

Platform
for Agricultural
Risk Management

Managing risks
to improve farmers'
livelihoods



Ethiopia Final Report

In Collaboration with:



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

September 2019



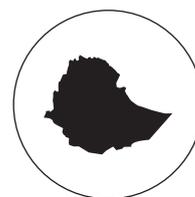


PARM
PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

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

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FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF AGRICULTURE





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-Saharan African countries – Cabo Verde, Cameroon, Ethiopia, Liberia, Niger, Senegal, Uganda and Zambia.

PARM process in Ethiopia kicked off in November 2014 in an ARM policy forum with stakeholder, allowing PARM to commit to providing technical and co-financial support to facilitate the integration of ARM into Ethiopia's National Agriculture and Food Security Investment Plan and related development programmes. The joint process led to the implementation of several activities, including launching a risk assessment, delivering capacity development seminars, and finalizing a feasibility study on ARM tool.

This report presents the main outcomes of this 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 Ethiopia; (ii) outcomes from the country-level risk assessment and prioritization; (iii) outcomes from the feasibility study on ARM tool for investment; and (iv) capacity development and knowledge-sharing on ARM in Ethiopia. The report provides an executive summary of the main reports, which full studies and background reports are available on [PARM Library](#) .

The Government of Ethiopia and, in particular, the Ministry of Agriculture (MoA), previously known as the Ministry of Agriculture and Livestock Resources (MoALR), and the Agricultural Transformation Agency (ATA) largely contributed to all the studies supported by PARM and has been the leading partner of all activities of the joint process. IFAD, NEPAD 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.



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List of abbreviations and acronyms

AC	Advisory Committee
AFD	Agence Française de Development
AFIRM	Agriculture and Food Insecurity Risk Management
AFRACA	African Rural & Agricultural Credit Association
ARM	Agricultural Risk Management
ARMT	Agricultural Risk Management Team
ASDP	Agriculture Sector Development Plan
ASSP	Agricultural Sector Strategic Plan
ATA	Ethiopian Agricultural Transformation Agency
ATVET	Agricultural Technical and Vocational Education and Training
AU	African Union
BMZ	The Federal Ministry for Economic Cooperation and Development
CAADP	Comprehensive Africa Agriculture Development Programme
CD	Capacity Development
CEIGRAM	Centro de Estudios e Investigación para la Gestión de Riesgos Agrarios y Medioambientales
DGCS	Direzione Generale Cooperazione allo Sviluppo (Italian Development Cooperation)
DRMFSS	Disaster Risk Management and Food Security Sector
EC	European Commission
ECX	Ethiopia Commodity Exchange
EU	European Union
EWS	Early Warning System
FAO	Food and Agriculture Organization
FARM-D	Forum for Agricultural Risk Management in Development
FIRM	Financial Information and Risk Management
FTC	Farmer Training Centre
KfW	Kreditanstalt für Wiederaufbau (KfW Development Bank)
KM	Knowledge Management
LDCs	Least Developed Countries
LMICs	Low- and Middle-Income Countries
MFIs	Monetary Financial Institutions
MoA	Ministry of Agriculture
MoALR	Ministry of Agriculture, and Livestock Resources
MoANR	Ministry of Agriculture and Natural Resources
NAFSIP	National Agriculture and Food Security Investment Plan
NDRMC	National Disaster and Risk Management Commission
NDCs	Nationally Determined Contributions
NDIP	National Development Investment Plan
NEPAD	The New Partnership for Africa's Development
NGOs	Non-governmental Organizations
NSC	National Steering Committee
NRI	Natural Resources Institute
PARM	Platform for Agricultural Risk Management
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PASDIP	Participatory Small-scale Irrigation Development Programme
PPP	Private-public partnership
RAS	Risk Assessment Study
RECs	Regional Economic Communities
SC	Steering Committee
TOR	Terms of Reference
UN	United Nations
WB	World Bank
WFP	World Food Programme
WRS	Warehouse receipt study



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1. Overview

A landscape photograph with a large, spreading tree in the foreground on the right, a smaller tree to its left, a body of water in the middle ground, and rolling hills in the background under a clear sky. The text "1. Overview" is overlaid in white on the left side of the image.

Main Achievements in Ethiopia

Ethiopia's agriculture sector makes significant contribution to the country's economic growth performance and remains of strategic importance, partly because of its potential in helping to address some socio-economic challenges. The importance of agriculture to the economic fortunes of the country makes mainstreaming of agricultural risk management (ARM) relevant. The Government of Ethiopia have put up ambitious efforts to enhance the agricultural sector by developing strategic approaches for the sector's development. In line with the Government's efforts, a *Policy Forum on Integrating Agriculture and Food Risk Management* took place on the 11-13th November 2014 in Addis Ababa. This was an important starting point in the process of enhancing ARM into Ethiopia's policy agenda. The Forum was supported by the Ministry of Agriculture and Natural Resources (MoANR), which is now the Ministry of Agriculture (MoA), the Ethiopian Agricultural Transformation Agency (ATA), the African Union's New Partnership for Africa's Development (NEPAD), the United Nations Food and Agricultural Organization (FAO), the International Fund for Agricultural Development (IFAD), and African Rural & Agricultural Credit Association (AFRACA).

At the close of the Forum, Ethiopia's MoA acknowledged the need for holistic ARM and requested for the creation of an ARM unit constituted by IFAD-PARM, NEPAD, FAO, MoA and the Association of Ethiopian Micro-Finance Institutions (AEMFI) and ATA. This decision kick-started the PARM process in Ethiopia, leading to the implementation of ARM activities from 2014 to 2019. The PARM process is participatory policy engagement process on ARM, which comprise of three main phases: (i) a **risk assessment phase** focuses on identification, assessment and prioritisation of risks, together with an analysis of risk management gaps within holistic lens; (ii) a **tools assessment phase** where the feasibility of identified/agreed management tools is analysed, and specific action plans for investment are proposed; and (iii) the **implementation phase** consists of integrating specific ARM components, including the identified ARM tools into national policy and investment plans of governments and partners.

PARM's participatory engagement process is marked with three key activities: 1) Stakeholders' validation workshop that is held after the risk assessment studies and feasibility studies to validate findings; 2) Capacity development seminar to increase knowledge on ARM for identified stakeholder groups; 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 PARM participatory engagement process in Ethiopia led to; 1) Bringing ARM to the core of development and agricultural policies; 2) Assessing agricultural risks in Ethiopia: 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) Facilitating dialogue between the Government, local institutions and development partners.

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

The first achievement of PARM has been raising the awareness about the importance to manage properly agricultural risks, having a more accurate perception of the relative size of these risks. The key message that investing in ARM is a powerful way to boost investment and growth in this crucial sector has been discussed and disseminated. As a result, the Government of Ethiopia and PARM, under the CAADP framework and in consultation with the government authorities, including the ATA and the MoA, developed a road map to ensure the integration of agriculture risk management into the national policies and investment plans. The strong engagement of the Government was confirmed by signing a tripartite MoU with PARM, ATA and the MoA. This early achievement and commitment to ARM was a milestone that was followed by further discussion and definition of priorities.

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

Agriculture continues to represent a dominant share of Ethiopia's economy, though its share of GDP has dropped from 52% in 2004/05 to 43% in 2013. The sector accounts for nearly 85% of exports and employs over 80% of the labour force. Effective management of identified agricultural risks is crucial to sustaining the sector's productivity. It is in this context that in 2016 PARM finalized a risk assessment study (RAS) for Ethiopia, which outlines the complete mapping and assessment of the agricultural risks identified, the data and information on priority risks and impacts as well as the existing policies and tools to improve ARM in the country. The RAS identified 5 priority risks: (i) droughts; (ii) plant and livestock pests and diseases; (iii) price shocks for crops and livestock; (iv) risks related to input quality and performance and (v) erratic rain-falls (See the table 1 below).

Considering the importance of risk assessment and the focus given by the Government of Ethiopia, on the 16th and 17th day of December 2015, PARM partnered with the ATA and NEPAD to organize a national stakeholder workshop in Addis Ababa to present and discuss the preliminary findings from the RAS. By the end of the workshop, the stakeholders contributed to the finalization and the prioritization of the agricultural risks identified for Ethiopia. Stakeholders also identified and discussed relevant needs to consider such as diverse financial services, downstream contracts and commodity exchange, and innovative information systems for agricultural risk management. The workshop gave the opportunity to stakeholders to discuss the findings, possible ways forward and also build national ownership and awareness of those results.

The executive summary of the PARM RAS in Ethiopia is available under the section 2 of this Ethiopia Country Final Report

Table 1: Agricultural risk assessment and prioritization in Ethiopia.

Risk	Severity	Frequency	Worst scenario	Score
Drought	● High	● High	● Very High	4.25
Livestock diseases and pests	● Medium	● Very High	● High	3.90
Plant diseases and pests	● Medium	● High	● Very High	3.85
Price risk: food crops	● High	● Medium	● Very High	3.85
Inputs risk: rising prices	● Medium	● High	● High	3.60
Erratic or variable rainfall	● Medium	● Very High	● Low	3.40
Exchange rates variability	● Low	● High	● Medium	2.87
Floods	● Low	● Very High	● Low	2.62
Policy risk: export ban	● Very low	● High	● High	2.50
Policy risk: price subsidy	● Very low	● Very High	● Very low	1.93
Price risk: export crops	● Medium	● Medium	● Very low	1.55
Interest rates variability	● Very low	● Medium	● Very low	1.55
Price risk: livestock	● Very low	● Very low	● Very low	1.00
Policy risk: land policy	● Very low	● Very low	● Very low	1.00
Inputs risk: quality variability	● Very low	● Very low	● Very low	1.00
Earthquake	● Very low	● Very low	● Very low	1.00
Volcanic activity, wildfire etc.	● Very low	● Very low	● Very low	1.00

Source: PARM (2016) Agricultural Risk Assessment Study of Ethiopia

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

From its early stage, a priority for PARM in Ethiopia has been to contribute to create capacities on risk assessment and risk management among government officials, service providers, as well as universities. The ARM holistic approach is an innovative way of thinking about agricultural development through managing risks and it requires raising awareness and creating capacities on the topic. Following the demands from the Government and stakeholders, PARM developed a capacity development action plan to lay a foundation for ARM mainstreaming into Ethiopian extension services policy strategy and universities/training institutions curricula. The three key parties (PARM/IFAD, ATA, and MoA) signed a MoU defining the objectives and roles/responsibilities in support to the capacity development activities.

Additionally, PARM implemented a pilot ARM training course (CD1) in May-June 2018 specifically for extension service officers. The training was delivered in collaboration with Hawassa University and Ethiopia's Ministry of Agriculture (MoA) after a memorandum of understanding (MoU) was agreed and signed. The training was a pilot course designed to provide support for ARM training needs to a larger number of extension workers in Ethiopia and with a view of future integration in standard undergraduate and graduate courses



offered by Ethiopian universities. It was a 5-day high-level training (CD2) attended by a total of 30 participants from government agencies, such as the MOALNR, the Disaster and Risk Management Commission, ATA; project managers from IFAD, as well as other Ethiopian universities as participants and lecturers.

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

4. Investing in priority tools for better agricultural risk management

At the national stakeholders' validation workshop of December 2015, a priority ARM tool for investment was identified - the Sustainable Investment Plan for Capacity Development in Agricultural Risk Management in Ethiopia. In order to sustain CD activities for national extension service in Ethiopia, PARM and partners agreed to launch and complete a feasibility study on this identified ARM tool, with a focus on mainstream the findings into the national agricultural policy and investment plan targeting the Ethiopian extension service, including the new National Strategy for Ethiopia's Extension Services. The study was a highly participatory process that yielded;

A proposed 5-year capacity development for agricultural risk management (CD4ARM) training programme of US\$4.089 million that will be built on local-ownership through multi-faceted training methods that foster cascading effects and ensure sustainability. A crucial part of the proposal is that it heavily focuses on the extension service personnel, including the ATVET, Zonal/Woreda Agricultural Officers, AgDAs. The proposal is also a phased approach consistent with on-going activities of development agencies in the field.

Executive summary for the feasibility study is available under the section 3 of this Ethiopia Country Final Report.

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

From the initial setting up forum in Ethiopia, PARM met and held active discussions with key stakeholders from diverse organizations, including MoA, ATA, AEMFI, IFAD, FAO, USAID, World Bank, AfDB and AU/NEPAD. In the discussions, partners proved their increasing interest and engagement in ARM and on the PARM's holistic approach. PARM received support from these agencies, in particular, the Ministry of Agriculture (MoA), ATA, Hawassa University during the capacity development seminar, technical dissemination meeting and national stakeholders' validation workshop. It is no surprise that ARM is on the table of all these stakeholders discussing the institutional, technical and financial opportunities to mainstream ARM components into programmes.

The timeline of the Ethiopia ARM process

1. Launch of PARM process in Ethiopia in late 2014

PARM Process kicked off in Ethiopia on the occasion of a three-day “**Policy Forum On Integrating Agriculture and Food Risk Management and Innovative Financial Services**” jointly organized by PARM, AFRACA, NEPAD and FAO in Addis Ababa on 11-13 November 2014. The workshop brought together stakeholders from the National Central Banks, MFIs, Insurance companies, NGOs, UN, Universities, research centres, the Ministry of Agriculture, ATA, DRMFSS and others.

In February 2015, PARM undertook a **setting-up mission** to develop the roadmap and discuss potential synergies with the temporary ad hoc National Steering Committee. Given the interest expressed by the ATA, in the last quarter of 2015 a national consultant in support of PARM activities was recruited as Liaison Officer and played a key role in coordinating PARM country activities in Ethiopia.

2. Risk Assessment Phase in 2015-2016

In February 2015, a **Terms of Reference (TORs)** for the RAS was discussed and developed with the ad hoc National Steering Committee (NSC) and by May 2015, the Natural Resources Institute (NRI) from the University of Greenwich contracted to undertake the study in collaboration with local experts. The study was conducted in 2015/16, and the report was published in December 2016 following the official validation from the Government.

After the completion of the RAS, a **National Stakeholder Workshop** was held in Addis Ababa on the 16-17 December 2015, to present and discuss the drafted RAS report and identify priority risks and the potential ARM tools. In consultation with the participants the priority risks and most relevant comments were integrated in the RAS. The occasion was a great opportunity that strengthen the strategic partnership with ATA for PARM process in Ethiopia.



3. Tools assessment Phase in 2016-2018

PARM undertook a mission in November 2016 to strengthen the partnership with the Ministry of Extension Service and to jointly develop a **capacity development action plan** to lay a foundation for ARM mainstreaming into Ethiopian extension services strategy and universities/training institutions. In May 2017, PARM held additional meetings with the ATA and MoA to present the Capacity Development (CD) Strategy. The three parties (PARM/IFAD, ATA, and MoA) signed a MoU for capacity development activities. The capacity development as agreed sought to focus on; 1) developing feasibility studies on the CD and possibly investment plans 2) increasing the synergies and complementarities among insurance, social protection, and humanitarian assistance; and 3) strengthening ARM information systems. However, during the current program (2013/2019) PARM was requested to focus the technical analysis on the CD only.

In May 2018 PARM launched a feasibility study to look into the existing capacities and develop an investment plan to mainstream ARM CD into the extension service activities. The focus and content of the Terms of Reference (TORs) for the **feasibility studies** on *Sustainable Investment Plan for Capacity Development in Agricultural Risk Management in Ethiopia* were developed in close collaboration with the Government and national and regional technical partners.

The study was conducted by researchers from the Natural Resources Institute (NRI), also for continuity with the work they had undertaken for the RAS. It was completed in September 2018, followed by a **Technical Meeting** organised by PARM and NRI in Addis Ababa on the October 2, 2018 where national stakeholders from the Ethiopian authorities and relevant government agencies reviewed the findings and commented on specific recommendations made with regards to implementation and funding of the proposed capacity development programme for Ethiopia.

The country level partners involvement in the feasibility study and the sustainability of the CD2 training with Hawassa University represent the culmination of the PARM process in Ethiopia. The technical meeting in October 2018 was a milestone for PARM and for Ethiopia, providing a holistic specific package of CD initiatives responding to the main ARM priorities and gaps.

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

The risk assessment study and the capacity development actions undertaken by PARM-NEPAD in partnership with the Government of Ethiopia and key stakeholders during the current phase of the PARM program (2014/2019) represent a relevant achievement for the platform. The technical analysis and studies developed by PARM in support to the Growth and Transformation Plan II, in consultation with international and national experts, contributed to raise the awareness on agriculture risk management in Ethiopia. The engagement of the Government along the PARM process strongly contributed to involve different stakeholders both at national than international level lay the foundations for the full integration of ARM into the national priorities and investment plans.

All the various activities implemented during the PARM process with the Government and other stakeholder constitute a solid and attractive holistic package to enhance ARM in Ethiopia. This is a great opportunity for the Government of Ethiopia and development partners to continue their engagement by implementing ARM initiatives and policies like those proposed here. Development partners and stakeholders have already expressed their interest on these initiatives which will follow up and support on the implementation process. Keeping the momentum of ARM mainstreaming can significantly improve the livelihoods of farmers and boost the investment in the sector.



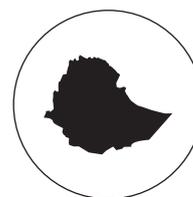
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A close-up photograph of a woman with a joyful expression, wearing a black headscarf and a brown jacket over a blue patterned top. She is holding a large pile of fresh, reddish-brown potatoes in her hands. The background shows a field of tilled earth and green plants under a bright sky.

2. Prioritizing risks



Ethiopia



Agricultural Risk Assessment Study (RAS)

Executive Summary

December 2016

In collaboration with:

Agricultural Transformation Agency (ATA)
Ministry of Agriculture (MoA)

Study conducted by:

Natural Resources Institute
University of Greenwich, UK

Scope of study and country context

Agriculture continues to represent a dominant share of Ethiopia's economy, though its share of GDP has dropped from 52 percent in 2004/05 to 43 percent in 2013. The sector accounts for nearly 85% of exports and employs over 80% of the labour force. It is the main source of livelihood for most of the rural population and is dominated by smallholder farmers cultivating less than two hectares of land. About 31 percent of GDP growth recorded between 2011 and 2013 has been attributed to the sector, which recorded an average annual rate of 7.8 percent between 2005 and 2013. Effective management of identified agricultural risks will help in sustaining or improving this level.

Identification of agricultural risks: country risk profile

Range of risks

Farmers, especially smallholder farmers, in Ethiopia face a range of risks from preplanting through to postharvest. Most of the major risks identified in this report include those reported in a recent survey by the Central Statistical Agency (CSA) and the World Bank¹. The major risks are:

Weather risks

Precipitation-related risks which affect crop and livestock production in Ethiopia include drought, floods and unseasonal/erratic rainfall. Other natural hazards mentioned include landslides/avalanches and wildfires but these are ranked pretty low in importance by farmers and are also infrequent and their impact comparatively less severe. The country is ranked fifth (5th) in the world in terms of exposure to drought². This affects not only crop production, especially in the southern regions

of Oromia as well as northern and eastern regions of AFAR, but also the livestock industry as the feeding systems rely mainly on grazing and browsing of natural grass and bushes. Though the incidence of floods, including flash floods, is much higher than that of drought, the impact of the latter tends to be more severe. There is growing evidence about the effects of climate change in Ethiopia. In particular, rainfall is becoming less predictable as the onset and duration of the rainy seasons become more variable. The impacts of El Niño and La Niña are also becoming more prominent in the country.

Biological and environmental risks

Crop damage and death of livestock occur on a regular basis in Ethiopia and lead to significant household income loss, though the scale is often under-estimated due to problems of under-reporting. The common plant diseases include leaf rust and wilt affecting coffee, maize and cowpeas. Corn leaf blight, maize ear rot and maize streak virus are also common. Incidentally, teff has proved resistant to most of the diseases affecting grains and is also known to be highly drought-tolerant. Common livestock diseases in Ethiopia include Rift Valley Fever (RVF), foot and mouth disease (FMD), contagious bovine pleuropneumonia (CBPP), contagious caprine pleuropneumonia (CCPP), Pest des petits ruminants (PPR), brucellosis in ruminants and lumpy skin disease (LSD). These are known to cause mortality but can also trigger export restrictions which lead to significant loss in foreign exchange earnings and household income for pastoralists. In analysing these risks, the focus has not been on the regular occurrence but rather epidemic scale events which tend to be uncertain. There is emerging evidence suggesting that climate change effects such as rising temperatures and more variable rainfall is causing increased uncertainty regarding the occurrence of these risks³.

Inputs risks

The dominant role of the state in the distribution of inputs such as seed and fertiliser appears to have reduced the incidence of quality variability which was identified as an important risk in Uganda. Though some respondents in the CSA/World Bank survey published

1 Central Statistical Agency (CSA) and the World Bank (2015): "Living Standards Measurement Survey: Ethiopia", 2015.

2 Araya N. S. (2011) "Weather insurance for farmers: experience from Ethiopia", Paper presented at Conference on new Directions for Smallholder Agriculture, 24-25 January 2011, Rome IFAD HQ.

3 Feyssa D H and D O Gemedo (2015) "Impact of climate change on production systems in semi-arid regions of Ethiopia", Journal of Biological and Chemical Research Vol. 32 No. 2 pp.755-764.



in 2015 cited rising prices of inputs as a problem, the reported number affected was low (representing only 6.3 percent of the total population surveyed) and refer mainly to fertiliser price risk. However, in the course of the Validation Workshop, many participants indicated that limited access to inputs credit posed a much more important challenge to farmers. Variability in output market prices also impacts on uptake of inputs such as fertiliser and seed.

Output market risks

From the focus group discussions farmers cited uncertainty about market access as well as price volatility among the shocks they face.

Policy and institutional risks

The risks cited, especially during the Validation Workshop, included the following: land policy – the evidence obtained shows that reforms based on The Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use Proclamation No. 456/2005 produced tangible benefits. However, implementation challenges, including administrative capacity issues, appear to be causing tensions in some rural communities, especially where there is competition between crop farmers and pastoralists as well as where smallholder farmers are excluded as a result of allocation of land to commercial farmers or for large-scale infrastructure investments by the state. Other policy risks which were identified include export restrictions (maize) and price subsidies (wheat) as well as macroeconomic policies (interest rate and exchange rate controls).

Political and security risks

These risks were particularly highlighted during the Validation Workshop and include violence/conflicts, theft/robberies, involuntary loss of land and displacement due to Government development projects. The evidence available indicates that these risks are ranked quite low by smallholder farmers (cited by only 1.3 percent of respondents in the CSA/World Bank survey as important shocks).

Logistical and infrastructure challenges

Poor rural transport infrastructure tends to increase transaction costs in output markets and squeeze producer margins. Similarly, limited access to efficient storage facilities contributes to high postharvest losses, which exceeded US\$ 430 million per year between 2005 and 2012, with the exception of 2006 when the total estimated losses was US\$ 233.6 million. However, these are not uncertain events but are known challenges, which nonetheless require attention.

Mapping of existing agricultural risk management policies and tools

Policy environment and institutional framework

The Ministry of Agriculture (MoA) is the lead agency responsible for overall policy actions in the sector. Other public organisations playing various roles include the Directorate of Crop Marketing in the Ministry of Trade (MoT) and the Ministry of Industry (which controls the Ethiopian Standards Institute). The Ethiopian Food Security Reserve Agency (EFSRA) and Ethiopian Grain Trade Enterprise (EGTE) work together in managing food security policy, whilst the National Bank of Ethiopia (NBE) and the Commercial Bank of Ethiopia (CBE) are involved in the supply of agricultural finance. The Federal Cooperative Agency (FCA) fosters collective

action by farmers as well as inputs distribution and output marketing. The Agricultural Transformation Agency (ATA) is a strategy and delivery-oriented government agency created to help accelerate the growth and transformation of Ethiopia's agriculture sector, and is also focused on improving the livelihoods of smallholder farmers across the country.

Due to the multiplicity of institutions involved in sector policy interventions and programmes, there is apparent need for effective coordination of actions to promote ARMs in the sector through leveraging the strengths of various actors.

Risk management landscape

The main existing ARMs in Ethiopia include the following:

Initiatives to manage weather risks

These include ongoing pilots to promote agricultural insurance in Ethiopia (both indemnity-based and weather-indexed products). Uptake remains low due partly to low level of awareness among farmers and high cost (premiums, especially for weather-indexed products are high and variable). The need for the following refinements to the insurance products have emerged from the pilots: bundle insurance with farm credit; minimise basis risk and ensure cost-effective pricing of the products. Government is also investing in small-scale irrigation projects (targeting households with less than 5 hectares). The scheme is intended to increase resilience against drought as well as raise household income through enabling farmers to diversify beyond staple foods.

Initiatives to mitigate biological and environmental risks

The MoA hosts research agencies responsible for breeding disease-resistant crop varieties. It also undertakes screening/trials of various pesticides through the Institute of Agricultural Research. The private sector is involved in the distribution of agrochemicals, especially for vegetables, making access relatively easy. Most of the traders are reported to be unlicensed and unable to provide reliable advisory services. In the livestock industry, diagnostic services, vaccination, vector control and treatment are mainly provided by public sector agencies. The private sector role is limited due to lack of capital. Consequently, some NGOs are filling the gap by providing community-based animal health services.

Initiatives related to inputs risk

The public sector dominates the distribution of inputs such as fertiliser and seeds as well as animal health service delivery. The risk of quality variability therefore appears low. However, uptake of available technology remains low among both crop and livestock farmers. Limited access to inputs finance has been identified as one of the constraints, for which reason ATA has been piloting the "New Agricultural Input Sales System" (NAISS) since 2013.

Initiatives to mitigate output market risks

Tools which are being developed to mitigate output market risks include the following:

- Forward contracting involving cooperatives, which has been demonstrated to help mitigate inter-year price risks.
- The Ethiopia Commodity Exchange (ECX) and the WRS linked to it – the focus of these have mainly been on export commodities and there has been limited utilisation in enabling producers to



benefit from intra-seasonal price movement, especially for food crops. Scaling forward contracting and these tools can enhance access to finance to sector players.

- Use of food reserves to mitigate the effects of major food supply shocks.

Information systems

The main sources of sector-relevant data include the Bureau of Agriculture and Rural Development, Disaster Prevention and Preparedness Bureau, the Bureau of Trade and Industry, EGTE, ECX, the Famine Early Warning Systems Network (FEWSNET) and the Ethiopian Meteorological Agency. ATA is piloting an initiative through which weather advisory information is provided to farmers through extension officers.

Traditional risk management tools

Despite the existence of these ARM policies and tools, available evidence suggests that most farmers rely on faith-based or traditional coping measures in responding to agricultural risks.

Risk analysis: systematic quantification of impacts and likelihood

The table below ranks agricultural risks in Ethiopia based on the weighted scores of average annual frequency and severity of the risks as well as impact during a worst case scenario.

Risk	Severity	Frequency	Worst scenario	Score
Drought	● High	● High	● Very High	4.25
Livestock diseases and pests	● Medium	● Very High	● High	3.90
Plant diseases and pests	● Medium	● High	● Very High	3.85
Price risk: food crops	● High	● Medium	● Very High	3.85
Inputs risk: rising prices	● Medium	● High	● High	3.60
Erratic or variable rainfall	● Medium	● Very High	● Low	3.40
Exchange rates variability	● Low	● High	● Medium	2.87
Floods	● Low	● Very High	● Low	2.62
Policy risk: export ban	● Very low	● High	● High	2.50
Policy risk: price subsidy	● Very low	● Very High	● Very low	1.93
Price risk: export crops	● Medium	● Medium	● Very low	1.55
Interest rates variability	● Very low	● Medium	● Very low	1.55
Price risk: livestock	● Very low	● Very low	● Very low	1.00
Policy risk: land policy	● Very low	● Very low	● Very low	1.00
Inputs risk: quality variability	● Very low	● Very low	● Very low	1.00
Earthquake	● Very low	● Very low	● Very low	1.00
Volcanic activity, wildfire etc.	● Very low	● Very low	● Very low	1.00

Source: PARM (2016) Agricultural Risk Assessment Study of Ethiopia

The top six risks are listed below. Together the estimated average annual losses due to incidence of these risks is about US\$ 276.4 million but the aggregate cost of the worst case scenarios for these risks is over US\$ 2.25 billion.

- Drought ranks as the highest priority as its average annual severity of is high (losses estimated at about US\$ 78.35 million) and the incidence is highly frequent. The severity of the worst case scenario, which coincides with El Nino, is extremely high (with losses estimated at US\$ 924.6 million).
- Plant and livestock pests and diseases are ranked very high because the average annual severity may be medium for both (estimated at about US\$ 49.2 million) but the frequency is high and the impact of the worst case scenarios can be quite severe – about US\$ 570 million and US\$ 210 million respectively. The estimates are based on the occurrence at epidemic levels reported in EM-DAT rather than normal incidence of diseases and pests.
- Price shocks for crops and livestock in Ethiopia were analysed and it emerged that whereas prices tend to exhibit very low levels of volatility, export crops and livestock, inter-year price variability is relatively higher for food crops – though intra-seasonal variation in prices is quite low. Price uncertainty has been measured in terms of variability around trends and focused on troughs which negatively affect farm incomes.
- Inputs risks: it is apparent that variability in the quality and performance of inputs in Ethiopia is quite low. Rising inputs prices emerges as significant, but that is the case mainly for fertiliser and not so much for seed.
- Erratic rainfall (delayed or late rainfall) scores high enough to be prioritised partly because of the high and rising frequency, even though the level of losses are relatively low (average annual economic losses are estimated at about US\$ 9.5 million whilst the cost in the worst case scenario is about US\$ 16.67 million).

Impact

It is evident from estimates of economic losses decline in output occasioned by these shocks can severely affect household incomes and well-being of farmers, especially when the worst-case scenarios occur. Most of the prioritised risks have nationwide effect but the incidence of drought and erratic rains is comparatively higher in regions like Afar, Amhara, Oromia, Somali, SNNP and Tigray.

Conclusions and recommendations

Institutional framework for promoting ARMs

Multi-stakeholders, including a number of public sector organisations are involved in various actions related to the development of various ARMs in Ethiopia. It is our view that ATA, by its remit, appears to be very well-placed to coordinate ARM development initiatives, leveraging the strengths of different actors.

Building capacity for ARM development: Sustained capacity building in ARM development is required at all levels, including service providers, policymakers/regulators, users (especially farmers) and extension officers, who may be disseminating information on ARM policies and tools.



Improved data collection and analysis

Dearth of data, including gaps in published data, sometimes hampered analysis of various risks. Investment in improved data collection, analysis and dissemination will benefit actors engaged in developing/improving ARM tools.

Risk reduction

Scaling up and fostering utilisation of ARM tools and practices such as intra-seasonal stockholding using WRS; and technologies like small-scale irrigation can enable farmers to reduce exposure to some of the prioritised risks. The specific pathways needs to promote these tools need to be examined further, but is beyond this study.

Risk transfer

The agricultural insurance market as well as tools for managing price risks are under-developed. In the case of the former, investment in actuarial capacity in the local insurance industry is seen as critical. The latter will require ECX to graduate towards trading futures contracts after years of successful spot trading (mainly for export crops). Additionally, forward contracting can be used in farmers' cooperatives.

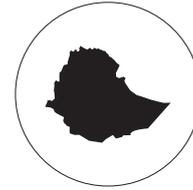
Risk coping

Currently, insurance is one of the main social safety nets that have been developed to respond to drought on a catastrophic scale. The insurance industry is likely to be able to cope with mitigating the risk of floods, erratic rainfall and normal drought. Clearly demarcating the boundaries for state action may be helpful in fostering supply of private insurance.

Risk Assessment

Ethiopia

Agricultural Risk Profile



What are the key findings?

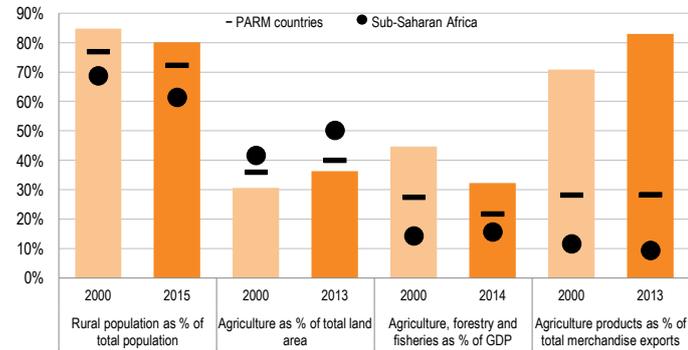
- ▶ Droughts are identified as the greatest agricultural risk.
- ▶ Temperature levels are rising fast, and erratic rainfall patterns are observed.
- ▶ Many livestock diseases are endemic, and along with crop diseases and pests, are identified as high-level risks for Ethiopia.
- ▶ Yams and sesame seeds are the crops most affected by yield losses.
- ▶ Food crops are most affected by output price risks.
- ▶ The rising price of imported inputs is also a high-level risk, along with exchange rate variability.
- ▶ Political stability is poor and worsening.

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 output data for livestock products. Further, production and price data for Ethiopia only go back as far as 1993 and 1994 respectively. A detailed country risk assessment requires a much fuller investigation.

What role does agriculture play?

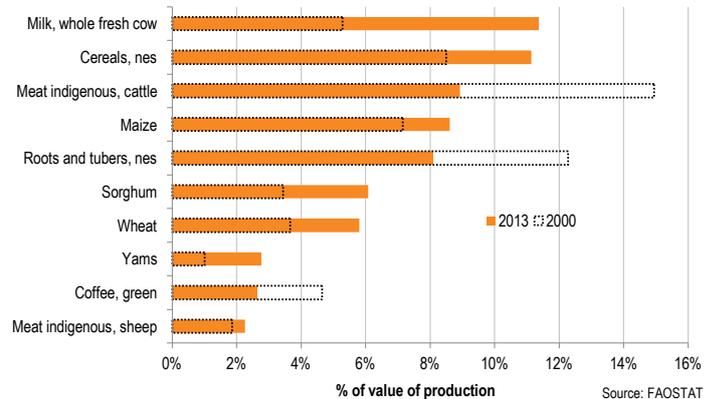
About 80% of the total population of 99.4 million is rural, higher than the Sub-Saharan Africa and PARM countries averages. Agriculture contributes to more than 80% of export earnings and 30% of GDP, far more than most other African countries.



Source: FAOSTAT

What products are most important?

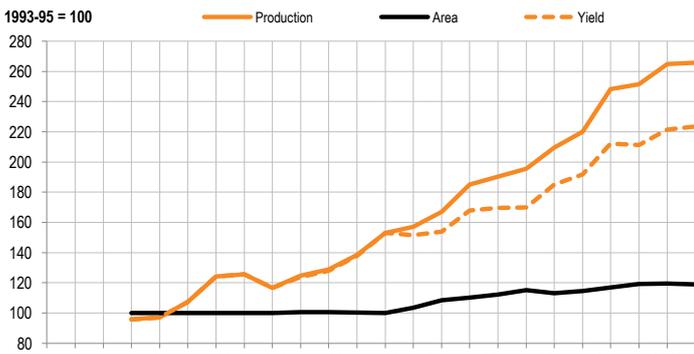
Cows milk, cattle meat and maize are the three most important commodities. The top ten products represent 68% of production in 2013, with all crops accounting for 70%. Production of most of the top ten commodities has increased in since 2000.



Source: FAOSTAT

How has the sector grown?

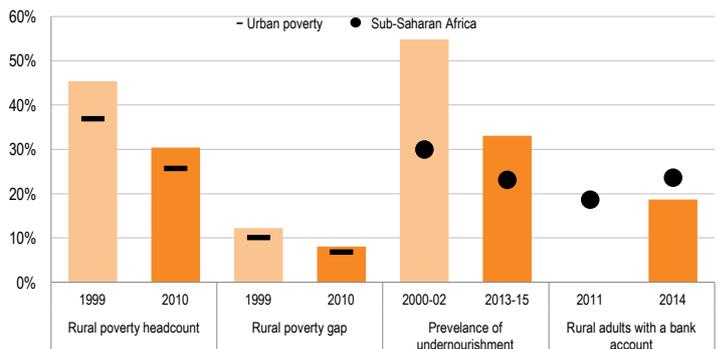
Between 1993 and 2013, agricultural output increased by 160%, an average increase of 5.4% per annum. This is primarily due to rising yields, which have grown 4.5% per annum. Crop and livestock output have both risen at similar rates (5.8% and 5.0%).



Source: FAOSTAT

How vulnerable are people to risks?

Both the incidence and level of rural poverty has fallen since 1999, and is very close to urban levels. The prevalence of undernourishment has more than halved but remains above the Sub-Saharan average. Access to credit is also below average.



Sources: World Bank and FAOSTAT



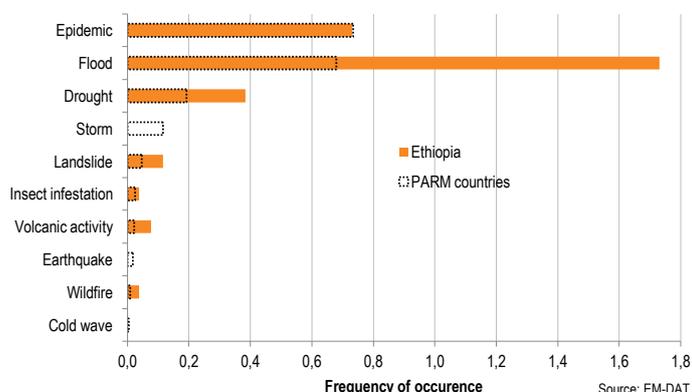
Production risks

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, floods were the most frequent disaster to affect Ethiopia, often occurring twice a year. Landslides can accompany these. A drought event occurs once every two and a half years. Volcanic activity occurs, but no major storm events.

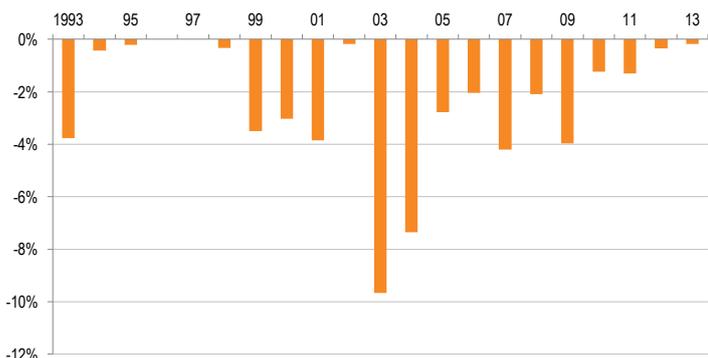


What is the likely impact of future climate change?

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. Mean average temperatures are likely to be 2°C higher than experienced in the late 20th century. Projected rainfall change over most of sub-Saharan Africa is uncertain due to complex topography. Rainfall is likely to increase in the Ethiopian highlands. Future precipitation projections show that extremes (droughts and floods) may become more frequent. Increasing temperatures and changes in precipitation are very likely to reduce cereal crop productivity, and could also adversely affect high-value perennial crops. Pest, weed, and disease pressure on crops and livestock is expected to increase.

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 3%, ranging from 0-10%. The largest estimated losses occurred in 2003 and 2004.

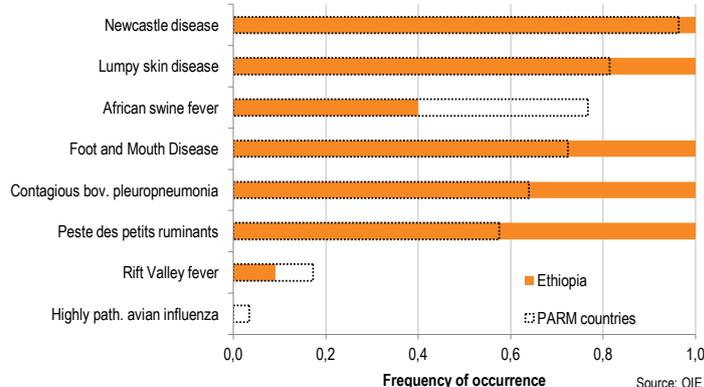


Estimated production lost

Sources: PARM and FAOSTAT

What animal diseases are present?

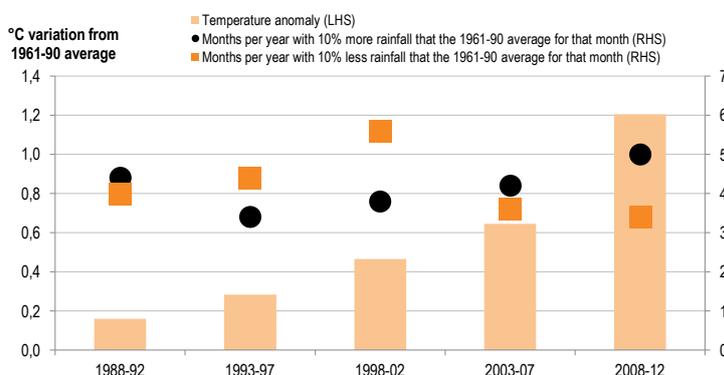
Of the eight animal diseases analysed over the period 2005-2015, five could be considered as being endemic in Ethiopia. Highly pathogenic avian influenza is the only one that has never been reported as occurring.



Source: OIE

Are weather anomalies increasing?

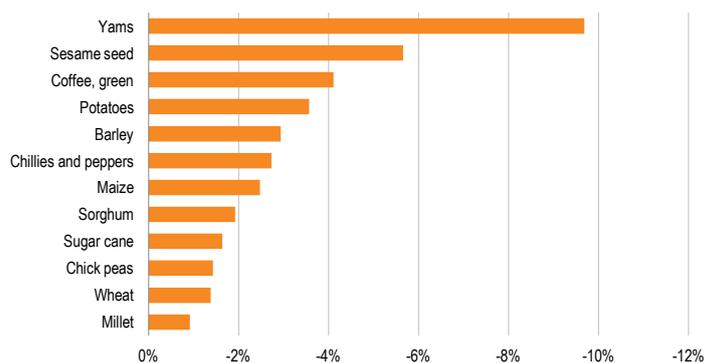
Temperature levels are rising, with the 2008-12 average 1.2°C warmer than the 1961-1990 average. There is no clear change in rainfall patterns although a rise in the number of wetter, and a fall in the number of drier, than average months is observed.



Sources: PARM and World Bank Climate Change Knowledge Portal

Which crops appear most at risk?

Yams is the crop most affected by yield losses as estimated by the impact on production. Annual yield losses averaged 10% of production for yams (an average loss of 29% once every three years). Sesame seed and coffee averaged losses of more than 4%.



Average production lost to risks, 1993-2013

Sources: PARM and FAOSTAT



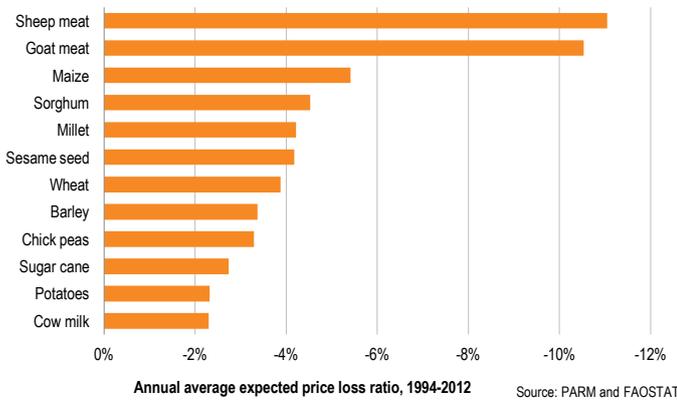
Market risks

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?

Over the period 1994-2012, sheep meat and goat meat appear to be the commodities most affected by output price risks. These two products have an annual average price loss of greater than 10% (an average loss of 25-30% occurring every two and a half years).



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

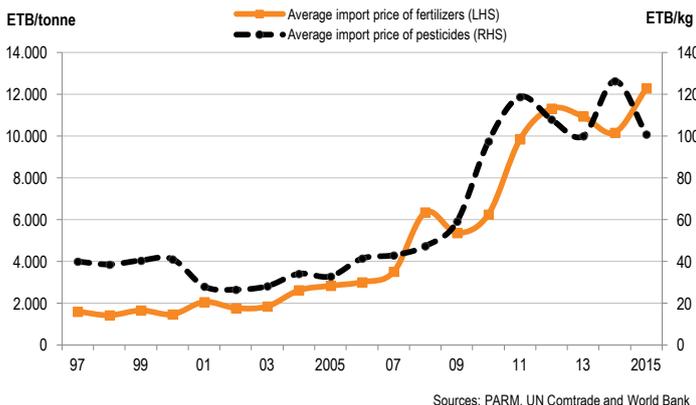
Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.

To calculate product specific risk values, the average yield or price loss below the threshold level (severity) 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

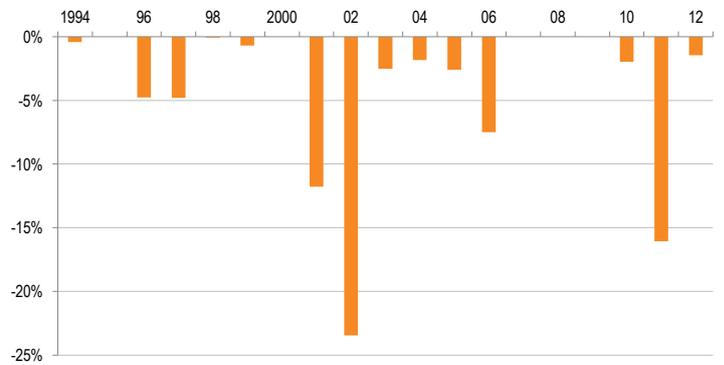
How variable are input prices?

The rise in annual average import prices rather than variations is likely to imposing input risks on farmers. The average import price of fertiliser in 2015 is more than six times higher than in 2003, while pesticide prices have risen by 250%.



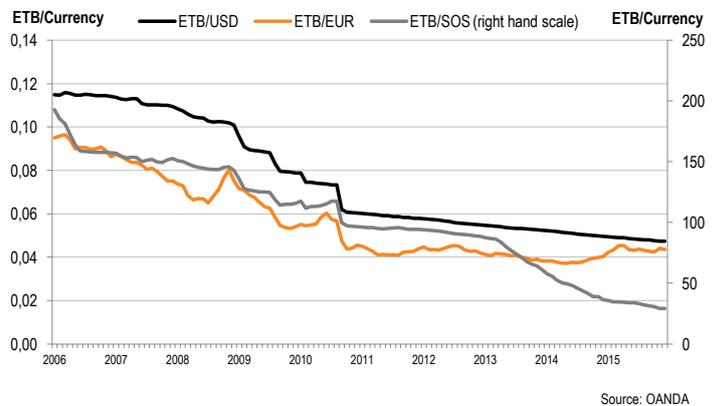
Has price risk changed over time?

Totalling the estimated revenue lost due to output price risk for crop commodities provides an indicative market risk profile for the period. The average annual revenue loss is 4%, with losses over 15% in 2002 and 2011. No trend over time can be observed.



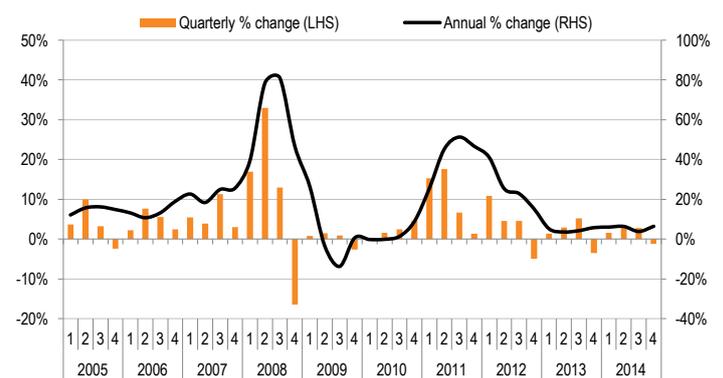
Is there an exchange rate risk?

Over the past decade there has been a significant depreciation of the Ethiopian birr (ETB) against the USD, Euro and the Somali shilling, it's main African export market. As it has become weaker, the effect of variation has become larger.



Do food prices vary for consumers?

Over 2005-14, the food component of the consumer price index recorded an average annual increase of 20%. The highest annual rate of 81% was recorded in September 2008. Prices have risen more slowly since 2010 and fluctuate less.





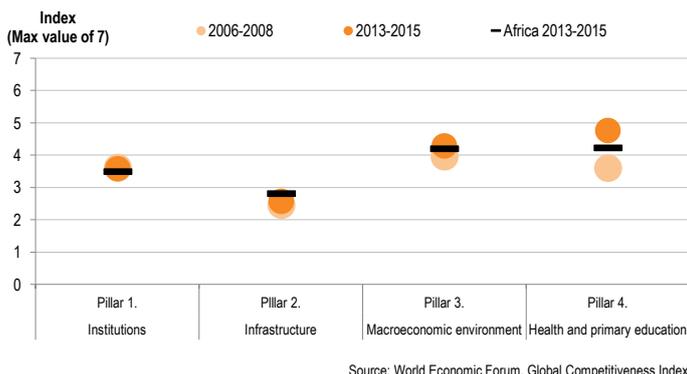
Macro level risks

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.

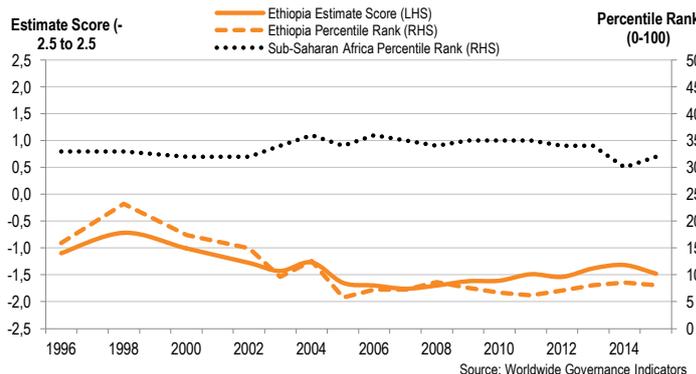
Are basic requirements in place?

Index scores for the basic requirement pillars place Ethiopia very close to the African average across all four pillars. Index scores have lifted for three, with a particular improvement in health and primary education, lifting it above the African average.



Is the political environment stable?

Ethiopia scores well below the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking has deteriorated markedly since 1998, falling from a percentile ranking of 23 to below 10.



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 risk assessment study and a national validation workshop have been completed for Ethiopia. Droughts have been identified as the major risk for Ethiopian agriculture. The next four high-level risks are: livestock diseases and pests, crop diseases and pests, price risks for food crops, and rising input prices

What are the main agricultural risks?

RISK	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST-CASE SCENARIO
DROUGHTS	● HIGH	● HIGH	● VERY HIGH
LIVESTOCK DISEASES & PESTS	● VERY HIGH	● MEDIUM	● HIGH
PLANT DISEASES & PESTS	● HIGH	● MEDIUM	● VERY HIGH
PRICE RISK: FOOD CROPS	● MEDIUM	● HIGH	● VERY HIGH
INPUT RISK: RISING PRICES	● HIGH	● MEDIUM	● HIGH
ERRATIC OR VARIABLE RAINFALL	● VERY HIGH	● MEDIUM	● LOW
EXCHANGE RATES VARIABILITY	● HIGH	● LOW	● MEDIUM
FLOODS	● VERY HIGH	● LOW	● LOW
POLICY RISK: EXPORT BAN	● HIGH	● VERY LOW	● HIGH
POLICY RISK: PRICE SUBSIDY	● VERY HIGH	● VERY LOW	● VERY LOW
PRICE RISK: EXPORT CROPS	● MEDIUM	● MEDIUM	● VERY LOW
INTEREST RATE VARIABILITY	● MEDIUM	● VERY LOW	● VERY LOW

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. In Ethiopia, drought is a clear example of one risk that can trigger others, aggravating some pests and diseases (additional production risks), leading to spikes in food prices (market risks) and even stimulating conflicts over water and pasture (macro level risks).

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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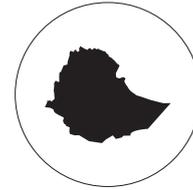


PARM
PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT



3. Finding the right tools

Ethiopia



Information Systems for Agricultural Risk Management

Policy Brief

October 2016

Key message

1

Many risks including livestock/plant diseases and pests, drought and food/crop price fluctuations are affecting the agricultural sector in Ethiopia. Efforts to reduce/mitigate them are constraint by limited risk management information.

2

The available national information systems include CSA¹, NMA², EIAR³, EGTE⁴, LINKS⁵, ECX⁶ and EVA⁷. Some of them provide comprehensive and elaborative information for ARM on market, satellite, meteorology and production levels.

3

However, there are weaknesses on the level of data aggregation, inadequate up-to-date information to allow for better analysis of plant/livestock pests and disease related risks, and limited communication and access for smallholder farmers

4

There is the need for effective communication packages for remote access, improvement in animal and plant health information and development of public-private partnership arrangement for IS-ARM in Ethiopia.

Context

In October 2016, the Platform for Agricultural Risk Management (PARM) finalised a study that assessed **Information Systems for Agricultural Risk Management (IS-ARM)** in seven Sub-Saharan African countries undertaken by CEIGRAM/VISAVET. The assessment and systematic scoring focused on information for seven thematic areas (see table 1) of agricultural risk management: meteorology, climate and soils, satellite image and communications, price of commodities, inputs and market, production level, yield and plant health, animal and human health, policy, and socio-economic and sectorial. This policy brief outlines the strengths, weaknesses and recommendations for the information systems as identified in the Ethiopia IS-ARM report.

Like many African countries, agriculture forms the mainstay of the Ethiopia's economy. It accounts for nearly 85% of exports and employs over 80% of the active labour force. Major risk facing the agricultural sector as identified in the **PARM Risk Assessment Study (RAS) for Ethiopia** include drought, livestock/plant diseases and pests, and food crop price fluctuations. According to the study, drought incidences in Ethiopia are very frequent with total estimated annual losses of about US\$ 78.35 million. In addition, pests and diseases such as *busseola fusca*, *chilo partellus* and rift valley fever cause US\$ 570 million losses in plant and US\$ 210 million losses in livestock based on the occurrence at epidemic level reported in EM-DAT. These rampant consequences to smallholder farmers' income and national food security are the result of several constraints including limited information on plants health and weak communication systems for climate-related risks.

Existing information sources and information systems

The information systems identified for the seven thematic areas of agricultural risk management in Ethiopia are listed in Table 1. Some national information systems deliver information on a single thematic area of agricultural risk management. Examples include the NMA for meteorology and climate information, ECX for commodity price information, and ESA for input price information. Others, including CSA, NBE, ATA, EVA and EIAR offer integrated information on two or more thematic areas. The CSA for instance is one of Ethiopia's federal agencies that reports directly to the Ministry of Finance and Economic Development. It carries out annual socio-economic and demographic surveys, and provides countrywide information on precipitation and temperature, trade and prices of commodities, production and yields for economic management. Another important national information system is the EIAR, which comprise of many research centres located across various agro-ecological zones of the country. The affiliate centers of EIAR establish and maintain information that are useful for different aspects of agricultural risks management including, climate variability, prices and market, production and yield, policy and socio-economic.

- 1 Central Statistical Agency of Ethiopia (CSA).
- 2 National Meteorological Agency (NMA).
- 3 Ethiopian Institute of Agricultural Research (EIAR).
- 4 Ethiopian Grain Enterprise (EGTE).
- 5 Livestock Information Network Knowledge System (LINKS).
- 6 Ethiopia Commodity Exchange (ECX).
- 7 Ethiopian Veterinary Association (EVA).

Study Conducted by: Research Centre for the Management of Agricultural and Environmental Risks (**CEIGRAM**), a research centre of the Universidad Politécnica de Madrid, Spain; **VISAVET**- Health Surveillance Centre, a research centre of the Universidad Complutense de Madrid, Spain



**Table 1:** Information systems for thematic areas of agricultural risk management in Ethiopia.

Type of information systems	Thematic areas of agricultural risk management						
	Meteorology, climate & soils	Satellite image & communications	Prices of commodity, input & market	Production levels, yields & plant health	Animal & human health	Policy	Socio-economic & sectorial
National	NMA / CSA / EIAR / ATA / DRMFSS	DRMFSS / ATA	ECX / EGTE / CSA / ENADA / EIAR / LINKS / NBE / NAIA / ESA	CSA / EIAR / ESA / APHRD / EPHI / EVA / MoA / MoH / NAHDIC	CSA / MoA / APHRD / EVA / MoH / EPHI / NAHDIC / NVI	NBE / FAO MAFAP Ethiopia / EIAR	CSA / EIAR
Regional	ACMAD / IGAD – ICPAC	AARSE / RCMRD	AfDB / UNECA / COMESA / AMITSA / AFO	ASARECA / AfDB / AU – IBAR / WHO – Africa	AU-IBAR / WHO-Regional Office for Africa / DLCO-EA RustTracker	FEWS NET / HDE	AfDB
International	CRED – IDD / FAO-Aquastat, / WB – CCKP / ESDAC ISRIC / GYGA	NASA / ESA / USGS / CGIAR – CSI / RSAC / UN (Spider) / Terra Remote Sensing	GIEWS-FAO / WFP-VAM / FEWS NET / FAOSTAT / USDA	CountryStat-FAO / FAO-STATS / GYGA / EMPRES / IAEA / OIE / USAID	Factfish / FAOSTAT / OIE / WHO-HSIS / EMPRES / IAEA / USAID / WB	GIEWS-FAO / FEWSNET / WFP / WB / IPC	WB

Source: PARM IS-ARM Report, Ethiopia (2016). These information systems were identified during the Information Systems for Agricultural Risk Management Study in Ethiopia finalised by PARM in October 2016. The classification of information systems are based on geographical scope or scale of information (national, regional and international).

Strengths

In Ethiopia, the national systems that provide relevant information for agricultural risk management are NMA, EGTE, LINKS and ECX. These systems maintain and deliver information services that allow for sufficient analysis of agricultural risk management on thematic areas such as prices of commodities and inputs, policy, production and yields, and meteorology and climate. They are noted for providing:

Comprehensive information: In terms of commodity and input price information for risk management, the EGTE, LINKS and ECX jointly provides data on all important crops, which permit a deep understanding and monitoring of pricing situations in the market. Particularly, their data have a wider coverage of agricultural commodities throughout major markets in Ethiopia. Data also captures prices for different levels in the food chain, import-export commodities for an appreciable length of series. In addition, weather information from the NMA also appears to be very extensive. The agency has more than 1000 observatory stations and over 140 AWS, which permits a better analysis of climatic trends such as El Niño oscillations and Pacific Decadal Oscillations in Ethiopia.

Well-elaborated information: The websites of some information systems including LINKS and EGTE are well-organised to provide detailed recent information on animals and animal products. The information is categorized according to many characteristics and organized under different criteria including market/price situation for different commodities. There is continuity in the time series accompanied by a clearly explained data sources and gathering methods. Besides, datasets are easy to find using the search engine and search filters on the websites.

Alert systems for specific pests and diseases: Some regional systems provide updated information about risks of infestation and sprea (Desert Locust Control Organization for Eastern Africa, DLCO-EA and RustTracker.org)

Weaknesses

Information on thematic and sub-thematic areas of communication, plant health, risk of animal diseases is recorded not to be sufficient (see Table 2 for the scores) for agricultural risk management purposes in Ethiopia.

Limited up-to-date information: There is hardly any recent information on soil and livestock endemics in Ethiopia, although the ATA's EthioSIS project was launched in 2012 to develop depository for soil related information across the country. CSA collects data on production/yield of livestock, and publishes an annual Report on Livestock and Livestock Characteristics. The most recent report was published 2010/2011 with a series since 1995/96.

Difficult access to information: The means of communication of ARM information is only through reports and bulletins published on websites but internet penetration and social media use is low in Ethiopia. In addition, satellite data on agricultural systems can only be downloaded or printed from websites of private institutions but come with a cost of a fee, which might exclude poor farmers.

Data is aggregated at national and regional level: the information on plant health, crop management, production, acreage and yield available at CSA website is aggregated at regional level, which is made up of about 100-150 households within an enumeration coverage. Besides, information on some of commodities relevant

for poor households' food security is not included. This does not permit an in-depth analysis of individual/farmer level situations.

Weak animal health information system: None of the national information systems had evidence on pests and disease prioritization programmes that are based on clear indicators. Rather, there is a continuity of report based on disease prioritized by the international community (particularly on impact on trade) or those with a high morbidity/mortality rates. Besides, animal diseases and endemic control information system appeared to be inadequate. There are little convincing evidences on disease control programmes. For the few ones that existed, there is hardly any progress or evaluation report on the detail description of the control programmes, as well as the costs, compensation or rewarding schemes and contingency plans.

The way forward

Build communication systems suitable for remote access. Mobile penetration in Ethiopia has grown remarkably in the last years. It should be complemented with cheaper and efficient internet services to allow information to be disseminated to smallholder farmers through SMS and social media platforms like twitter and Facebook that are increasingly becoming popular in Africa. Delivery and access mechanisms through TV/radio/producers associations and hard copy distributions should also not be undermined.

Improve plant and animal health-related information systems. There should be adequate surveys on animal movement dynamics to develop general assessment models for risk of further transmission of pests and diseases. Endemics within local areas should be prioritised rather than those of international recognition. There should be priorities to expand insect pests and diseases' early warning information systems from local and regional institutions.

Initiate public-private partnerships and institutional arrangements. In the future the information systems management should integrate the private sector through public-private partnerships translated into enhanced institutional arrangements in financing and governing all forms of ARM information. Private actors should include professional and producer organizations, cooperatives, universities and private foundations and programs (e.g. Alliance for Green Revolution in Africa).

Table 2: Scores for information on thematic & sub thematic areas of ARM in Ethiopia

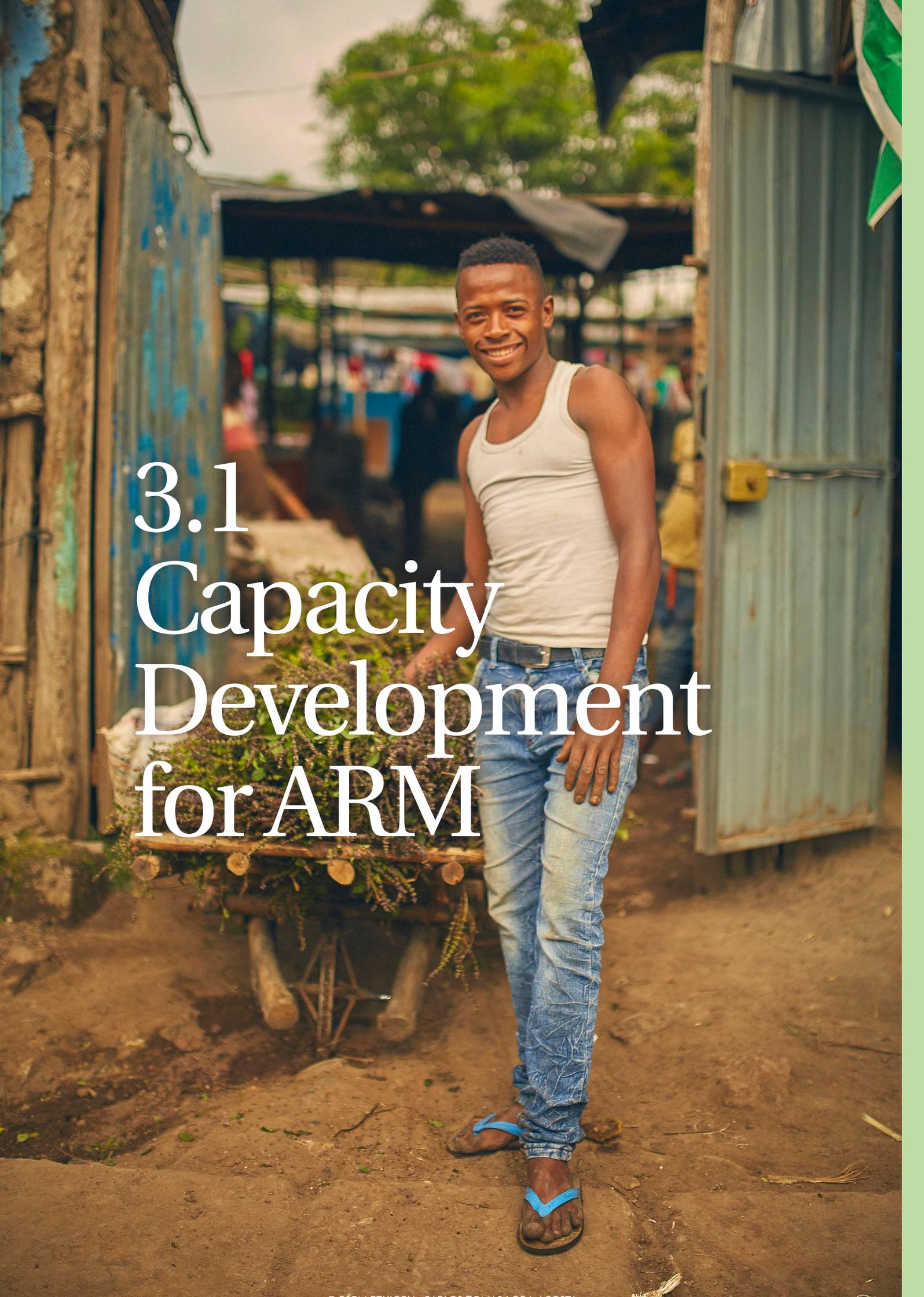
Strongest score (%)	Weakest score (%)	
Prices	95	Communications 30
Satellite image information	95	Plant health 50
Policy	88	Risk of endemic and emerging diseases 55
Soils	85	
Production levels and yields	84	
Meteorological & climate information	81	
Trade	75	
Stocks and inputs	70	
Socio-economic & sectorial information	65	
Cost of animal diseases	60	

Source: PARM IS-ARM Report, Ethiopia (2016).

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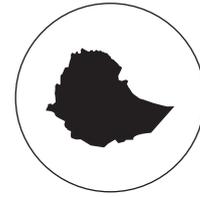




3.1 Capacity Development for ARM



Ethiopia



Sustainable Investment Plan for Capacity Development on Agricultural Risk Management

Executive summary

October 2018

Study conducted by:

**Natural Resources Institute
University of Greenwich, UK**

In collaboration with:

**Agricultural Transformation Agency (ATA)
Ministry of Agriculture (MoA)**

1. Background of study

This feasibility study presents a sustainable investment programme to develop the capacity of smallholder farmers in Ethiopia to assess, prioritise and manage agricultural risks. It forms part of activities agreed between PARM and the Government of Ethiopia (GOE) to promote the mainstreaming of Agricultural Risk Management (ARM) into Ethiopian agricultural sector programmes. It follows from the signing of a Memorandum of Understanding (MoU) to formalize collaboration between PARM and the GOE through the Ministry of Agriculture (MoA) and the Agricultural Transformation Agency (ATA).

The terms of reference for the assignment require the development of a plan to include ARM training in the Agricultural Technical and Vocational Education and Training Centres (ATVETs) as well as the development of the capacity of smallholder farmers including training at the Farmer Training Centres (FTCs). It is also required that recommendations will be made to create a *cascade effect* from training activities towards reaching smallholders at the national level through the delivery of training on ARM by extension service personnel or Agriculture Development Agents (AgDAs). Furthermore, the proposed CD programme should contribute to strengthening the capacity of the national extension service, agricultural service providers, as well as farmers in general and farmers' organizations.

The methodology adopted, and activities undertaken as part of the feasibility study included reviewing the framework for training activities in ATVETs, FTCs and similar vocational institutions as well as consulting with relevant stakeholders, including policymakers in the Ministries of Agriculture and Education. In addition, relevant legal, regulatory and policy documents were reviewed, and field visits undertaken in order to consult with some staff of ATVETs (Holeta ATVET and Alage ATVET) and to the Berek Woreda Agricultural Bureau and the FTC at Sendafa in the

Oromia Region. The emerging conclusions and recommendations from the study were presented at a Technical Workshop held at the Friendship Hotel in Addis Ababa on 3rd October 2018.

The team which undertook the feasibility study was comprised of Dr Gideon E. Onumah of the Natural Resources Institute (NRI), the University of Greenwich in the United Kingdom; as well as Mr Getachew D. Bedane and Mrs Engdawork M. Kassaye, both from the National Disaster Risk Management Commission (NDRMC).

2. Justification of investment in CD in ARM

Evidence summarised from the Risk Assessment Study (RAS) by PARM (2016) shows that agricultural risks lead to substantial losses to farm households and at the national level when aggregated in Ethiopia. It is quite apparent that, though farmers are aware of the prevalent risks, their capacity requires strengthening in order to prioritise the risks and adopt effective ARM tools in a holistic manner. Meeting this need is one of the main justifications for the proposed CD in ARM programme. The CD will also help fill a gap in the delivery of extension services, enabling AgDAs to better incorporate holistic risk management in the provision of extension advice, thereby ensuring greater uptake of their services. By mainstreaming holistic ARM in the planning process, the CD is also expected to improve the quality of planning and implementation of sector development interventions and policy actions. The synergy between the CD programme and other major sector-linked programmes and strategies has also been outlined, demonstrating its overall importance to farmers, GOE and other stakeholders. The elements of a proposed CD for ARM programme for Ethiopia is outlined below.



3. Main activities/elements of the proposed CD for ARM programme

Though smallholder farmers are at the centre of the CD programme, considerable investment is proposed in training trainers at various levels. It is proposed that the staff of the ATVETs are trained in ARM by selected universities e.g. Hawassa University using materials from the pilot training in ARM but further customised to suit the focal regions and translated into local languages. Agricultural Development Agents (AgDAs) will be the main resource persons trained by the ATVETs to train farmers. This training will be through two channels: one will involve training of existing AgDAs whilst the other is through training prospective AgDAs by means of incorporating ARM in the curriculum. The ATVETs will also train selected model farmers (MFs) – with relatively larger farms, usually better-endowed and quite influential in their communities. The MFs are expected to assist the AgDAs in training other smallholder farmers during specific programmes organised at the FTCs. They are also expected to share information on ARM with other farmers through an informal process – MFs are part of 5-member clubs in the kebeles. The main means of communicating with farmers will be through audio-visual aids and illustrative posters and flyers.

Extension officials at regional, zonal and woreda levels will also be trained in ARM in order for them to assist in the organisation and quality control of training at the FTCs. Furthermore, their training will equip them with skills to incorporate ARM in woreda-level planning and projects as well as to become effective channels for communicating feedback to providers of ARM tools and policymakers.

Policymakers, providers of ARM tools and donors/NGOs involved in ARM-related projects and programmes will be sensitised on a regular basis to ensure that a holistic approach to ARM is mainstreamed into planning and investment decisions in the sector, especially where it involves participation by smallholder farmers.

4. Phased approach for the implementation of CD programme

A phased approach was proposed for the implementation of the CD programme. It is a three phase of a pre-Implementation, pilot and consolidation/scaling-up.

Pre-Implementation Phase may run from September to December 2018 and involved the following activities:

- Validation of the report and recommendations on the feasibility of the CD programme during a workshop in October 2018.
- Confirmation of funding commitments for the CD programme by government agencies and donors – this was part of discussions during the proposed workshop and is expected to continue afterwards.
- Setting up coordination structure for the implementation of the CD programme.

Pilot Phase will involve the following activities:

- January-April 2019: Training of trainers, including staff of ATVETs, selected officials at the zonal and woreda levels, and DAs.
 - Also, preparation and translation of training materials and teaching aids (including videos, flyers and posters).
 - Selection of FTCs for farmer-training.
- April-May 2019: Training of MFs.
- Training of farmers at selected FTCs in May/June, August-September and October-December.
- CD programme evaluation and refinement of plan for scaling up.

Consolidation/Scaling-up Phase will involve the following activities:

- Implementation of consolidation/scaling up plan.
- CD programme evaluation.

5. Funding and programme management

The total budget for implementation of the proposed CD programme over a 5-year period estimated at Birr 113.474 million (approximately US\$4.089 million). The breakdown of this budget on an annual basis is as detailed in Table 8 – the exchange rate applied was US\$ 1.00 = Birr 27.75 (September 2018).

Table 1: Breakdown of annual cost of CD programme in Ethiopia

Year/cost	Annual cost (Birr)	Annual cost (US \$)
Year 1	11,637,000	419,351
Year 2	11,978,450	431,656
Year 3	19,787,195	713,052
Year 4	31,612,435	1,139,187
Year 5	38,459,018	1,385,911
Total	113,474,097	4,089,157

A future implementation of such CD programme could potentially include a budgetary contribution of GOE that currently allocates funds for regular extension trainings to the woredas and zonal level, the latter through the National Disaster Risk Management Commission (NDRMC). In particular, it was discussed with relevant stakeholders that such contribution could correspond to about 8.5% of the total budget and could be shared by the following GOE sources:

- Budget for FTC per extension training session, which is Birr 20,000 or (US\$720) per woreda. This is justified on the assumption that the ARM training will fit into regular extension training as proposed in this report. The projected contribution for the target FTCs during the 5-year period is estimated at Birr 4.4 million (US\$159,000).
- Training zonal and woreda officers is aligned to the programme by the NDRMC, which can therefore contribute to the budget for this line which is estimated at Birr 5.2 million (US\$186,500).

The funding gap for which contributions are required is estimated at Birr 103.9 million (approximately US\$3.74 million). This is required over a 5-year period, and the funding requirement rises from a relatively low base until it peaks in Year 5 allowing for programme managers to mobilise resources as the programme proceeds.

Donors who are potentially targeted for supporting the CD programme include those who are already supporting the activities of the NDRMC as well as the PARM process. These include WFP, the World Bank (through its GFDRR programme), Spanish Aid, the European Union and USAID (through the Feed the Future Programme). It is also anticipated that providers of ARM tools will contribute in the production of teaching aids, such as video documentaries, posters and flyers as it is in line with the promotional activities.

To ensure localisation of the CD programme we propose that a Coordinator is appointed, who will be stationed at the Extension Department of the MoA and be responsible for the implementation of the CD programme. He/she should be supported by a Coordinating Committee with representation from the MoA, Ministry of Education, the NDRMC, the ATA and representatives of selected providers of ARM tools (e.g. insurance companies, ECX, the FCA). The Coordinator should report regularly to the Committee and then to the State Minister for Agriculture and the PARM Secretariat.

For at least the first two years of implementation of the CD programme, it is proposed that the position of the Coordinator and the administrative cost of running activities, which is estimated at Birr 832,500 (US\$30,000) per annum should be covered by the PARM Secretariat. After this the position should be mainstreamed into the regular structure in the MoA.

A project logframe has been designed, detailing out the activities and outcomes which are targeted for the CD programme. One of the first tasks of the Project Coordinator should be to benchmark these per quarter. The quarterly reports submitted to the Coordinating Committee and thereafter to the State Minister and the PARM Secretariat. This will make it possible to monitor the progress in terms of actions implemented and results achieved. It is further proposed that there be an evaluation at the end of Year 2, to assess progress and provide a basis for scaling up actions. A final evaluation is also recommended at the end of Year 5 - the results of which will inform decisions and plans by GOE to scale up the CD programme at national level - covering all regions and woredas in the country.

Participant evaluation will also be mainstreamed into the CD programme, not only as a means of generating information for improving the delivery of requisite knowledge and skills but, even more crucially, to create a sustained participatory process which will enrich the range (number of) and quality of ARM tools available to smallholder farmers and other actors in agricultural value chains in Ethiopia.



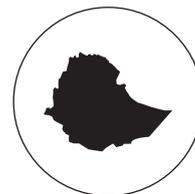
PARM
PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT



4. Developing capacities and sharing knowledge



Ethiopia



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.

ARM 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 financial tools. PARM's capacity development (CD) strategy is articulated in three levels of activity: 1) CD1, a 2-day general ARM seminar; 2) CD2 - A high level ARM course/ Training of trainers (ToT) to be included in the curricula of local training institutions; and 3) CD3 - Specific CD activity in support to the feasibility studies for investment on ARM.

PARM's CD components are also supported by feasibility studies for investment in training agricultural extension services to develop smallholder farmers' capacity on ARM. PARM also develops and disseminates its own training material to enhance knowledge and practical use of the new ARM concepts proposed by the platform.

The catalog of PARM's CD training materials composed of:

- CD1 material 'Managing risk at farm level':
 - *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 above four modules of the CD2 Materials contribute to the PARM / FAO / NEPAD e-learning course on «Agricultural Risk Management and Resilience» available on FAO E-learning Centre. Together, all the learning materials are used in PARM's CD activities at the country level. Ethiopia benefited from the following CD activities developed by PARM:

- ARM training of trainers (ToT) course (CD2) with the University of Hawassa. PARM's training framework expected to be included in the curricula of local training institutions.
- Technical workshop on sustainable investment plan for CD on ARM.



2. Institutionalization of high-level training of trainers (ToT) (CD2) course in Ethiopia

The CD2 ARM training course/ToT in Ethiopia was organized by PARM in partnership with Hawassa University and the Government of Ethiopia, Ministry of Agriculture (MoA), from the 29th May to 2nd June 2018 in Hawassa. The goals of this partnership were to:

- create a training capacity on ARM hosted in Ethiopia that can be offered in a regular basis;
- organize and deliver the pilot ARM training course targeted to extension officers (in particular at federal and regional level) and other agricultural practitioners (farmer organizations, private sector, etc.); and
- start the activities for future CD activities with Farmer Training Centres (FTCs), ATVET centres (Agricultural Technical and Vocational Education and Training), and other training institutions involved with national extension service and Government of Ethiopia for a sustainable and durable ARM training strategy for national extension staff.

The course brought together about 30 participants from: i) Ministry of Agriculture, Dept of Extension Service (federal and regional level) ii) National Disaster and Risk Management Commission (NDRMC) iii) Bahir Dar and Mekelle universities; iv) Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and; v) IFAD-funded "Participatory Small-scale Irrigation Development Programme" (PASDIP). Back to back to the course two days field visits were organized at Hawassa Lake to discuss risks for environment and fishery sector due to pollution and downstream canals, and at Ethiopian Commodity Exchange (ECX) to learn about the coffee market and the potential use of ECX as ARM tool for local producers and international buyers.

The five-day training was a mix of presentations, lectures, group activities and exercises grouped in the following modules:

- Module 1: Agricultural risk management: an overview;
- Module 2: Assessing and prioritizing risks;
- Module 3: ARM tools linked to the Ethiopian context, including climate smart agriculture, insurance (weather-based index insurance), ECX, market related tools, etc.;
- Module 4: Additional Considerations and Monitoring & Evaluation (M&E);
- Module 5: Roles and responsibility for ARM;
- Module 6: Training of Trainers (ToT).

3. Technical workshop on sustainable investment plan for CD on ARM in Ethiopia

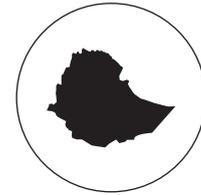
Following stakeholders' recommendation of capacity development as a key tool for agricultural risk management (ARM) in Ethiopia, PARM launched a feasibility study on Sustainable Investment Plan for Capacity Development in ARM. The main objective of the feasibility study is to produce an outcome which will help to translate capacity development training activities into concrete actions and, in particular, to incorporate ARM theory and practices into extension advisory services vocational training and therefore actions to benefit smallholder farmers.

Upon finalizing the study, PARM and its country partners in Ethiopia, most notably, the MoA, NDRMC, the ATA and the Federal TVET Agency of the Ministry of Education organised a workshop in Addis Ababa in October 2018 to review the findings and provide comments regarding the implementation and funding of the proposed recommendations. The workshop also had an inherent objective of strengthening stakeholders capacity on the range of ARM issues that came out of the feasibility study. It saw the participation of 34 officials from a diversity of stakeholder groups.

The workshop was a one session activity that focused mainly on the presentation from the feasibility study consultant. Presentations highlighted on the basic definitions and concepts of ARM as relevant to the study in Ethiopia, the justification of proposed CD on ARM programme, and the phased implementation approach to deliver the CD on ARM programme. Detail outcomes of the workshop is outlined in the Technical workshop on sustainable investment plan for CD on ARM report.



Ethiopia



E-library: list of full publications on ARM process in Ethiopia

Studies

Risk assessment



Agricultural Risk assessment study in Ethiopia
Full Report
December 2016

Tools assessment



Feasibility Study on Sustainable Investment Plan for Capacity Development in Agricultural Risk Management in Ethiopia
Full Report
Septembre 2018



Information systems for agricultural risk management In Ethiopia
Full Report
October 2016

Factsheets/Policy Briefs

Risk assessment



Agricultural Risk Profile of Ethiopia
Factsheet
November 2016

Tools assessment



Information systems for Agricultural Risk Management in Ethiopia
Policy Brief
October 2016

All publications are available in our library



<http://p4arm.org/library/>

Workshop Reports

National stakeholder ARM validation workshop reports



Risk assessment validation workshop
*Vol. 1 - Main Report | Vol. 2
Presentations*
June 2017

Capacity development seminar



ARM Training of Trainers (ToT) (CD2) Seminar,
with Hawassa University
Full Report
June 2018



Technical workshop on sustainable investment plan
for CD on ARM
Main Report
October 2018



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