

# Mozambique



## Information Systems for Agricultural Risk Management

### Policy Brief

October 2016

#### Key message

1

Output price and production related risks such as constant currency depreciation, commodity market volatility, drought, epidemics and floods affect Mozambique agricultural sector in great frequency and severity.

2

Information from national systems including INGC<sup>1</sup>, INE<sup>2</sup>, MASA<sup>3</sup>, SIMA<sup>4</sup>, INFOCOM and INAM<sup>5</sup> allow for comprehensive market/price risk analysis. There are prospects for enhanced access to information and better dissemination environment.

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However, some of the risk information are short-length and do not present enough geographically disaggregated information.

4

Efforts to enhance the national information system should focus on building capacities for long-term data collect, data disaggregation at the most basic level, public-private partnership, and diversification of information across thematic areas.

#### 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 Mozambique IS-ARM report.

According to the **2015 World Bank Risk Assessment** and **PARM 2016 country risk profile for Mozambique**, output price and production related risks such as constantly depreciating currency, commodity market volatility, drought, epidemics and floods occur in frequency and with severity of impacts. The average annual output price losses to agricultural producers are about 12% from 2000 to 2004. Agricultural products most affected by the output price risks are cassava, meat and cashew. Price risks increase expenditures of consumers and cause losses to about 10% per year, and as high as 24% in 2006. Epidemics and floods occur on average once every year. The occurrence of these events affects the production of paddy rice, maize, sweet potatoes and sesame seeds with average yield losses recorded at 15% per annum from 1990 to 2013. These impacts affect not only poor rural farmers, but also the government at the national due to lack of information to aid disaster preparedness and management initiatives.

#### Existing information sources and information systems

Several information systems are available for agricultural risk management in Mozambique. As shown in Table 1, some of the identified national information systems deliver information on a single thematic area of agricultural risk management; INGC and CENACARTA for satellite image information, SIMA and INFOCOM for market/price information and IAM for production related information. Only few national systems – INE and MASA – provide integrative information on two or more thematic areas. INE is a governmental body responsible for developing censuses, surveys and other statistical reports in Mozambique. Over the years the INE has focused on gathering data on production and yield, price/market, animal health and socio-economic. In recent years, it has extended its statistical activity into climate change and hazards (floods, drought epidemics) impact analysis. MASA on the other hand serves more as a central state organisation tasked to direct, organize and ensure the implementation of legislations and policies in the field of agriculture, livestock, agricultural hydraulic, agro-forestry plantations and food security. It therefore maintains information on satellite image, production levels, price/market and animal health that are useful for agricultural risk management.

- 1 Instituto Nacional de Gestão das Calamidades (INGC).
- 2 Instituto Nacional de Estatística/National Institute of Statistics (INE).
- 3 Ministério da Agricultura e Segurança Alimentar (MASA).
- 4 Sistema De Informação De Mercados Agrícolas De Moçambique (SIMA).
- 5 Instituto Nacional de Meteorologia de Moçambique (INAM).

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

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
<b>National</b>	INAM / INE	INGC / MASA / CENACARTA	INFOCOM / INE / SIMA / MASA	INE / MASA / IAM	INE / MASA / Ministério da Saúde	BM / National Early Warning System (Aviso Previo) / PAPA	INE
<b>Regional</b>	ACMAD / SADC	AARSE / AGRHYMET	AfDB / UNECA / AMITSA / AFO	AfDB / eRAILS / SADC	AU-IBAR / WHO-Regional Office for Africa	ARC	AfDB
<b>International</b>	CRED – IDD / FAO-Aquastat, / WB – CCKP / ESDAC / ISRIC	NASA / ESA / USGS / CGIAR – CSI / SOS Sahel / UN (Spider) / Terra Remote Sensing / ICARDA	GIEWS-FAO / WFP-VAM / FEWS NET / FAOSTAT / USDA	CountryStat-FAO / FAO-crop calendar / Plantwise	Factfish / FAOSTAT / OIE / WHO-HSIS / EMPRES / IAEA / USAID / WB / CDC	GIEWS-FAO / FEWS NET / WFP / WB / IPC / HDE	WB

Source: PARM IS-ARM Report, Mozambique (2016). These information systems were identified during the Information Systems for Agricultural Risk Management Study in Mozambique 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

Table 2 shows the scores for information on the thematic and sub-thematic blocks of agricultural risks management in Mozambique. Information on prices, soils, satellite image, trade and communication are within the highest scores. This indicates that the available information on these themes is sufficient for proper agricultural risk analysis in Mozambique due to the:

**Prospects for ease access to information:** Mozambique has a very good mobile penetration, and internet servers and users have been increasing rapidly over the past five years. Farmers and stakeholder are likely to get access to information with ease, either through internet services or by SMS.

**Diverse information dissemination channels:** SIMA is one of the national systems with wider information coverage and services delivery. It provides weekly, monthly, annual updates and historical bulletin online. It is also initiating an SMS delivery system to extend information to farmers without access to internet, such as those in remote settlements.

**Comprehensive information on price/market:** INE presents information on trading activities for about 195 agricultural commodities ranging from horticultural products, grains, and cereals to staple crops. Data for the information is collected from 32 sampled markets across Mozambique. SIMA also has a transparent system that monitors a number of commodities in the market and display recent price.

## Weaknesses

Information for thematic and sub-thematic areas of commodity stock and input price, plant health, cost of animal diseases, and risk of endemic and emerging diseases, on the other hand appear to be weak (Table 2) for agricultural risk management purposes in Mozambique.

**Some of the available information is short-length.** There are notable deficiencies in terms of the length of information on climate/ meteorology and trade available from both the National Meteorological Services and the Statistical Services (INAM and INE). Information on commodity stock and input price is very poorly developed: very limited and irregular. No direct report was found containing actual, as opposed to estimated stocks assessments. Even though INFOCOM has some production/use balances, it is not sufficient for risk management purposes.

**The aggregation level is not well-suited for thorough risk analysis.** IAM has complete plant health information but only on one commodity – cotton. Information on socio-economic issues and production levels from INE are insufficiently disaggregated to portray micro level or individual farmer situations. The aggregation level for the information from IAM and INE is by province and national level.

**Available information does not allow for holistic risk analysis.** While SIMA is a notable trade information system, it does not provide any information on commodity stock/inputs markets. The INGC and MASA satellite information focus on only flooding situations. Ministério da Saúde does not provide any database on animal

diseases, which makes it difficult to ascertain the risks and costs associated with endemic and emerging diseases. Policy and socio-economic information from the INE also lacks the necessary content. They hardly capture some of the important initiative in Mozambique such as Agricultural and Livestock Census (CAP) or the Trabalho do Inquérito Agrícola (TIA).

## The way forward

**Information/data sources/providers should seek to disaggregated data** and variables for not only national, regional and provincial but also sub-provincial and individual farmer level dimensions. Mozambique should invest in geographically disaggregated information.

**Strive for holistic data systems:** Deeper information on all the various risks thematic areas should be a priority. In particular, government should develop complete satellite databases for all major disasters, and plant and animal pests/diseases. Data should be connected to other thematic areas like climate/meteorology data, policy and socio-economic information to enhance a holistic risk management approach.

**Strengthen the capacity of national information systems to manage reliable data and deliver timely information.** The technical personnel require a great deal of improvement in their expertise to allow for comprehensive collection of relevant long-term and up-to-date statistics at national level and on frequent basis.

**Seek public-private partnership to increase information dissemination:** It is essential that alerts systems be created so that farmers can receive information through SMS or other means of communications, and prepare themselves against potential vulnerability. Government should partner with potential private investors to enhance effectiveness and efficiency in delivering information.

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

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, Mozambique (2016).