at the sector level is highest with low percentages at national, sub-national levels and local level. Plans to improve pest and disease data collection, analysis and reporting, dissemination and communication include creating a web-based EWS or surveillance system where data will be entered from districts to simplify the work undertaken by National Livestock Epidemiology and Information Centre (NALEIC) to do the analysis and advise on response strategy. This is however challenging, due to the limited funding from the government. Data capture is not available in real time due to inadequate staffing capacity.

This study observed capacity gaps in the current agricultural information systems. Zambia Meteorological Department (ZMD) has inadequate capacity in terms of technologies for weather monitoring and technical skills for analysis and interpretation of weather data. The Ministry of Agriculture through the extension services has not been effective in pests and disease surveillance and agronomic advisories due to challenges of transportation facilities, poor road networks, inadequate funding and shortage of extension staff. There is a standardized data collection template with the Department of Agribusiness and Marketing of the MoA but the Market Development

Officers from the Agricultural Market Information Center (AMIC) have received minimal training in the management and application of market information and data collection approaches. In addition, there is weak collaboration among key relevant ministries involved in data collection, monitoring and warning systems, analysis and reporting, and dissemination and communication, resulting in a range of weaknesses all along the supply chain for price information. These include irregular data collection and transmission, unreliable data, unstructured management that lacks strategic oversight, and dissemination is entirely supply-driven.

Notes: The survey indicates that 24 main information channels are used by the respondents' organizations. The top six channels for disseminating agricultural risk information and EWS channels are extension services with a score of 41 percent, electronic newsletter (39 percent), radio (33 percent), other farmers and interactive voice response (24 percent each), and cell phone (22 percent).

Recommendations

Priority activities for targeted investment for improved agricultural risk management are outlined as follows:

i. Modernizing infrastructure for data collection and dissemination

Investing in the modernization of infrastructure for data collection and dissemination will enable the timely collection of information and particularly from remote areas that are difficult to reach. It will also improve the dissemination channels which have proved challenging in the current systems. Upgrading the existing infrastructure and application of satellite data and Information and Communication Technology (ICT) will enable collection of precise weather data and measurement of weather related risks at specific locations. In addition, improving internet connectivity will enhance access to information required to better manage agricultural risks.

² Radar here refers to active sensor.
³ Satellite here refers to passive sensor.

Figure B: Preferred information dissemination channels used by meso-level operators (%)

ii. Enhancing technical skills and institutional capacity

Investment for enhancing the technical capacity within key government agencies and departments will enable the delivery of quality, accurate and timely information. There is a need to strengthen the expertise within its management to include business development capabilities and public-private partnerships. As ZMD is the main provider of weather and agro-meteorological information that gives an overview of the crop (maize) condition based on the crop stage and amount of rainfall, its institutional performance still needs to be enhanced through staff training, introducing business development experts, retraining, professional development and collaboration with development partners. On the other hand, Ministry of Agriculture needs to increase the number of extension officers, and deliver/provide regular trainings on pests and diseases data collection and dissemination. There is also a need to increase number of data analysts for pests and diseases at NALEIC. Community surveillance should also be encouraged for real-time monitoring of pests and disease outbreaks. In order for marketing information system to be effective there is need for regular trainings of staff responsible for market information on collection, processing and dissemination. Development partners should be encouraged to fund as well as give technical assistance.

iii. Establishing web-based Integrated Information Systems for Agricultural Risk Management and EWS

Integrated information system will enable timely and cost-effective provision of information. Web-based integrated information systems are more reliable in providing data and enhancing access to information needed by farmers and meso-level operators, to better manage agricultural risks across the value chain. For instance, access to information about crop prices in different markets increases the bargaining power of farmers enabling them to boost incomes by 10-30 percent⁴.

To estimate the value of the recommended actions in the investment plan, an economic analysis that estimates both costs and benefits has been undertaken. The costs of the investment plan per component is indicated in table below.

Table B: Costs for developing the Zambia integrated agricultural risk and early warning information system

Component	Description	Cost in US\$
Component 1	Modernization of infrastructure for data collection and dissemination	2,827,500
Component 2	Enhancing technical skills and institutional capacity	5,710,000
Component 3	Establishing integrated system for agricultural risk management and EWS	5,775,000
Total Investment Cost		14,312,500

Two approaches were combined to estimate the benefits from the investment. The first is the benchmarking approach that was used to estimate the order-of-magnitude benefits of reducing damages from weather-related events resulting from the adoption of the integrated weather and market information services. The second approach is the benefit transfer approach that estimates benefits of improved ARM services. The benchmarking approach reveals that improved weather services will reduce economic losses in Zambia by US\$51.6 million/year, corresponding to \$3.7 million/year for the agricultural sector alone.

In addition, the benefits transfer analyses indicates that modernization of existing information systems infrastructure will lead to agricultural productivity increases ranging from US\$5.4 million to US\$26.9 million annually. Using a time horizon of 20 years and a 12 percent discount rate, the projected earnings generated by the investment exceeds the anticipated costs by \$61.4 million. A cost-benefit ratio (BCR) of 3.7 indicates that every dollar invested in improving agricultural risk information will yield about 4 dollars, indicating that the investment is economically viable. Sensitivity analyses demonstrate the robustness of the investment to changes in discount rate and benefit rates, but the sustainability of the investment will largely depend on continuous support of the initial investment in terms of operations and maintenance costs, and skills development. Mainstreaming agricultural risk management into the agricultural planning framework and national budget is vital for enhancing the resilience of the agricultural sector in Zambia.

⁴ <https://www.weforum.org/agenda/2015/06/8-ways-africa-can-raise-farm-productivity-and-boost-growth/>



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3.2. Warehouse receipt systems



Zambia



Feasibility study for investment to enhance warehouse receipt systems and align with the food reserve agency's strategic plans

Executive summary

March 2019

Study conducted by:
IAPRI

In collaboration with:
Ministry of Agriculture

Background to the study

Warehouse receipts (WRs) have the potential to address market-related risks within the agricultural sector. As shown by Braimoh et al. (2018), Zambia's agricultural sector could benefit from further development of the warehouse receipt system (WRS). By reducing price volatility and increasing access to finance, increasing incomes among value chain actors, and reducing counterparty risk and price volatility, the development of WRS in Zambia could facilitate economy-wide growth and attainment of the United Nations Sustainable Development Goals.

This study's primary purpose is to enhance the operational capacities of the Zambian WRS, increase market and financial access, liquidity, and enhance credibility in the commodity markets. Through an analysis of the current status of WRS in Zambia, it identifies existing gaps and provides recommendations for interventions to improve the sustainability of the WRS. This is achieved through a review of the literature and key informant interviews with various stakeholders drawn from the government, private sector, and the farming community.

Overall, we find investing in the Zambian WRS potentially attractive if some problems can be addressed particularly around maize policies given it is the most widely produced commodity in the country. This would trigger sufficient business volume and attract private sector participation in the WRS. Wheat and soya beans are potentially attractive but could also face the same problems as they are designated as strategic crops in the Zambian policy documents. Without addressing the political economy and market interventions, the regulated WRS in Zambia will remain an unsustainable proposition under the Agricultural Credits Act 2010.

Main findings of the study

The implementation of the regulated WRS in Zambia can be traced back to the Zambia Commodity Agency (ZACA) which operated from 2001 to 2006, and the first phase of Zambia Commodity Exchange (ZAMACE) which operated between 2007 and 2011. Throughout these periods, the main factors limiting the success of

WRS were i) limited adoption of the financial sector of the WR as a financial product; ii) absence of a legislative framework backing WRS; iii) limited volumes especially from smallholder farmers; and iv) limited capacity in terms of human capital and equipment to operationalise the system.

Between 2011 and 2014, ZAMACE operations were deemed illegal by the Agricultural Credits Act of 2010. This changed when ZAMACE (a private entity) was appointed as the regulator and promoter of the WRS. This was in view of the fact that the government could not constitute a Warehouse Licensing Authority due to a lack of resources. ZAMACE has continued to perform this role to date since its appointment in November, 2014.

Presently, the WRS is regulated by ZAMACE Limited (hereafter ZAMACE) and backed by the Agricultural Credits Act of 2010 which was enacted in 2014. The major successes scored have been the certification of 300,800 Metric Tonnes (MT) of storage space operated by 8 warehouse operators, introduction of grain standards that have been widely accepted by industry players, and deployment of a system for the WRS - Electronic Silo Certificates.

On the ground, the WRS still remains a proposition that is yet to receive sufficient buy-in from players across the entire value chain. In 2018, the commodity exchange only recorded 4,000 MT worth of trade that was fully settled through the exchange using WRS.

Overall, the legislative framework is supportive of the WRS development although there still remain a few gaps. The main pieces of legislation include the Agricultural Credits Act No. 35 of 2010; the Securities Act of 2016, the Moveable Property (Security Interest) Act No. 3 2016, and the FRA Act Cap 225 and proposed amendments.

Inclusiveness of smallholder farmers in WRS is being explored in alternative forms by value chain actors including ZAMACE. For example, ZAMACE in collaboration with Export Trading Group (ETG) provided input finance against stored commodities (about 10,000 MT worth), thus easing the pressure on smallholder farmers to sell their commodities early.



A system of collateral management has been successfully practiced by value chain actors (predominantly commercial farmers). This involves commodity-backed financing under collateral management agreements, which allows them to access finance from financial institutions. While this system does not meet the requirements of a WR based on the Credit Act of 2010 because the issued receipt cannot be traded, it has proved to be a successful instrument trusted by financial institutions.

The study identified some gaps in WRS. Among them include the extremely low awareness levels even among large grain traders and processors, and misalignment in the legislation governing WRS such as the Agricultural Credits Act (ACA) of 2010 and the Securities Act of 2016. Currently, ZAMACE's trading of warehouse receipts is illegal under the Securities Act 2016 as it designates a WR as a financial instrument. Also, there is huge capacity limitations in terms of staffing at ZAMACE, and limited warehousing management skills in the industry though those with the capacity are trained by the large grain operators/processors such as AFGRI.

The strategy for the inclusiveness of smallholders in WRS is unclear. Also, the legislation to support grain market development appear to be missing while the quality standards between ZAMACE and the Zambia Bureau of Standards, and between Zambian standards and regional standards are not harmonized.

On top of the above gaps, the financial institutions are reluctant to finance WRS due to policy inconsistencies in grain markets, and lack of an up-to-date grain Market Information System (MIS). Market distortions caused by ill-timed rotations of food reserves and the lack of clarity in the Agency's direction in relation to its activities on the market.

Also, the ZAMACE trading platform is inadequate. While the platform is able to handle bids and offers, the automated order matching and settlement modules remain undeveloped with financial constraints.

Apart from maize, soya beans, groundnuts and wheat, the production levels of other potential commodities remain low (largely below 100,000 metric tons). The situation is worse when we factor in the geographical spread of the commodities. This limits the likely commodities under which the private sector can certify storage largely to maize, wheat, soybeans and groundnuts. Maize would make economic sense for certification, but it faces political economy challenges as discussed.

Commodities with the greatest potential for WRS development, other than maize, are wheat and soya beans. Other potential commodities include rice, white sorghum, cashew nuts, edible beans, seed cotton, and groundnuts. Except for soya beans and wheat, these commodities are predominantly produced by smallholders. We also note that, for the potential commodities under the WRS, national production is below 100,000 MT for all except wheat, groundnuts, soya beans, and maize. Worse still, the household commercial index (the proportion of the crop that is produced and sold) among smallholders is below 40%, for all commodities except seed cotton. This suggests further value chain development for most commodities, or production in tight value chain financing arrangements to spur production.

Recommendations of the study

There is a need for financial and technical support to the stakeholders initiative to establish an independent body for the collection of grain market information and stock monitoring modeled around the South African Grain Information Service (SAGIS).

Legislation governing the WRS needs to be reviewed. Further, other legislation that could improve decision-making in agricultural marketing is missing or in draft. As a quick fix, it is possible to make the WR trading legal through a collaboration of ZAMACE with the Lusaka Securities Exchange on the trading side of ZAMACE activities. LuSE is regulated by the Securities and Exchange Act 2016, and any receipts generated and traded would then be legal.

Zambia needs to ensure policy coherence in implementation of agricultural policies to support WRS development. We recommend a review of the timing of maize stock rotations to minimise market distortions with private sector. Given the need for a government signal supporting WRS activities, we recommend the certification of selected FRA silos in major production (or commercial) areas under the WRS. This could be done initially as a pilot with FRA certifying say 100,000MT storage space for maize, a strategy that has a potential revenue of at least US\$ 250,000 per month in storage and handling fees assuming full utilization of this space. This allows the FRA to meet some of its immediate liquidity needs and make it more commercially viable without stifling private sector growth.

To create confidence and trust in the WRS among industry players, there is a need to have a guarantee fund (and/or an agricultural fund) that covers some of the perceived risks particularly among banks and financial institutions (e.g. price). This can be gradually phased out within the pilot phase.

The role of farmer groups in the WRS cannot be overemphasized. For effective participation, producer organizations need to work with business organisations. Due to low levels of commercialization and limited business skills among the smallholder farmers, the use of District Farmer Associations (DFA) as aggregators should be supported. It is recommended that tailored trainings be conducted for community aggregators on warehouse management and the value addition that comes with the WRS.

There is a need for capacity strengthening of the Zambia Bureau of Standards (ZABS) to develop additional agricultural standards, and harmonize ZAMACE and ZABS standards.

Warehouse management skills are limited in Zambia and need to be enhanced. The available trained individuals are very few and have been trained by the private sector for their own operations. Alongside this training, there is a need for widespread promotion of the WRS to kick-start the entrenchment of a storage industry.

To increase confidence in ZAMACE trading platform, there is need to support the current ZAMACE/ Lusaka Securities Exchange (LuSE) collaboration to further develop the LuSE commodities trading platform. This means that ZAMACE's trading platform should be provided through its collaboration with the LuSE so that an established exchange with its core systems and upgrade plans are extended to ZAMACE.

Investment plan

Detail investment plan to address the gaps in Zambia's WRS is available in the annexes 3 and 4. It indicates the lists of activities to be implemented and the associated costs required. Approximately US\$ 24.6 million will be required to address all the issues.



PARM
PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT



4. Developing capacities and sharing knowledge



Zambia



Capacity development on agricultural risk management

Country strategy note

February 2019

1. Context

Agriculture is a risky business. Extreme weather conditions and climate change are likely to affect negatively the performance of crop production and livestock activities. High food prices and global market uncertainties pose a major threat to food security, especially for the poor. Global, regional and national interests call for opportunities to develop sustainable tools to manage risk in agriculture beyond a humanitarian intervention to disasters and to implement an ARM system covering other risk layers for farmers, private sector and government.

Agriculture risk management, however, requires knowledge and skills to assess the risks and to implement appropriate tools successfully. Developing capacity at country level among relevant stakeholders is essential to plan strategies and mainstream solutions in the national policy agenda.

As part of the overall initiative, PARM supported capacity development (CD) activities on agricultural risk management oriented towards the understanding of the structure of risk management cycle considering the diversity of risk sources and risk management options, from agricultural practices to improved seeds, irrigation or access to finance.

PARM's capacity development (CD) strategy is articulated in three levels of activity: CD1, a 2-day general ARM seminar; CD2 - A high level ARM course/Training of trainers (ToT) to be included in the curricula of local training institutions; CD3 - Specific CD activity in support to the feasibility studies for investment on ARM. In certain countries, Capacity Development component of PARM was also supported by feasibility studies for investment in training agricultural extension services for developing small-holder farmers' ARM capacity.

Zambia benefited from the 2-day general ARM seminar (CD1) as capacity development activity developed by PARM. In addition, PARM has also conceived and disseminated its own training material to enhance knowledge and practical use of the new ARM concepts proposed by the platform.

2. A 2-day general ARM seminar (CD1)

PARM, in collaboration with the Ministry of Agriculture and E-SAPP/IFAD project, organized a Capacity Development Seminar (CD1) on Agriculture Risk Management (ARM) held on 27th -28th June 2018 in Chilanga with the objective to raise awareness and share experiences on ARM in Zambia, and with the scope also to prepare the ground for the launch of PARM process upcoming activities in the country.

The training saw the participation of 60 people, mostly government officers from all country provinces working for the Ministry of Agriculture and the Ministry of Fisheries and Livestock. Other officers were from the Headquarters of the Ministry of Agriculture and the Ministry of Fisheries and Livestock. Other participants were drawn from: Disaster Mitigation Management Unit (under Office of the Vice President); Ministry of Finance; agencies and technical centers under the two Ministries; four (4) IFAD projects; Zambia National Commercial Bank; University of Zambia; Mayfair Insurance; National Union of Small Farmers; and Zambia State Insurance Corporation.

The seminar was delivered in two days and it was conducted with presentations and discussions, covering the following topics:

- Concepts of Agriculture Risk Management;
- Agricultural Risk Assessment and Prioritization;
- Agriculture Risk Management Tools and Strategy;
- Country case studies on ARM finance tools, ARM on-farm tools and ARM policy.

The participants judged the seminar as very informative and useful, and that replication could also be beneficial to agricultural officers and practitioners at provincial and district level. They ranked the general concept of ARM and risk assessment and prioritization as most preferred sessions, and the risk matrix tool emerged as one of the most useful topics learned. Among the different country tools presented, access to credit was the most appreciated tool.



3. Using learning resources developed by PARM

PARM has developed its own catalog of training materials to enhance knowledge and practical use of the new ARM concepts. The materials are:

- CD1 material on “Managing risk at farm level”. This material consist of four products:
 - *Manual*, with the theoretical framework for developing the ARM CD1 seminar;
 - *Guidelines for Trainers*, with practical information, tips and suggestions for trainers on how to conduct a two-day ARM seminar and manage its content;
 - *Handbook*, with the theoretical framework developed using visual and graphic tools for participants;
 - *Slides*: to help trainers provide the course content using the computer.
- CD2 material “Agricultural Risk Management in Developing Countries: a Learning Course for Practitioners”:
 - *Module 1. Understanding the risk environment in agriculture;*
 - *Module 2. Risk assessment in agriculture;*
 - *Module 3. Agricultural Risk Management Tools;*
 - *Module 4. Planning, Implementation and Evaluation of ARM Strategies*

The four modules of the CD2 Materials contribute to the PARM / FAO / NEPAD e-learning course “[Agricultural Risk Management and Resilience](#)”  available on FAO E-learning Centre website.



Zambia



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Feasibility Studies



Improving agricultural risk information for meso-level stakeholders
Full report
March 2019



Enhancing warehouse receipt system and aligning with food reserve agency's strategic plans
Full report
May 2019

Workshop reports

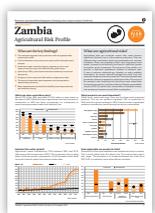


High-level policy dissemination/dialogue workshop
Full report
April 02, 2019



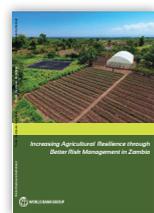
Agricultural risk management capacity development (CD1) seminar
Full report
June 27-28, 2018

Country Factsheet



Zambia Agricultural risk profile
Factsheet
November 2016

External Resources



Increasing Agricultural Resilience through Better Risk Management in Zambia
World Bank ASRA
2018

All publications are available in our library



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