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Strategic Plan for the Mozambique Institute of Cereals

Supporting the Policy Environment for Economic Development (SPEED+)

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ACRONYMS

INTRODUCTION & PURPOSE

The **Mozambique Institute of Cereals (ICM)** is an independent public entity tasked with achieving two overarching objectives for the Government of Mozambique (GRM): *i) **promote efficient trade in agricultural produce*** to stimulate production and ensure broad-based economic growth in rural areas, and *ii) ensure domestic **food security*** in times of crisis.

Per Article 4 of the official statutes for ICM, the institute is to work through eleven functional areas covering a mix of market development and food security related activities. ICM's mandate has evolved over time in response to the growing private sector presence, and today is more optimized to actions suitable for a state actor. In the most recent iteration of ICM's mandate from the Council of Minister's Decree 62/2016, the Institute's role is to:

- Coordinate agricultural trade and engage with stakeholders along value-chains,
- Intervene as a marketing agent of last resort for excess production,
- Establish a reserve stock of cereals to ensure food security, and
- Ensure absorption by national industry of local production.

The Institute is now in the process of restructuring to fulfill this role. This Strategic Plan (SP) seeks to guide ICM in its restructuring, to suggest best practice models for each of ICM's key functions, and to ensure that GRM's aims in stimulating agricultural production and promoting agricultural trade are met while also developing mechanisms to support food security.

A STRATEGIC VISION FOR ICM

As a global best practice, it is accepted that most market development roles are best suited to the skill sets of the private sector, with complementary support provided by the state. A clear role the private sector cannot fill is reducing agricultural marketing costs across the value chain—only the state has this capability. This includes work to improve transportation, expand market information, enforce legal contracts and facilitate contract dispute resolution, free both the formal and informal traders from excess regulation, and assure safe high quality product goes to market. The most impactful role for ICM will be to serve as the **connective tissue between private-sector led market development and advocating for reforms that will enable stronger cereals value chains in Mozambique.**

As an actor focused on both market development and supporting a national social safety net, ICM must operate in a manner that minimizes market distortion caused by direct intervention. This balanced approach is woven into its current mission and vision statements:

Mission: *“Intervene as the marketing agent of last resort to ensure liquidation of the agricultural surplus with the objective of guaranteeing strategic reserves for food security to contribute to price stabilization.”*

Vision: *“Be a leader in the coordination of agricultural marketing, mapping and establishing the logistics chain between demand and supply.”*

With these in mind, and following the framework of Council of Minister’s Decree 62/2016, we recommend that **ICM operate through four strategic objectives** (SOs):

SO1: Facilitate Market Development in Cereal Value Chains

SO2: Facilitate Private Sector Investments in Value Chains

SO3: Facilitate Maintenance of a Strategic Reserve for Cereals

SO4: Advocate for Reforms that Enable Cereals Market Development

This document is organized around these four SO’s. Before elaborating on each, the following section provides a snapshot on *how* and *why* the coordinated movement of cereals—domestically and across borders—can strengthen Mozambique’s cereals economy and reinforce food security, the two guiding objectives of the new ICM.

THE OPPORTUNITY IN THE COORDINATED MOVEMENT OF CEREALS

When cereal stock flows from areas of surplus to those in a deficit in a timely fashion, both ends benefit. This balancing act applies to regions within Mozambique itself, as well as moving cereal surplus across borders to supply neighboring cereal deficit nations.

DOMESTIC SURPLUS & DEFICIT AREAS

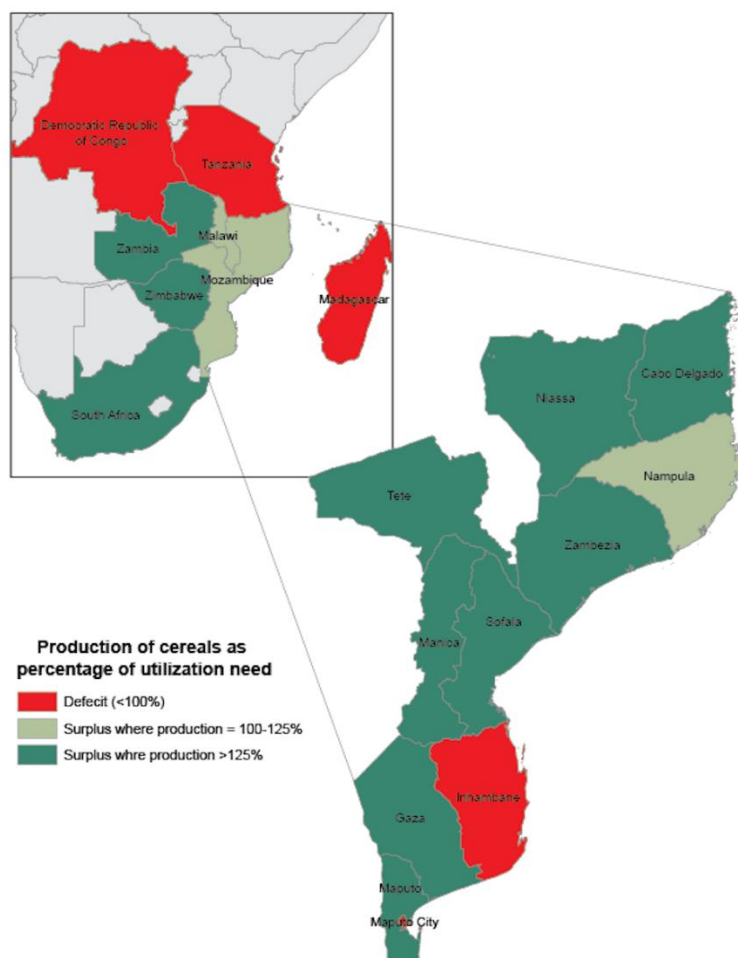
Mozambique has three broad agricultural bands. The **Northern** and **Central** zones that regularly produce an agricultural **surplus** and the **Southern zone** that **is frequently in deficit**. Figure 1 illustrates domestic maize trade flows, with the green areas representing those with a surplus.

Figure 1: Maize Production, Trade Flows, & Domestic Surplus/Deficit



REGIONAL SURPLUS & DEFICIT AREAS

Examining the surplus/deficit situation in neighboring countries, one can see (Figure 2) that **a robust trade opportunity** lies in exporting surplus from Mozambique's northern and central bands to countries in deficit, namely **Tanzania**, the **DRC**, and **Madagascar**. While **Kenya** is not depicted in the map, it is known to be in a cereal deficit, having recently purchased large quantities of maize from



Ethiopia and Zambia.

Figure 2: Regional Cereal Surplus/Deficit Map¹

Figure 2 also illustrates that investing only in north-south transport infrastructure in Mozambique may not be the most efficient strategy; it could be worthwhile to consider an approach that balances priority infrastructure investment with exporting northern surplus to the nearby deficit countries, while using the returns to finance imports to urban deficit areas in southern Mozambique.

¹ Mozambique's southern agricultural band is a mixed zone with presence of both surplus and deficit in various grains; as depicted in Figure 1, the south is a deficit region in the important staple crop of maize.

In sum, coordinating the systemic movement of cereals is complex, especially in Mozambique, where the overwhelming majority (98%) of the country's four million farms are categorized as small (an average of 1.1 hectare per family) and are dispersed across a territory close to 800,000 square kilometers. That said, ***the market opportunity within the region calls for a coordinated movement of cereals to maximize Mozambique's economic potential***—facilitating and enabling this coordination is a clear role for ICM.

THE STRATEGIC PLAN FOR ICM

The following Strategic Plan provides guidance for ICM to facilitate market access and enable the efficient trade of cereals from surplus to deficit areas (domestically and regionally) without disrupting market growth and development. It is framed around the four Strategic Objectives (SOs), which guide ICM to maximize the impact of its limited budget to develop a private sector driven cereals value chains—in maize, rice, beans, pigeon peas, sorghum, barley, and millet—while also facilitating the maintenance of a strategic grain reserve. ***The overarching strategy is for ICM to serve as a market development actor rather than a direct operator***, with the caveat that its activities, at least in the short to medium term, must continue to be financed through the ownership of physical assets that are leased out to private operators.

The Strategic Plan incorporates best practices and experiences from relevant countries, as well as the characteristics of grain reserve activities, market information systems, and warehouse receipt systems—this overview can be found in Annexes A and B. The Plan is organized by the recommended four ***ICM strategic objectives*** (SOs):

SO1: Facilitate Market Development in Cereal Value Chains

SO2: Facilitate Private Sector Investments in Value Chains

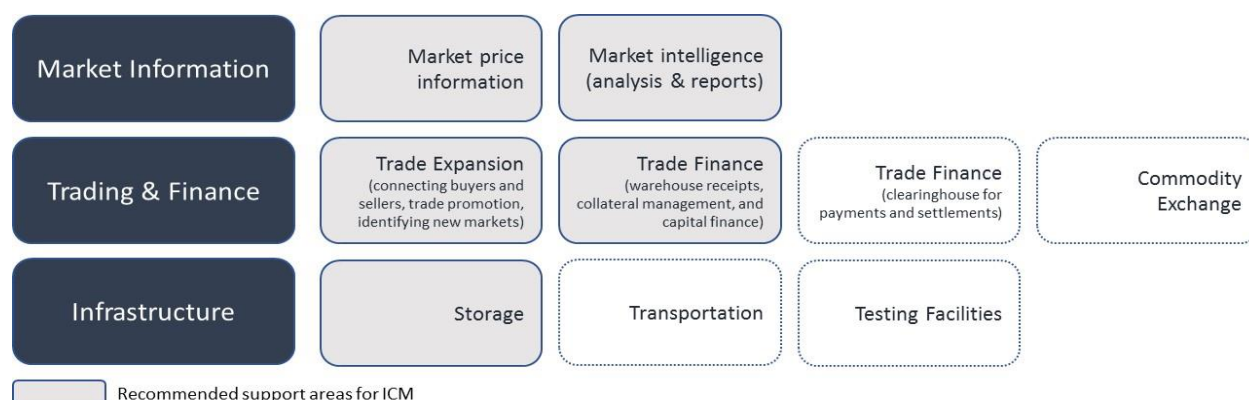
SO3: Facilitate Maintenance of a Strategic Reserve for Cereals

SO4: Advocate for Reforms that Enable Cereals Market Development

SOI: FACILITATE MARKET DEVELOPMENT IN CEREAL VALUE CHAINS

Taking Farmers' Products to Market. The core of ICM's mandate is to expand and improve Mozambique's cereals trade so that cereals are moved from surplus to deficit areas, ensuring the liquidation of smallholder surplus production and improving food security nationwide. ICM's role as a market development actor is to intervene to establish the essential elements of an efficient, well-structured commodity trading system, without contributing to inefficiencies or market distortions. This market system would include the essential elements shown in Figure 3 below, with ICM taking a facilitative role in the areas shaded in light grey.

Figure 3: Suitable Areas for ICM Support in Market Development



In line with the Market Development graphic (Figure 3), the following set of four activity areas contain the actions required to fulfill SOI.

1.1 Market Information: *Effectively track, analyze and disseminate price and quality information, as well as provide market intelligence.* SOI.1 was developed using a typology of market information systems from relevant countries, which can be found in Annex B.

1.1.1 Price Information. Work with private sector lessors of warehouses to participate in price information systems. Private sector investment across value chains is highly correlated to the level of transparency of market prices, as these data points are essential to measuring risk and building earning models.

- Conduct a participatory use-case analysis for price information to showcase how value chain actors benefit from robust and accurate pricing information.
- Collaborate with existing government price information systems.

- Explore collaboration with regional price information systems.

1.1.2 Market Intelligence. Expand access to market intelligence. This includes price information and goes deeper to incorporate key data such as grain quality, warehouse reserve information, transport costs, harvest forecasts, etc.

- Conduct end market assessments for various grains through consultancies or in partnership with ongoing donor programs (e.g. FTF INOVA by USAID)—use these as framework of high priority market intelligence products. Engage FEWSNet to identify collaboration opportunities around key grains, such as their data on regional maize pricing.
- Partner with private sector actors to articulate the demand-side needs—what information exists, what are the high priority data gaps, who is best situated to aggregate-analyze-package market intelligence, what investors are interested in backing such an effort?

1.2 Trade Expansion: *Grow the market for cereal producers and traders through market linkages and trading platforms.* Work to date through *Bolsa de Mercadorias de Moçambique (BMM)* provides informative guidance as to how to improve upon such a mechanism. For example, only ten percent of BMM’s silos capacity is currently utilized—in many cases due to infrastructure issues—and in 2017 the system was mainly used by 48 traders and processors (not farmers). Insufficient transaction frequency and volume have prevented the commodities exchange platform from scaling. Learning from regional experiences such as the Malawi commodity exchange, a successful platform requires end-to-end transaction strengthening, including reliable warehouse infrastructure (with power and telecommunication access), digital storage systems to minimize fraud, access to collateral finance products, and phone-based applications to share prices, market information, and banking transactions.

Advancing Mozambique’s domestic commodity exchange will take a collaborative effort—with ICM acting as a facilitator in the process of trade expansion, the institute must maintain an objective and analytical role regarding a next generation trading platform.

1.2.1 Increase Market Linkages.

- Connect buyers-sellers through B2B events (domestic/regional) and regional marketing tours.
- Provide Transaction Advisors to facilitate buyer/seller contract negotiation
- Engage with USAID’s regional trade hub projects—Southern Africa Trade and Investment Hub (SATIH) and East Africa (EATIH)—both tasked with trade facilitation.

1.2.2 Promote Regional Trade.

- Promote a regional trade strategy for Mozambique cereal exports and for addressing domestic deficit areas—develop a trade simulation strategy/analysis to export Central-North cereal surplus to nearby deficit nations, while ensuring a sustainable import strategy for the South.

1.2.3 Improve Trading Platforms.

- Engage leadership and developers of successful neighboring commodity exchanges (e.g. Malawi ACE) to build an understanding and evidence base for upgrading the exchange in Mozambique.

- Explore options for integration with existing commodity exchanges on borders (South Africa and Malawi), which would serve a capacity building purpose to jumpstart a domestic exchange.
- Advocate for free market transactions between buyers and sellers, and rely on the BMM or other exchanges only when advantageous.
- Actively participate in national discussion on future of BMM (particularly in clarifying its role as a more regulatory oversight institution) and relationship with ICM.
 - Encourage options for reform of BMM towards a model such as SAFEX and ACE, or for a simplified, reduced cost collateral management system.
- Share knowledge on other privately-operated commodities exchange platforms, including the end-to-end solution pitched by *FinComEco*, whose model underpins the success of Malawi ACE.

I.3 Trade Finance: *Scale up access to trade finance through warehouse receipts.* Prerequisites to setting up a warehouse receipt system (WRS) includes items such as accessibility of storage and standardization of the transactions between grain depositors/operators of storage facilities. ICM is well-positioned to facilitate the development, adoption, and dissemination of a simple set of norms that would be the foundation for a national warehouse receipt system. With common norms for storage as defined in practice and under the warehouse receipts law, there is an opportunity to invest in the development, adaptation, and/or adoption of technologies for managing the warehouse receipt program.

SO1.3 was developed using a typology of warehouse receipt systems from relevant countries, which can be found in Annex B.

I.3.1 Establish warehouse receipts program at ICM.

- Facilitate the handover of the SATIH/BMM warehouse receipts pilot program, following the recommendations provided in the USAID-SATIH report titled *Mozambique Structured Trade: Sustainability Plan, The Case for Warehouse Receipts* (December 2016, Report 01-2017).
- Work with key participating stakeholders to sign MOU's, establishing commitment and a foundation for investing resources in the next steps for the program.
- Work with BMM to reformulate their role to include regulatory oversight matters, and transition out of managing/leasing warehouses of the industry they will regulate.

I.3.2 Facilitate additional bank participation in warehouse receipts lending.

- Engage banks to document barriers to their involvement in collateral lending. The poor state of storage facilities and a lack trust in warehouse managers has prevented bank lending based on stored grains—without willing lenders, warehouse receipt systems cannot function, thus their involvement is critical.

I.3.3 Consider scaled down collateral management/finance programs as Phase I for WRS lending.

- Conduct analysis on the Madagascar informal inventory credit system, which allows smallholder farmers to store grain in local facilities and to receive financing from MFI's. The system enjoys high repayment rates due to local peer pressure, and low financing rates due to efficiencies associated with local storage (no transport required).

1.3.4 Explore linkages between warehouse receipt system and input supply vouchers.

- Promote the use of warehouse receipts as a guarantee for the acquisition of agricultural inputs, which can serve as a gateway to mainstream the use of credit for inputs.

1.4 Storage that Enables Trade/Finance: *Support private-sector managed storage solutions that guarantee compliance with quality and security standards, provide bonding/insurance, and enable participation in collateral management/warehouse receipts systems.* To enable SOs 1.2 and 1.3 above, a robust and dependable grain storage system is a necessity. At the same time, this storage strategy must also feed in to the strategic cereal reserve framework covered in SO3. Today, Mozambique's grain storage system can be characterized as highly fragmented, with underutilized assets (silos, warehouses) owned by a mix of state actors (e.g. ICM and BMM), and some private sector operators leasing storage assets for use under their own strategic vision. Strategic coordination on the use of Mozambique's storage assets—a foundational activity to establishing a WRS, attracting financing, ensuring food security, etc.—should be a very central activity in ICM's mandate moving forward.

1.4.1 Lead WRS storage strategy vision-setting exercise.

- Develop a WRS typology matrix with criteria such as cost, functionality, origin, use and results, and comments on the relevance for the Mozambican market.
- Develop a storage strategy use case that meets both market development and food security objectives—match this case against the numerous digital solutions offered by companies working in the WRS technology space.
- Consider advertising a request for information (RFI) to obtain strategic ideas and develop a shortlist of possible service providers qualified for future tenders related to the WRS.

1.4.2 Establish & implement a national storage asset management plan.

- Build on the work done by the working group—established by the Ministry of Industry—tasked with conducting an inventory of the commercialization infrastructure in the country and quantifying expected cereals surplus and deficit by province.
- Consider consolidation of storage assets (BMM) to sit under ICM, who can then coordinate a strategy to lease assets to the private sector as a first step in rationalizing domestic storage for a national WRS.
- Incorporate the storage economic analysis in the *Estudo sobre a reestruturação do instituto dos cereais de Moçambique* (2016, USAID, MIC, Deloitte & Touche).
 - The paper covers the pros and cons of leasing all storage assets (the current practice), versus an option of liquidating assets in the Southern band of the country and continuing the leasing strategy for the Central/North assets.

1.4.3 Facilitate management (financial and operational) capacity building for warehouse lessors.

- Lead training and knowledge dissemination on storage best practices.
- Create a trade association for self-regulation/certification/enforcement.

SO2: FACILITATE PRIVATE SECTOR INVESTMENTS IN VALUE CHAINS

Provide stability, vision, and market leadership to lower risk and attract investment.

Mozambique's private sector can be a powerful force for growth if assistance is provided for defining, developing and financing projects that fulfill the essential elements for market development. As the stabilizing anchor of the cereals trade in Mozambique, part of ICM's role is to enable private investment in cereals value chains. Each of the many moving pieces in the market system require ongoing investment, support, and optimization by private sector actors—as a 'facilitator' of this investment, ICM will help create an attractive environment for private sector market development. Key tools that ICM can use to spur investment are its inventory of storage assets, and its leadership role in championing market development reforms (discussed in SO4) that can ultimately lower risks for interested investors.

2.1 Identify Investment Pipeline: *Maintain an up-to-date pipeline for cereals sector investment as a means of coordinating actors and building relationships with foreign and domestic financiers.*

2.1.1 Identify/segment existing pipeline (production, transport, storage, trading platforms, finance.)

- Map the investment pipeline across ICM's four SO's to identify where priorities align
 - For example, a private sector mantra says 'you can only manage what you can measure'—ICM should identify what market information investors need and work to find aggregate partnership solutions (e.g. private sector association).

2.2 Investment Facilitation: *Align market development actions (SO1) with investment opportunities, and prioritize market development reforms (SO4) in a manner that facilitates new investment.*

2.2.1 Consider establishing an ICM-Investment Facilitation Department.

- In-house staff could be linked with SO1 activity areas and serve as the partnership management shop within ICM to facilitate investments.
- Analyze the possibility of providing fee-based services to, for example, assist with feasibility studies or financial analysis.

2.2.2 Facilitate linkages for access to finance.

- Conduct an inventory of agricultural credit and financing institutions; for example, the banks BCI and BNI have a program called MozGrow that is committed to providing credit across domestic ag value chains.
- Explore partnership opportunities between ICM and relevant financial institutions.

2.2.4 Facilitate investors' success in overcoming regulatory or approval hurdles.

- Tied directly into SO4 activities, ICM should align and prioritize key market development reforms that will lower investment risks and attract stable investment in domestic cereal value chains.

SO3: FACILITATE MAINTENANCE OF A STRATEGIC RESERVE FOR CEREALS

Lead food security strategy by facilitating strategic reserves. A strategic reserve is a public stock of grain used to meet emergency food requirements, to stabilize food prices, and to relieve temporary shortages while commercial imports or food aid are being arranged. While modest reserves could be justifiable for food security purposes, Mozambique needs a system that limits public expenditures, allows the government to address urgent needs, and uses private reserves. Through facilitating the use of private reserves, the GRM can achieve the same food security aims at a much lower ongoing cost to the public. Our recommended strategy is for ICM to coordinate with specialized agencies such as the World Food Program (WFP) and the National Emergency Management Institute (INGC) that have emergency purchase and distribution functions within their mandate and are regularly (though perhaps not sufficiently) funded to fulfill those functions. By doing so, rather than having two non-private buyers in the market there will be only one, which will help limit market distortions.

In developing SO3, we created a typology of grain reserve activities from relevant countries, which can be found in Annex B.

3.1 Collaborate with INGC/WFP to Coordinate Emergency Purchase & Distribution of Cereals: *Establish collaboration between ICM and INGC/WFP that have emergency purchase and distribution functions within their mandate.*

3.1.1 *Set up rapid-action working group to establish protocols for collaboration and define roles/responsibilities.*

- Identify gaps in INGC/WFP network that can be supplemented by the ICM private-sector led grain storage strategy.

3.1.2 *Develop ICM's regional food security storage strategy (Mozambique's three geographic bands).*

- In coordination with efforts for SO 1.4 (Storage that Enables Trade/Finance) discussed above, promote:
 - Small-scale storage options for low-income producers in the North, a
 - Larger more professional warehouse and silo network option for the Center region, and
 - A logistics-related investment in the South to facilitate cereals delivery.

3.1.3 *Establish joint food security strategy with aid organizations.*

- Facilitate commitment among MIC, MASA, INGC and WFP to ensure market-based decision making is preserved to most efficiently meet food security needs.
 - Define parameters for direct market intervention.
 - Maintain cash reserves rather than physical grain reserves.
 - Avoid GRM requiring mandatory purchasing from Mozambique versus importing, particularly when those choices are politically driven rather than market driven.
 - Coordinate ICM/WFP's network of private transporters and traders to reduce dependence on international, subsidized procurement systems.

3.2 Facilitate Private Sector Response Capacity: *Develop buy-in for a public-private strategy for grain reserve storage that serves both a market development purpose and a food security purpose.*

3.2.1 *Develop Private Sector Cereal Reserve Strategy.*

- In coordination with efforts for SO 1.4 (Storage that Enables Trade/Finance), engage private sector players in outlining a cereal reserve strategy and framework.
- Conduct an outreach campaign disseminating the new public-private collaborative approach.
- Prepare future participants in the WRS (traders, storage facility lessors, financial institutions) to understand the strategy of maintain a floor level of grain reserves for emergency purposes.

3.2.2 *Establish agreements with private traders/producers to maintain small strategic reserves.*

- Facilitate agreements with private traders using publicly owned storage facilities, with the aim to establish small strategic reserves in certain regions while full private storage market is still developing.

3.3.3 *Assess Food Security Warning Systems & Communications Mechanisms.*

- Lead a consultancy to assess current food security warning systems and communication mechanisms.
- Recommend strategy for ICM/INGC/WFP to attempt advance planning, purchasing and placement of stocks (preferably private reserves).

SO4: ADVOCATE FOR REFORMS THAT ENABLE CEREALS MARKET DEVELOPMENT

Be the aggregator of ideas, identify bottlenecks, and lead market development reform. Given most market development roles are best suited to the private sector, the GRM should keep in mind the one role the private sector cannot fill: reducing agricultural marketing costs. Only the state has the capability to do this. This includes work to improve transportation, expand market information, enforce legal contracts and facilitate contract dispute resolution, free both the formal and informal traders from excess regulation, reduce graft from police checkpoints, and assure safe high quality product goes to market. All this market development work is captured across SO1 and SO2 above – the key that turns the ignition for successful market development is a smart enabling framework. ICM is best placed to play this role, aggregating ideas along the cereal value chains, then championing the policy, regulation and public-sector investments that result in the development of efficient cereals value chains.

4.1 Support Free Trade in Cereals & Grains: *Serve as a leading voice for free trade and the coordinated movement of grains from areas of surplus to areas in deficit, led by private sector actors.*

4.1.1 Advocate against excess public market intervention.

- Prevent any reforms that make it mandatory for farmers to sell their product to commodities exchange houses.
 - Evidence shows that mandatory mechanisms, like the Ethiopian Commodities Exchange, can end up driving down farm-gate prices.
- Ensure ongoing and expanded role of private sector management of grain storage assets.

4.1.2 Participate in trade negotiations or agreements with neighboring countries.

- In coordination with SO 1.2 (Trade Expansion), explore the opportunity for border regions to participate in established exchanges.
- In alignment with market linkages and regional trade activities (SO 1.2.1, 1.2.2), engage neighboring countries in cereals trade strategy and efforts to meet country deficit needs, which will help inform and optimize the ongoing storage strategy.

4.2 Lead the Aggregation of Policy & GRM Investment Needs for Market Development: *Take a leadership position in identifying and harmonizing policy, regulation, and government investment needed to build capacity for each of the functions necessary for market development – and advocate for their approval and implementation.*

4.2.1 Support development of private sector constituent group for advocacy.

- Engage the Confederação das Associações Económicas (CTA) to align the priority policy and regulatory issues with the agenda for ICM.
- Arrange ongoing communication with the provincial associations to bring regional enabling environment concerns to the national stage.

4.2.2 Inventory, Prioritize and Assess laws/procedures considered barriers to market development.

- Inventory and assess relevant laws, regulations, procedures, etc. and recommendations for priority interventions, such as:
 - Development of grades/measures/standards (this is an area of SPEED+ work with INNOQ, the National Institute for Standardization and Quality under the MIC).
 - Improving SPS compliance capacity (this is an area of SPEED+ work).

4.3 Build Capacity in Market Development: *Play a lead role in educating and promoting participatory market development in Mozambique, where value chain actors openly communicate ideas to ICM that will build cereals sector competitiveness.*

4.3.1 Run broad trainings for private sector players and for key government stakeholders.

- Highlight the importance of quality standards and their impact on market price potential.
- Develop easy-to-communicate case studies of ICM's 'listening' role to showcase how the institute can work quickly to advocate for reforms pushed by value chain actors.

4.3.2 Collaborate with universities to incorporate this into agribusiness education.

- Assemble an inventory of public and private universities to assess potential for partnership.
- Work with universities to not only adapt upgraded market development curriculum for students, but also to design short courses and workshops targeted at mid-career professionals.

CONCLUDING REMARKS

ICM's current *modus operandi*, and arguably the institute's greatest value in the market today, is to act as an "honest broker," facilitating producer-trader-buyer contacts and assisting producers and traders from remote rural regions with market access. Looking forward, ICM will need to combine its traditional role of owning/leasing storage assets with a facilitative role in market development and policy advocacy. With proper coordination, the institute can help align cereals storage strategy to meet both private sector and food security objectives, at a much lower cost than a state-owned operation.

This initial Strategic Plan is a starting point for the restructuring of ICM, and upon draft review and further development, the SPEED+ team will support in developing the mechanics of a clear Operational Plan to help the institute evolve into its new role.

ANNEX A: RELEVANT CEREALS CASE STUDIES

Case Study I: Warehouse Receipts (South Africa)

South Africa's JSE/SAFEX delivery mechanism and silo receipts

Building on well-developed physical infrastructure at the time of deregulation, the South African grain industry developed a robust system for physical delivery that integrates the futures with the cash market (including silo owners), and the commodity with the finance sector. As well as the infrastructure in place, two elements were key to developing this system: a legal framework for the issuance and transferability of the silo receipt, and the collaboration of all parties - the exchange, the silo owners, the financiers and the grain industry participants - in designing a system that addressed industry requirements. As a result, JSE/SAFEX provides a guaranteed channel for physical delivery and procurement, ensuring that spot and futures markets are highly correlated, and that farmers and other grain industry participants have easy access to finance using their grain as collateral. The main elements of the system are as follows:

Delivery period: On JSE/SAFEX, physical delivery can take place anytime during the delivery month (i.e. a futures position in the July contract can only be delivered during July). With the introduction of constant month contracts, this means that maize and wheat can be delivered during every month of the year.

Delivery process: Physical delivery on the exchange takes place over a two-day period - the notice day followed by the delivery day. From the exchange's perspective, delivery is fulfilled when a JSE/SAFEX silo receipt representing 'good delivery' is presented in completion of a futures contract. Good delivery can be further defined as a silo receipt which allows access to the product as defined on the face of the receipt by the silo operator.

Issuing a JSE/SAFEX silo receipt: To be issued with a JSE/SAFEX silo receipt, a farmer must deliver the amount specified on the standardized futures contract to one of the 200+ approved delivery points (silos) in South Africa. This is unique in terms of world standards - for example, the CBOT has only four delivery points. Upon request, the silo owner issues a JSE/SAFEX silo receipt in the farmer's name. This is a highly secure document, issued in triplicate, and there have not been any forgeries to date. The receipt is freely transferable, but not negotiable, and represents title to a specified quantity of a specific quality product, free alongside rail, at a registered JSE/SAFEX silo. A silo receipt may also be issued electronically, as these have become recently accepted by certain clients and issued by a limited number of the large silo operators.

Performance guarantee: Delivery or procurement of any listed commodity is always guaranteed on the exchange. Should a market participant default on a contract, their broker would assume the position. If the broker is unable to assume the market participant's position, the broker's clearing member would stand in and assume the position. This system ensures that the market participant on the other side of the contract is always guaranteed fulfillment of their position.

Transfer of the receipt: Once the JSE/SAFEX silo receipt is received by the exchange, properly signed off by the previous owner, it will be handed over to the new buyer who will sign and accept ownership of the receipt. This transfer of ownership takes place on the back of the original JSE/SAFEX receipt. As the receipt is tradable, transfer of ownership may take place many times before the product is finally out-loaded.

Financing through silo receipts: A number of institutions offer financing using the silo receipt as collateral. In this case, the silo receipt is handed over and transferred in the name of the financing institution which will keep the silo receipt as security. Should the client default on the transaction, the institution will trade the silo receipt in the marketplace to settle the loan.

Out-loading the physical stock and canceling the receipt: Once the owner of the silo receipt has decided to collect the physical product represented by the receipt, the original silo receipt is presented to the silo owner who issued it. The silo owner will check the validity of the silo receipt and once all outstanding storage has been paid, out-load the product as per the final buyer's instructions. At this point in time the silo receipt is cancelled and cannot be traded any longer.

Source: http://unctad.org/en/Docs/ditccom20089_en.pdf

Case Study 2: Market Information Systems (South Africa)

The South African Grain Information Service (SAGIS)

The South African Grain Information Service (SAGIS), a non-profit company, was established on 11 November 1997, after the deregulation of the marketing and control boards in South Africa, to supply the grain and oilseeds industry with essential market information. The four industries which are served by SAGIS, are:

- Maize (white and yellow separate)
- Oilseeds (sunflower, soybean, canola & groundnuts)
- Winter cereal (wheat, barley & oats)
- Sorghum

Before deregulation the control boards of the four industries managed the information service. The Marketing of Agricultural Products Act, 1996 brought an end to single channel marketing and the control boards. Role-players, however, realized the importance of reliable information for the functioning of a free market and have co-operated to establish SAGIS.

The main goal of SAGIS is the gathering, processing, analyzing and timely distribution of reliable agronomic information to all role players. SAGIS is also entrusted with other functions, for example the monitoring of import tariffs, audit certificates for minimum market access, etc. How is SAGIS empowered to obtain information? Market participants (co-workers), e.g. storers, processors, importers and exporters of above grains and oilseeds, are statutory compelled under the Marketing Act of Agricultural Products, Act 47 of 1996, to register with SAGIS and to submit information. A co-worker that does not adhere to the requirements of the statutory measure is guilty of an offence and can be prosecuted. Fortunately, co-workers realize the importance of reliable information and co-operates mostly by submitting returns timeously and regularly. Number of market participants supplying information.

The total number of co-workers changes continuously due to the entry of new market participants or the exit of existing firms that close their doors. The number of co-workers and number of returns that are submitted are published in the annual report of SAGIS. (A copy of the annual report is available on the web.) Notwithstanding co-workers who are statutory compelled to supply information, various other partners provide information on a voluntary basis. This is used as a measure of control to evaluate the information for completeness and reliability before it is released.

SAGIS releases the following information:

- Monthly Data (MD) Variety data sets with stock, producer deliveries, imports, exports and consumption. This is released towards the end of each month.
- Weekly Bulletin (WB) This is a collection of local and international information such as prices, stocks, import parity prices, economic indicators, the food prices of Statistics SA, weather conditions, etc.
- Weekly imports and exports (maize and wheat)
- Weekly producer deliveries (maize and wheat)
- Maize and wheat Product Information

The above-mentioned information plus a historic database and much more are available on the website. The MD and WB are distributed on request but the information is also published on the website.

Source: <http://www.sagis.org.za/Introductionx.pdf>

Case Study 3: Storage (Oman)

PASFR joint ventures with private flour mills in Oman

Oman is 0.8 percent self-sufficient in grain production, with low levels of cultivation of land due to lack of water for irrigation. Given this situation, Oman cannot achieve self-sufficiency in food production and will continue to be heavily dependent upon the import of grains for domestic consumption. In addition, with demand showing an increasing trend with population growth, new industrial zones, and greater inflows of foreign workers, it is expected that Oman may have to rely solely on imports to meet food security needs by 2050. In the aftermath of the global financial crisis and continuing food price volatility, given the high import dependence, the government decided to increase its wheat storage capacity from six months to a 17-month supply. In addition to ensuring food security for its population, Oman also envisages itself as a hub for grain trade in the Middle East and North Africa region.

The Public Authority for Stores & Food Reserves (PASFR) was established in 1980 with a mandate to maintain strategic food reserves as well as to ensure domestic price stability of basic commodities. PASFR is also responsible for constructing and maintaining warehousing for basic commodities. PASFR envisages increasing private participation in order to fulfill this mandate, and it has established joint ventures for this purpose with Atyab Investments LLC²⁹ (with 51 percent government shareholding) and with Salalah Mills Co. (with 4 percent government share). In Oman, the Ministry of Commerce and Industry is structuring a deal for the construction of steel silo storages at two port sites: 300,000 MT at Sohar port³⁰ with Oman Flour Mills and 120,000 MT in Salalah Port with Salalah Flour Mills. The agreement is a build-own-operate-transfer (BOOT) model.

Case Study 4: Storage (India)

PRIVATE FINANCING OF STORAGE INFRASTRUCTURE THROUGH THE PRIVATE ENTREPRENEURS GUARANTEE (PEG) SCHEME IN INDIA

Government procurement of wheat rose progressively from 9.23 million tons in 2006–07 to an estimated 40 million tons in 2013–14. In July 2008, the FCI launched the PEG Scheme, aimed at increasing the storage capacity for consuming states to four months of Targeted Public Distribution System (TPDS), and for procured food grain in producing states to meet the highest stock levels recorded in the previous three years. The PEG Scheme was started for states that do not participate in Decentralized Procurement (DCP), with facilities delivered under the program used by FCI to store Central Pool grain stocks. It was extended to the remaining states in 2009. As the name implies, the program provides a guarantee of usage of godowns (warehouses) to private developers that deliver those facilities.

The 2008 PEG Scheme was designed to increase the number of godowns through Central Warehousing Corporation (CWC), State Warehousing Corporation (SWC), and private entrepreneurs, based on providing guarantees for a period of five, seven, or 10 years. The minimum capacity of storage facilities to be procured under PEG is 5,000 MT for plain areas and 1,670 MT for hilly areas, requiring a minimum of two acres and 0.82 acres of land respectively. The construction period for the godowns is set at one year for non-railway siding facilities and two years for railway siding facilities, with the option for a one-year delay in construction resulting in a corresponding reduction in the guarantee period. The procurement process involved two-stage bidding.

The program has the following features:

- The three parties involved in the PEG scheme are the FCI, the CWC/SWCs, and the private party. It involves two agreements for each project, one between the FCI and the CWC/ SWCs, and the other between the CWC/SWCs and the private party.
- The private party is selected based on a two-stage open bidding process.
- The monthly rate of rent to be paid to the private party is the sole selection criterion. Other factors considered as part of the technical bid prior to and separate from the financial bid are as follows: suitability of site based on distance from rail siding and other conditions; and the technical capacity of the bidder.
- The private party finances and constructs the storage based on technical specifications issued by FCI.
- The CWC/SWC hires the storage from the private party upon completion of construction. • Five years upwards of guaranteed storage is provided to the private party.

- The private party can have contiguous storage for private/ commercial storage operations.
- The CWC/SWC is responsible for overall operations and bears the performance risk (i.e., the losses). The CWC/SWC can handle food grain preservation, security and other activities itself or outsource these to a private party.
- All payments are borne by the FCI under the PEG scheme guidelines.
- The payment mechanism for FCI payments to the CWC/SWCs has the following components: a. Payments made by the CWC/SWCs to the private party; b. Expenses on food grain preservation and security; and. c. Supervision charges which are up to 15 percent of component A.
- As of July 31, 2013, more than seven million MT of new capacity had been delivered under the PEG Scheme.

Annex B: Benchmarking via a Typology Matrices

Including: Grain Reserve Activities, Market Information Systems, Warehouse Receipt Systems

i) Typology of Grain Reserve Activities

	EMERGENCY			INTERVENTION		
	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
	X	X		X	X	X
Kenya	<p>Kenya's National Cereal and Produce Board (NCPB) procures, stores and maintains a Strategic Grain Reserve (SGR), established in 2002. It stocks up to four million bags on behalf of the Government to be used for food security. The government has instructed the NCPB/SGR to stock up to eight million bags. NCPB has the capability to turn over the SGR stock through releases to commercial outlets and/or to social functions.</p> <p>The management of the SGR stocks also entails periodic replacement of stocks to facilitate freshening of the grain to ensure that the stock is of high quality at all times. However, it has had problems of spoilage and been criticized for mismanagement of grain stocks over the last decade.</p> <p>NCPB stores maize reserves around 8 million sacks of 90 kg. The total of 720,000 tons is almost entirely domestically purchased maize. For this reason, the government dedicates funds every year to ensure there is backup maize in the silos that can be released in an emergency.</p> <p>NCPB carries out social duties on behalf of the government: procuring, storing and maintaining the grain reserve; distributing emergency relief grains under the National Famine Relief Program; and intervening in markets by fixing prices for wholesale grains.</p>			<p>NCPB engages in commercial grain trading. It deals in various products and offers related services to its clients in competition with other players in the industry. Besides trading in key grain products such as maize, wheat, beans, rice, millet and sorghums, the Board offers the following additional services: leasing out surplus facilities, grain drying, weighing, fumigation, grain cleaning, grading, warehousing, bagging at silos, clearing and forwarding, and hiring of tarpaulins and dunnage.</p> <p>The Board has diversified into the marketing of various agricultural inputs such as fertilizers and certified seeds as part of the strategy of enhancing efficient cereal production through the use of affordable quality inputs. This move was undertaken in response to farmers' requirements and the need for the Board to take advantage of its extensive network to move these essential inputs closer to the farmer.</p> <p>NCPB also has the mission of stabilizing prices. In times of low prices, it attempts to raise producer prices by announcing a purchase price above market prices, and when prices are deemed too high, it can sell its stocks in the market. It fixes prices for wholesale grains. Some studies however, including by the World Bank (2011), argue the government has intervened in maize markets in ways that have kept maize prices high and have had little impact on price stability. They also claim evidence that the maize market interventions are generally anti-poor, in the sense that they raise prices paid to large-scale farmers at the expense of consumers – especially poor urban households and the majority of poor rural households, who are all net buyers of maize.</p> <p>The Kenyan government also promotes price stabilization and producer support prices for maize by importing maize for the reserve, supplying maize to millers at fixed prices. NCPB also acts as a commercial trader, just like any other private actor, selling maize and other commodities, often with its own brand names.</p>		

	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
Tanzania	X	X	X	X	X	X
	<p>Tanzania's National Food Reserve Agency (NFRA) aims to guarantee national food security by procuring, storing and releasing food stocks. The NFRA's main purpose is to address food emergencies. It operates 30 storage facilities and 90 – 120 buying centers around the country.</p> <p>Tanzania's reserve holds mainly maize, but also a small quantity of sorghum. The NFRA operates in seven zones, which are both surplus and deficit areas. It operates 30 storage facilities with a capacity of over 250,000 tons. One third of the stock is rotated each year. However, the NFRA deals in only small volumes and has less impact on the market than the NCPB in Kenya. Government purchases (of a maximum of 150,000 tons) and releases usually amount to less than 10 per cent of national marketed consumption.</p> <p>Emergency food stock releases are normally made when the country runs short of adequate harvests following droughts or other disasters, and normally target families who are not capable of carrying out normal economic activities.</p> <p>Households receive subsidized or free grain which are identified by village committees and their eligibility confirmed by local government staff.</p> <p>There are however questions as to whether emergency food releases are targeted at those most in need. A World Bank (2011) report noted that there was 'no good data' on the accuracy of targeting while other survey data show that rural households receiving food distribution benefits are spread fairly evenly over wealth quintiles. Maintaining the reserve at sufficient levels has also been sometimes shown to be a problem.</p>			<p>To a lesser extent, the NFRA also aims to stabilize prices by purchasing food staples in surplus areas and selling at subsidized prices in deficit regions. Its intervention is however limited. The inability to significantly influence prices is largely due to lack of finance and storage capacity.</p> <p>Government purchases do create incentives for farmers to increase production by offering them guaranteed purchases at fixed floor prices that are around 10 per cent higher than market prices. But price support to producers is also temporary only, occurring during procurement, and this support is offset once stocks are released onto the market.</p> <p>In terms of international trade, in 2014, for example, the government had to make emergency imports of 20,000 tons of maize from Zambia to address acute food shortages; at the time, the grain reserve was at too low a level to address food needs.</p>		

	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
Zambia	X			X	X	X
	Zambia's Food Reserve Agency, since about 2005, has become an active player in buying the maize surplus in the country, holding over 350,000 tons of maize. Grain reserves are drawn down in years of drought. However, the agency is often subject to criticism for squeezing out private sector trade and contributing to overproduction. For example, in 2010, it held a 1-million-tonne surplus that could be neither adequately stored nor exported, resulting in a price collapse.			The Food Reserve Agency also has commercial functions, such as grain marketing and market facilitation, that are more characteristic of marketing boards. It buys most of the surplus maize to support incomes of small farmers. The Food Reserve Agency also exports surplus maize, often at a loss, which represents large cost to the national budget.		
	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
Ethiopia	X					
	<p>The GoE has operated an emergency grain reserve targeting 407,000 tons for about two decades. At the same time, it has privatized all grain processing companies, despite the fact that it maintains a wheat import monopoly and cooperates with international food aid donors to operate a grain reserve for safety needs.</p> <p>Through the Emergency Food Security and Reserve Administration (EFSAR), it has successfully addressed emergencies in several instances since the 1990s, when the agency responded in timely manner by releasing about 94,000 tons of grain on loan to NGOs and 52,000 tons in free drawdowns to the government relief agencies. These interventions helped mitigate food shortages, prevented migration toward urban centers, and protected smallholders' livelihoods (FAO 2004).</p> <p>Although the EFSRA's target stock level is 407,000 metric tons, it has only seven warehouses with an effective capacity of 285,000 metric tons. Monthly stock data by storage site indicate that, on average, EFSRA held a stock of 179,000 tons during 2004–2009, which is about 63 percent of the effective capacity, 46 percent of total capacity, and 44 percent of the target stock level. At the warehouse level, capacity utilization rates have varied from only 25 percent to 80 percent.</p>			A key distinction between EFSRA of Ethiopia and the reserves of many other countries is that EFSRA does not engage in buying, selling, transporting, and distributing grain. Instead, the agency serves as the custodian of the stock, built through donor and government contributions. More specifically, when the target stock level of 407,000 tons was determined, government and donors made pledges to build up that stock, mainly through food aid and imports. This is a one-time procurement exercise. Once the stock level is reached, the national and international agencies can borrow from the EFSRA with a guarantee that they will replenish the stock within an agreed-upon time period. The main responsibility of EFSRA is to manage the lending and replenishment of stock according to its operational guideline. All transactions must follow strict procedures set by the EFSRA executive board.		

	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
Nigeria	X			X	X	
	<p>Nigeria has adopted a policy that 15 percent of the total annual grain harvest should be held in reserve. The National Food Reserve Agency (NFRA) holds 5 percent as a core strategic grain reserve, and individual states hold another 10 percent as so-called "state buffer stocks." The development of these grain reserves is part of government's efforts to transform the agriculture sector, prevent hunger, and stabilize food prices.</p> <p>This policy initiative has already been backed by significant investment.</p> <p>From 2010 to 2014, Nigeria added total storage facilities of 1.2 million metric tons' capacity grain reserves to its strategic reserves across the 36 states of the federation. But the current strategic capacity of the country is only about 35 percent of the recommended food security levels. Even more so as just 7 out of the 33 silos in the country are functional.</p>			<p>Besides eventual buy/sell interventions to stabilize food prices, in late January 2017, the government (re)launched the Growth Enhancement Scheme (GES) to provide support to farmers through subsidized agricultural inputs. Despite this news, rural/small holder farmers and cottage agribusinesses, who contribute to over 80 percent of the country's agricultural production, continue to demand greater government support, in line with previous governments' tradition.</p> <p>Conversely, the few large-scale agri-businesses note that government withdrawal of support, especially the Growth Enhancement Scheme, allows them to better plan as government support was typically provided towards the end of the production season when it was least beneficial.</p>		
	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
India	X	X	X	X	X	
	<p>Food Corporation of India's founding objective was to maintain satisfactory level of operational and buffer stocks of food grains to ensure national food security. Another objective was to distribute food grains throughout the country for public distribution system.</p> <p>The Food Corporation of India coordinates the movement of both rice and wheat from surplus to deficit states. This scheme is estimated to cost the Indian government \$20 billion per year. The main purpose of state grain purchases is for distribution of food rations to the poor. This is done through state level Public Distribution Systems that supply cereals to Fair Price shops in every village and city district.</p>			<p>The third goal of the Food Corporation of India is to provide price support operations for safeguarding the interests of the farmers, which it does by buying/selling grains in the market, influencing also market prices.</p>		

	Food Safety Nets	Public Distribution System	Subsidized Food	Buy/sell to support/dampen prices	Boost farmers' income	Export surplus/Import to stock
	X			X		X
Turkey	<p>The Turkish Grain Board (TMO, in Turkish) keeps a strategic reserve for emergency use and in case of war. It maintains a minimum level of grain in storage, which may be around 2 million tons, though the figure is not published.</p>			<p>The TMO's main role is to intervene in the market, buying grains from farmers when prices fall below a predetermined floor level based on production costs. Turkey's wheat harvest runs from May to August. During this period and until November, TMO takes in grain only from its 2.6 million registered farmers, 1.6 million of whom grow wheat, at over 203 of its own purchasing centers. It sets its price for sales to the market in November or December. Usually this price allows a sufficient margin over the minimum purchase price to cover all operating costs of the organization. Market sales can begin as early as September.</p> <p>When stocks are in excess, TMO sells them off to the international grain trade for export. In 2010, TMO sold 200,000 tons of wheat, while Turkey exported 1.16 million total tons. To accommodate its import and export operations, TMO has 528K tons of port silo and warehouse storage capacity together with ship unloading and loading facilities at a number of ports on the Black Sea, Sea of Marmara and the Mediterranean.</p>		

ii) Typology of Market Information Systems

Recognizing that all market information systems (MIS) are various forms of ICT platforms, the typology below breaks the MIS types into three categories of services because they each represent unique methods for providing these services. The MIS systems listed toward the top of the table below are the more comprehensive and market-driven. The MIS systems toward the bottom of the table are less comprehensive, but still valuable in terms of considering the various options when developing a new MIS system.

MIS System	Country	Type of MIS			Business Model/ Link
		Market Prices	Services	Transactions	
Esoko/Tulaa Asset Finance Platform based on SMS and call center	Ghana, Kenya	Market prices of crops and inputs	Financial services provided by 3 rd party Agricultural tips and weather forecasts are bundled to other packages	Provides the platform for the buying and selling of crops, inputs access to financial products (loans and savings)	Private company that receives commissions on transactions. https://nextbillion.net/why-we-broke-up-the-company-a-former-ceo-of-m-agri-pioneer-esoko-explains/
M-Farm Platform operates via Nokia	Kenya	Daily market prices and trends for crops, vegetables and fruit	Agriculture tips available on a blog site	An online market place allows buyers and sellers to post their products, but transaction takes place externally	Subscription-based service. https://www.mfarm.co.ke
Lima Links Ltd Platform operates on Airtel	Zambia	Market prices of crops and inputs	None	Connects farmers with bulk buyers, market agents and input suppliers	Private company started with NGO support (iDE). Revenue also from advertisements and commission/members. http://www.limalinkszambia.com
InfoTrade (by FIT Uganda)	Uganda	Market prices of crops, and some animal products sent via SMS, radio and noticeboards	FARMIS is a farmer record management service via InfoTrade Also, produces agricultural newsletters	Provides information on commodity offers and trade services, but not executed on the platform	Started with Danida support but now operating partially on a subscription-based model. http://www.infotradeuganda.com
e-ZNFA	Zambia	Market prices for crops and livestock via SMS or website	None	None	Service of the Zambia National Farmers' Union. http://www.znfa.org.zm

Ovi Life Tools Platform operates via Nokia	Nigeria	None	Agriculture and other information provided via SMS	None	https://www.naijatechguide.com/2010/11/nokia-ovi-life-tools-now-in-nigeria.html
Ethiopia Livestock Market Information System (E-LMIS)	Ethiopia	Livestock prices with detailed geography is the Oromo District via SMS	None	None	Supported by donor programming (Connect4Change/iicd). Website includes trend data targeted to early warning activities. http://www.lmiset.net/Pages/Public/About.aspx
Agricultural Market Information System	Cameroon	Market prices via SMS	Agricultural information via SMS	None	For-profit NGO. http://stealth.unreasonableinstitute.org/wp-content/uploads/2010/12/EXECUTIVE-SUMMARY-AMIS-CAMEROON.pdf
AMITSA	Burundi, Kenya, Malawi, Mozambique, Rwanda, Swaziland, Tanzania, Uganda and Zambia	Market prices via SMS and web-based	Agricultural information via SMS and web-based	None	https://ifdc.org/amitsa/
RATIN	Zambia and surrounding countries	Market prices via SMS	Ag information via SMS	None	A social venture. Business model is not clear. http://ratin.net/site/about/108

iii) Typology of Warehouse Receipt Systems

Type	Country	Description	Outcome	Pros	Cons	Conditions
Inventory Credit System	Madagascar	Decentralized version where MFI's provide financing based on bags of commodity stored at the household/village and locked with a double-padlock system (Greniers Communautaires Villageois)	100,000+ tons/year Improves resilience with more food stocks and savings held in rural area	No regulation or insurance required Uses peer pressure and local trust to have high (99%) repayment rates Formal warehouses not needed	Government interference in markets can undermine success	Requires rural MFIs and banks that back the financing via MFIs Works best when seasonal prices vary significantly (> 30%)
	Niger	Centralized version where 3 MFIs work through 125 producer organizations with warehouse access	5,000 tons/year (less than 1% of national production) Financing to 125,000 farmers at 2.5% per month interest Handles cereals, dehydrated vegetables and attempting onions	Commodity is more secure since it is held at a central warehouse (compared to being held at home/village level in Madagascar's decentralized model) Repayment rates are high (near 100% due to producer organization peer pressure) but participation is low due to the need for additional collateral, timing and membership in a producer organization	Without collateral managers, the model only accepts products and allows farmers to repay/cash out at 2 or 3 times per year when the warehouse is opened. This timing is not always convenient.	Requires that farmers are organized in producer groups that can liaise with MFIs

	Burkina Faso	Centralized version recently expanded to include collateral managers at the warehouses. Works through 2 MFIs (backed by Coris bank) and producer organizations.	~4,300 tons/year of cereals, oilseeds and legumes 10 – 15% annual interest financing for 4021 producers covering half of the provinces	Same as above (Niger) but involving the collateral managers improves the flexibility for timing.	Same as above (Niger) but with the additional risk introduced by the collateral manager if their capacity is low	Same as above (Niger)
Private Warehouse System	Cote d'Ivoire	Builds on the traditional model (export crops are held in a private warehouse managed by a collateral manager who issues a warehouse receipt to a bank, who then finances the exporter) by moving the warehouses inland (away from the port)	The inland warehouse option isn't yet effective	Results in an improved linkage to the producers	Infrastructure away from port is less optimal (warehouses, power, internet, bank branches) Banks do not trust the inland warehouses as much	
	Senegal	Builds on the traditional model (see above) to stimulate production for import substitution . The miller (Vital) advances funds to producer organizations based on paddy deposited. The PO then finances its producer members.	29,510 tons of paddy (rice) per year 6,800 producers receive input financing to increase production and quality	Driven by private sector with linkage to a bank	Collateral managers at the producer organization warehouses are weak. The locally produced rice is still struggling to compete with imported rice.	Requires leadership from private sector with close linkage to a bank and producer organizations
Public Warehouse System (often linked to commodity exchange)	Uganda	Producer organizations, traders or farmers deposit commodities at a registered warehouse (there are currently 2) and receive a warehouse receipt that they use to secure financing or trade.	8,000 tones per season Works with 162 producer organizations that benefit 10,000 farmers	Banks trust the warehouse receipt issued due to the quality collateral management system (eWRS) Buyers requiring quality maize would have a good source, but in reality, there	Regulatory system is challenging and still not working Difficult reaching the scale needed due to low market demand for stored maize (it is produced in 2 seasons and consumed quickly)	Requires enabling legislation and quality commodity management (Uganda has an electronic system linked to South Africa)

				were few buyers seeking quality (occasionally WFP).		
	Ghana	Certified warehouses issue WR to members that deposit products on behalf of GGC, a private membership organization. GGC certified 7 warehouses (based on certified warehouse operators and inspection services) that belong to the 60 member companies. Funds are pushed to farmer organizations (via one GGC member Weinco) to provide input packages to farmers.	29,500 tons of maize stored and 6,900 tons financed annually Weinco in turn contracts 9,000 smallholder farmers (via MAFA) to produce 60,000 tons of maize annually.	Achieved a 3 – 4-fold increase in maize yields (her ha) due to farmers having the right inputs coupled with advisory services Private-sector led	Repayment is low, approaching 90% in remaining areas, although some areas dropped due to poor repayment/sideselling	Requires private sector leadership and availability of quality warehouse managers and inspectors in country The farmer-loan portion is also based on an intermediary “repo” company
ZAMACE	Zambia	Warehouse receipts linked to commodity exchange and certified warehouses. Private sector initiative now linked to farmer’s union, producers, and many buyers and other stakeholders.	Trading volumes are good but warehouse receipts just now getting started via FNB and Stanbic bank. 6 warehouse operators participating with 750,000 MT capacity.	Links producers, buyers, transporters, storage and provides opportunities to trade futures. Developed grades and standards, and standard contracts to facilitate business.	Bank participation has been slow to materialize. Stanbic bank just signed up this year.	Needed authorizing and implementing legislation (Ag Credit Act 35 in 2011 and then Statutory instrument 59 in 2014). Trading platform built in WFP support. Stakeholders are represented on the board.
ACE	Malawi	Warehouse receipts linked to a trading platform. Developed by private and public sector working together.	Issued 1 st warehouse receipts in 2011 with 2015 volume reaching 50,000 MT via 4 banks. Warehouse receipts represent ~60% of traded volume via platform.	Required donor and public sector support to get started, but private sector is now in the lead.	Demand exceeds banks’ willingness.	World Food Program was a major buyer in the beginning to help it get started, but is now a minor player.
Lending against current or	Cote d'Ivoire	This option is being explored since financiers already lend to farmers based on the security of their rubber crop.		By formalizing finance of future production, gaps in production financing could be better addressed. This may	Collateral/Security is already very challenging in most of Africa, making the use of “paper” security even riskier.	Would need to be limited to crops that are not easily side-sold

future production				also be an improvement on outgrower schemes.		
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