



Integrating Risk Management Tools and Policies into CAADP: Options and Challenges

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In Brief

- *Increased investment in agriculture requires coherent and integrated long-term strategies and policies for reducing risk aversion and building the resilience of African rural producers.*
- *It is recommended that policy decision-makers adopt an integrated and holistic approach in support of risk management interventions through incentives and by strengthening agricultural markets and financial institutions.*
- *National agricultural development plans and policies need to integrate risk management policies and strategies.*
- *Government policies and involvement in markets should be consistent, transparent, and predictable to trigger less distortive interventions in the market and foster private investment in risk management activities.*
- *Governments should sustain long-term market development with investments in basic services such as definition of grades and standards, contract enforcement and market information to create a supportive institutional environment where more modern risk management tools can thrive.*
- *Policy-makers need to recognize the critical importance of social protection that complements risk management initiatives.*

I. Background

Risk can be defined as the probability of occurrence of hazards and shocks that impact negatively on agricultural production, trade, markets and consumption. They are major impediments to expanding financial services in agriculture and agri-food chain. Agricultural risks can be related to several factors among which price volatility, market and institution failure, weather shocks such as drought and floods, and to biological factors such as insect pests and crop diseases. All these risk factors affect the entire agricultural value chain and are highly interrelated and correlated. Access to risk management tools enhances investment and contributes to building resilience of the most vulnerable populations by helping them overcome upcoming shocks and hazards and protect their assets effectively.

In Africa, price and production risks have discouraged agricultural investment and technology adoption for decades. They have become a major concern and a critical area of engagement for the Comprehensive African Agricultural Development Program (CAADP). This policy brief is one of a series that is being developed to disseminate knowledge around key policy instruments that can be used to mainstream integrated risk management strategies into national and regional agriculture

and food security investments plans (NA&FSIPs). The objective is to analyse different price and disaster risk management tools, as well as the challenges of their application in Africa, and document country experiences to guide decision-makers in the mitigation of the negative effects of production and market and price volatility.

II. Reducing price volatility

Numerous options are available to manage price risks (Table 1), among which warehouse receipt systems, commodity exchanges, contract farming, grain stock management and price and tariff policies stand out as the most common.

Table 1: Price risk management tools

Price Risk Management Measures	Specific Tools
Warehouse Receipt Systems	<ul style="list-style-type: none"> • Inventory credit (government/community/private) • Transferable receipt system
Commodity Exchanges	<ul style="list-style-type: none"> • Spot Contracts • Futures Contracts • Option Contracts
Contract Farming	<ul style="list-style-type: none"> • Out-grower scheme • Multipartite model • Intermediary model
Grain Stock Management	<ul style="list-style-type: none"> • Strategic grain reserves • Emergency Reserves
Trade Policies	<ul style="list-style-type: none"> • Tariffs • Quotas

1. Warehouse receipt systems (WRSs) protect farmers from seasonal price risk variability by giving them the opportunity to store their product and receive a receipt indicating the existence and availability of a stored product. Transferable receipts can be sold or be used as proof of collateral for loans.¹ In this case WRSs allow farmers to access formal credit markets by offering a collateralization service which is generally based on a tripartite agreement involving a financial institution, a borrower (the depositor) and a collateral manager (the warehouse operator). Transferable receipts foster impersonal trade avoiding high transaction costs. Besides these direct benefits, WRSs play an important role in introducing other market innovations like commodity exchanges.

Major challenges in implementing WRSs are related to institutional bottlenecks. It requires well-established grades and standards, an enabling policy environment, a developed financial market and an effective legal environment to enforce contracts. The Niger Warrantage or inventory credit system has found ways to overcome some of the challenges and has been successful in helping rural farmers access loans in return for their produce stored in a community based warehouse (Box 1).

2. Commodity exchanges provide a centralized marketplace and options to simplify title transfers, perform the 'price discovery' mechanism and deal with price risk and market uncertainty. In a commodity exchange, commodity-linked contracts are traded on the basis of rules and procedures determined by the exchange. The contracts commonly include:

- **Spot trading** – a basic market where commodities are bought and sold for immediate cash and immediate delivery, and the spot prices are disseminated through various media outlets as reliable and

transparent information to facilitate grain buying and selling.

- **Futures contracts** – an agreement to buy or sell a given amount of a commodity at a predetermined price and date, hence buyers use the contract to avoid the risks associated with the price fluctuations of the product, while sellers try to lock in a price for their products.

Box 2

Niger Warrantage System

Inventory credit systems targeting farmers groups can address the issue of small farmers' exclusion from the system. In Niger such an approach is represented by the so-called Warrantage System. The project helps rural farmers to access bank loans in return for their produce stored in a community-based warehouse. Once the harvest is bulked in a warehouse, the producer organization obtains a loan from a microfinance institution and distributes it to its members on the basis of their share in the total commodity stored. Short-term loans (four months), represent up to 70 percent of the commodity stored, with an interest rate of about 2.5 percent a month.

Sources:

Warrantage scheme boosts Niger farm income:

<http://www.fao.org/news/story/en/item/40281/icode/>

- **Options** – the right, but not the obligation, to buy or sell a commodity at a predetermined price at any time within a specified time period. A put option gives the option seller the right to sell the underlying commodity, while a call option gives the option buyer the right to buy the underlying commodity for a given cost known as option premium.

Well-functioning commodity exchanges require several conditions in place: large trading volumes per transaction, a huge amount of liquidity in the market, grades and standards of quality, storage facilities, a reliable banking service, and a strong legal framework to enforce commercial laws and contracts.

The challenges of meeting the different institutional and infrastructural requirements in Africa are considerable. In particular,

¹In this case, the property rights of the commodities are transferred free of any outstanding claim not reported on the receipt (e.g. outstanding storage charges), resulting in an exchange of the title of ownership over the underlying goods.

smallholders face a major hurdle of meeting the minimum quantity required to trade in such markets. For instance, on a well-functioning and sustainable exchange like the South African Futures Exchange (SAFEX) market, the contract size is 100 metric tonnes for different types of maize and sorghum, 50 for wheat and sunflower seeds and 25 metric tonnes for soybeans.

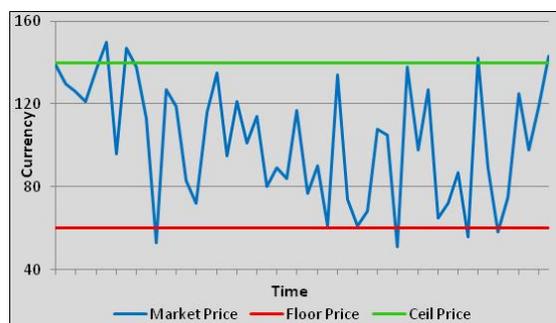
3. Contract farming is intended to solve the problems of an imperfect product market, price uncertainties and credit market failures. A contract agreement obliges farmers to supply their product to agro-enterprises or other users. The contract often includes a pre-agreed price, quality, quantity and time of delivery. By entering into contract, farmers can gain easier access to inputs along with credit from sponsors. Contract farming takes the form of outgrower schemes, a multipartite model (in which government plays a key role) and an intermediary model (in which cooperatives play a major role).

Contract enforcement and limited capacity of small farmers are major constraints, particularly as many agribusinesses and supermarkets prefer not to work with small quantities. Contract farming also works better in the case of export crops (e.g. tea in Kenya) and high value crops than staple cereals.

4. Grain stock management refers to government-maintained stocks such as *strategic grain reserves*, which are used to address food price instability, and *emergency stocks*, which are employed for food transfer programmes. Strategic stock is generally operated through parastatal organizations that announce specific prices, ceiling and/or floor prices, at which they buy and sell grains to influence market prices. The costs and impacts of stock management strategies on food prices highly depend on the threshold prices adopted for purchases and sales (Minot, 2010). The band could be set large enough so as to only require government interventions in the case of large shortages or surpluses. This would trigger small running costs and less distortive intervention in the market, but

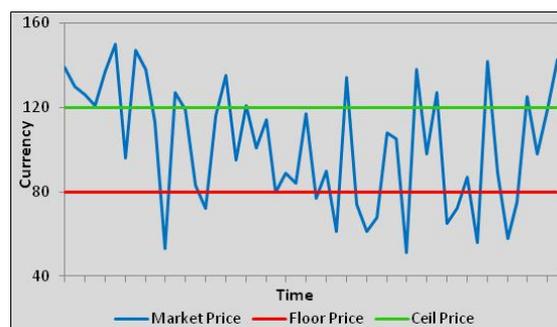
large bands would mean a lower level of price stability (Figure 1).

Figure 1: Large price band



On the other hand, a price band that is too tight allows less fluctuation than seasonal storage costs, but this would displace private trading activities and generate higher costs (Figure 2).

Figure 2: Tight price band



Many governments (e.g. Malawi and Ethiopia) have tried to intervene by releasing stocks when prices are high.

Evidence from national and international experiences, however, suggests that grain stocks have been more effective in moderating downward price movements than price increases (FAO, 2011).

5. Trade measures can be used to buffer domestic food price fluctuations. The high costs of stock management suggest that stabilization policies should not only rely on stocks, but also on **trade policies**. Open trade policy, however, fails to stabilize domestic prices when international prices are themselves unstable, too low or too high. Trade restriction measures, on the other hand, could

distort prices and make world prices unpredictable. In practice, many governments regularly apply trade restriction measures to influence domestic prices. Governments in Asia, for instance, restricted trade to prevent price transmissions from world markets to domestic markets during the 2007/08 world rice crisis (Dowe, 2012).

Tariffs are more effective trade restriction measures than temporary impositions of quotas or trade bans in stabilizing domestic prices because prices resulting from their application are easier to anticipate.

III. Reducing production/disaster risks

Disaster Risk Management (DRM) aims to improve preparedness and effective responses to agricultural threats and production losses using various options (Table 2).

Table 2: Disaster risk management measures

Production risk management tools	Specific Tools
Financial Markets	<ul style="list-style-type: none"> • Credit Guarantee Schemes
Insurance	<ul style="list-style-type: none"> • Yield/Weather Index Based
Technology Adoption	<ul style="list-style-type: none"> • High yields/resistant seeds • Integrated pest management • Remote sensing, GIS • Conservation water/ agriculture • Intensification/diversification techniques
Farm safety nets	<ul style="list-style-type: none"> • Targeted input distribution

1. Financial markets: The development of appropriate and innovative financial systems is a direct initiative on the part of the government to mitigate production risks. Financial institutions shy away from extending credit to farmers because of the high production and price risks in agriculture. Governments play a key role in

developing innovative financial products such as credit guarantee schemes that can help farmers' access credit through managing production risks.

Credit guarantee schemes (CGSs) are used to increase access to credit by covering a share of the default risk tied to loans, guaranteeing lenders a minimum repayment in case of default. CGSs absorb an important share of borrower risk and could compensate for factors such as insufficient collateral and weak creditor rights. Public guarantee schemes involve state subsidies that are less distortive for the market than other options such as subsidies on interest rates. In case of a loan default, the guarantee is paid out directly from the government budget, resulting in higher credibility within the banking sector (OECD 2011). Tanzania (Box 2), Nigeria and Kenya, for instance, have a positive experience in CGS. **Financial sustainability and keeping moral hazards at reasonable levels (minimizing deliberate defaults) are among the major challenges.**

Box 2

CGS in Tanzania

In 2008, the African Development Bank, USAID and CRDB (former Cooperative Rural Development Bank) launched a CGS in Tanzania to finance private sector participation in agriculture using US\$10 million to set up a 50 percent partial credit guarantee facility. The aim is to expand access to medium- and long-term financing for 450 small and medium enterprises (SMEs), especially in the agricultural and eco-tourism sector.

Source: *Tanzania: Launch of Historic AfDB-USAID Partnership to Finance Private Sector Participation in Tanzania's Agricultural Development* <http://www.afdb.org/en/news-and-events/article/tanzania-launch-of-historic-afdb-usaid-partnership-to-finance-private-sector-participation-in-tanzanias-agricultural-development-2442/>

2. Agricultural insurances: Insurance schemes are instruments designed to pool risks from a large population to cover pay-outs encountered by a small portion of that population. Innovative insurance schemes have become a useful tool for

poor farmers in managing climatic risks which tend to affect large population in a given area. Insurance coverage also improves credit-worthiness of participating farmers.

The most promising 'new' insurance mechanisms are **index-based insurances**: these are financial products written against specific risks linked to an index highly correlated with the production of a commodity, but not based on specific losses a farmer may encounter. **Area-yield indexes** and **weather-based indexes** are the two index insurance schemes. The first offers compensation based on the expected losses when average yield on a geographically defined group falls below a specified threshold. The second provides a payout to farmers when an index (normally rainfall) falls below a certain threshold level; the payout will compensate farmers from the reduced production.

Events that typically hit agriculture are spatially correlated, hence insurance companies operating at regional or country level are not able to pool risk efficiently and protect against systemic risks, such as droughts, floods, earthquakes, etc. **To support local insurance companies, governments or international insurance companies would need to eventually reinsure local companies at affordable premium prices.** These tools require reliable historical data to define accurate pricing, secure weather stations to increase insurance providers' confidence.

Most country experiences in Africa are still at the pilot level and are supported by international organizations and global insurance companies. For example Ethiopia, Kenya, Malawi and Tanzania are piloting different types of weather-based index insurance, particularly against risk of drought. The Ethiopian Project on Interlinking Insurance and Credit in Agriculture (EPIICA) works with a local insurance company, in partnership with an international reinsurance company, to offer rainfall-based index insurance.

3. Technology: The adoption of farm technology can be critical in overcoming production variability caused by climatic events. Improved seed varieties that offer higher and more stable yields and are resistant to multiple stresses can be developed. New technology packages, such as drought tolerant millet and sorghum, together with integrated pest management, can increase output and productivity and lower production risks. The use of new information technology, such as remote sensing images and geographic information systems (GIS) to identify yield gaps, input use efficiencies, soil and water constraints, and climate projections on regional scales, could help transform the ability of farmers to respond to resource and climate changes over time. Conservation agricultural technologies are also increasing yield levels and reducing yield variability while improved practices of agricultural intensification and diversification are generating new income and more resilient livelihood strategies for small farmers.

The main challenge in Africa is ensuring adequate investments in agricultural research, supportive policy and institutional environment and strong political commitment to support technology adoption by small farmers.

In Mali a comprehensive reform of the irrigation system, which included new legislation providing tenure security, full cost recovery and joint management of the scheme by farmers and government staff, triggered an increase in production and productivity: paddy yields increased from 1.5 to 5.5 tons/ha and production more than tripled to about 300,000 tons (Reij & Steeds, 2003).

4. Farm safety nets: The purpose of farm safety net interventions is to protect farmers against risks, such as devastation from natural disasters, limited access to inputs, or lack of resources. The most widely adopted programmes to assist agricultural production are **input distribution schemes**, which mainly focus on targeted fertilizer distributions. However, these interventions are mostly designed and implemented as ad-hoc policies without proper

planning, resulting in temporary and scattered interventions. Failure to properly target needy families and delay of input distributions are also of serious concern. **Accurate targeting of input distributions is key to limiting the costs associated to the scheme, and to avoid the crowding out of commercial sales.** The delays in fertilizer availability lower the effectiveness of fertilizer due to their late application.

IV. Institutional & policy environment and challenges

High risks and inadequate risk management tools for managing price and production risks in African agriculture are linked to weak information systems, inadequate legal and policy environment, and lack of social protection for consumers.

1. Information systems are critical in facilitating the dissemination of information for risk awareness and preparedness, market decisions, and policy decisions. Information systems in agriculture can be classified using two main categories: **Market information systems (MISs), and weather forecast and early warning systems (EWSs).**

In Africa, agricultural markets are constrained by high transaction costs caused by inadequate MISs. **MISs** gather, analyse and disseminate information about agricultural prices, quantities and other relevant information of widely traded products from rural assembly, retail and wholesale markets. However, an MIS is often construed as synonymous with price information (using daily or weekly averages). In this case, important data on trade volumes, quality/grade, location, price trends, and production data are missing. Analysis of price data to provide insight about whether prices are increasing or decreasing over time is often non-existent. Most staple crops have no clearly defined grades and standards. Some rudimentary grades and

standards may be instituted but no regulatory body exists to ensure that the grades and standards are applied; therefore, the validity of price information becomes questionable.

Problems of grades and standards, inadequate financing, inability to collect reliable market information, poor quality and outdated information, and scant information on production forecasts, and costs of production are among major constraints to functioning MIS.

The Regional Agricultural Trade Intelligence Network (RATIN) of the East African Grain Council (EAGC), a not for profit institute, provides an MIS service that includes trade flows, price analysis, trade trends and forecasts and production data, among others. Rwanda's Agricultural Market Pricing Information System (AMIS) is operated through a joint effort of the Ministry of Agriculture and Animal Resources (MINAGRI) and the Rwanda Information Technology Authority (RITA). The Kenyan Agricultural Commodity Exchange (KACE) performs mainly as a market information system focusing on the collection and dissemination of market information. However, the information provided by various MISs is not trusted and is undervalued (USAID/COMPETE, 2012). Inadequate MISs are a major constraint in the establishment of price risk management tools, such as warehouse receipt systems, commodity exchanges, grain stock management and contract farming.

EWSs collect, analyse and disseminate timely and effective information about hazards, allowing actions to avoid or reduce risks and prepare an effective response. **Preconditions for well-functioning EWSs are: data accuracy, clear risk assessment and definition of system objectives, context-based indicators, timeliness warnings, and easy-to-use information.** At country level, the Ethiopian EWS provides regular information on early warning indicators (e.g. rainfall), stress indicators (e.g. diet shift to less nutritious food) and late or outcome indicators. One

international example is the FAO-GIEWS (Global Information and Early Warning System): it combines information on prices, crop production, weather hazards, and vegetation conditions. In most cases, a major challenge for EWSs is providing local and household level information for guiding emergency responses such as emergency reserves. Committees responsible for local-level risk and vulnerability assessment as part of EWSs (often known as vulnerability assessment committees) have inadequate analytical and methodological capacities.

2. Legal framework and policy environment:

Many elements of contracts and market transactions are difficult to enforce in Africa. Transactions are largely informal and disputes are often settled out of court. Trade restrictions and inadequate rules for fair and competitive markets and trade have increased transaction costs for private investment in risk management tools. The challenge in Africa is securing an

effective legal framework and developing a business and economic environment that contributes to the emergence of different solutions for risk pooling or sharing. Most governments have yet to include price and disaster risk management policies in their national development plans.

3. Social protection: Price or production risk management activities are often adversely affected by ad-hoc safety net programmes designed to support consumers. Government interventions to lower prices for consumers—through the distribution of grain (often non-targeted) at subsidized prices or banning grain export or marketing and price controls—have discouraged investment in warehouse receipt systems or commodity exchanges. **A good social protection scheme delivers timely, multi-year, guaranteed and predictable transfers to the poor without undermining the business environment for investment in risk management tools.**

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