

## **The role of Warehouse Receipt System and Financial Services in improving produce marketing by smallholder farmers in Kenya.**

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**KENFAP-Kenya**  
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*The case studies are part of Phase II of ESFIM collaborative research component. The studies build on the previous ESFIM study on Government intervention in inputs and output markets and responds to the demand by KENFAP members. The demand stems from difficulties encountered by smallholder farmers in marketing their produce and access to financial services, especially when there is seasonal glut. The objective of the studies was to generate evidence for a position paper articulating the interests of smallholder farmers, which will be used to inform the design of the WRS and how it will be regulated. Case 2 is intended to develop a strategy that will foster better access to suitable financial and insurance services. The two lobby cases will be delivered to the relevant authorities through KENFAP lobby channels. The development of the lobby cases were backstopped by experts from Agrinatura.*

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## **ABSTRACT**

The agriculture sector contributes 24% directly to Gross Domestic Product (GDP) and 26% indirectly through linkages with service and manufacturing sectors. The sector contributes 65% of export earnings in the country. The smallholders' farmers in Kenya account for 75% of the agricultural output and 70% of marketed agricultural produce.

The government is moving away from the direct management of agricultural markets to regulation. This defines the context within which farming business operates as well as the framework within which smallholder farmers' economic organisations and institutions can be developed. Empowering Smallholder Farmers in Markets (ESFIM) builds capacity of farmers' through their organizations to influence research and policy development thereby creating a more enabling policy environment and innovative support mechanisms and marketing strategies for farmers Organizations (FOs).

There were two case studies conducted; Improving produce marketing by smallholder farmers in Kenya through Warehouse Receipt System (WRS) and Improving access by smallholder farmers to financial and insurance services and to secure markets (through contract farming). The two cases build on a previous ESFIM study and is a response to the demand by farmers due to challenges encountered in maize marketing and access to financial services especially when there is seasonal glut.

The overview of WRS approaches revealed that WRS is global need for food security. It has been practiced in food secure industrialized countries such as United States of America, Europe. It is an attractive concept in developing countries and in Africa such as South Africa, Malawi, Zambia and Madagascar among others. The grain production and management for smallholder farmers appear to be fruitful when WRS concept is applied. The factors that contribute to its success include increase capacity of smallholder farmers, support services (financial and insurance) and good enabling environment. Secondary and primary data was collected in main maize growing areas which covered Rift valley, Eastern, Western and Parts of Nyanza in Kenya. National level organizations were purposively sampled based on the functions. At local level organization were purposively sampled based on participation in the Pilot WRS (Certified) and community Cereal Banking (uncertified). One hundred individual farmers were randomly sampled from the four regions. A reconnaissance survey was conducted by KENFAP field officers to identify information sources prior to the study team visits to collect the data. Research instruments were developed and used to gather primary data. A checklist was personally administered to the

respondents in the respective areas and data collected, analyzed and report generated.

The study results revealed that there were two pilots-certified WRS (EAGC & NCPB) implemented in Kenya, and a number of community cereal Banks (Uncertified WRS) which involved grain bulking in the rural areas. It was found out that certification of Warehouses was based on EAGC criteria. The certification process was elaborate and very expensive (US\$ 4,400) and undertaken by international companies (SGS & ACE). The weighing equipment such as Weigh Bridges and scales were examined and certified by Kenya Bureau of standards (KEBS). The study established that there was No policy & legal framework in place to guide the process. The study revealed that there was inadequate awareness on WRS and mainly accessible to large scale farmers & traders (90%) with limited participation of smallholders in groups (10%). The cost of storage range between 8%-11 % per bag of 90kg while the market price per 90 kg bag gradually increased from the base price at harvest of Kshs 1,800 to kshs 3,000 at the time of the study (August/September 2011) hence translates to 66.7% increase within 6 months. Majority (85 %) of the farmers interviewed did not meet quality standards especially moisture tests and minimum quantity 10 metric tonnes (111 bags of 90kg) required to earn a Warehouse receipt. However, the results revealed that there was growing interest in Community cereal banking in rural areas driven by development agencies programmes such SACRED Africa in Western, Farm Concern International in Eastern, Millennium Villages in Nyanza and USAID in lower Eastern Kenya, In addition, establishment of modern warehouse require heavy capital investment, hence unaffordable for smallholder farmers.

The study recommend innovative progression simple storage facilities at strategic grain collection and bulking sites at village level to fully fledge WRS. This will promote use of simple technologies such as solar drying and moisture testing meters at the farm level. It is imperative to organize smallholder farmers into association and built their capacity to engage in collective action in management and ownership of collection centers at strategic location in the village level. Price volatility and weather conditions pose a great challenge to the implementation of the WRS hence need for innovative insurance packages to mitigate the above risks. There need for harmonized storage charges and standardization quality requirement to facilitate trading. It is paramount for the government to provide enabling environment through appropriate national policy and legal framework to guide and transact business. Cooperative approach in development of WRS is recommended with a back up of support services and enabling environment.

# CHAPTER 1: INTRODUCTION

## 1.1 Background

Empowering Smallholder in Markets (ESFIM) entail enhancing influence and increasing benefits through participation, improve bargaining power, better information sharing and positioning of smallholders' farmers in the centre of dynamic agricultural markets. Agricultural markets in developing countries have undergone profound changes over the last few years. Government policies are moving away from the direct management of agricultural markets, and focus more on indirect regulation for markets to work for the poor (WDR 2008). These policy initiatives define the context within which farming business can be done, as well as the framework within which smallholder farmers' economic organisations and institutions can be developed. Globalisation and liberalisation of markets have led to the emergence of new players in the value chains for agricultural products. Demographic factors, particularly urbanisation in developing countries, have influenced consumer preferences, which in turn have impacted on domestic markets and supply chains. Supermarkets and large-scale retailers have become increasingly important in both developed and developing countries. However, in developing countries, most of the farming business in the rural areas is undertaken by smallholders' farmers operating in dynamic markets and political environment.

Smallholder farming is important in terms of poverty reduction, food security and wider rural economic development in developing countries. Their importance derives from their prevalence, their role in agricultural and economic development and the concentration of poverty in rural areas. Most smallholders are vulnerable to economic and climatic shocks and spread their risk by diversifying their sources of livelihood, often including significant off-farm income generating activities. The perceived risk of these future changes is a strong disincentive to investment in agriculture. Investments in alternative crops and entering new markets that may provide them with better prospects can be extremely difficult due to the need for economies of scale. Many countries have a agricultural policy and poverty reduction strategy that explicitly supports the inclusion of smallholders in markets.

In many developing countries especially in Africa, it is not the policy, as such, but the budgetary, technical and/or administrative implementation of the specific policy that falls short and needs to be adjusted to generate positive impact for smallholders. Policy instruments and institutional arrangements have to be designed and built in a technically feasible and

effective way for the objective of poverty reduction and food security to be reached. And learning between countries on the pros and cons of these instruments is key in this innovation and policy design process.

## **1.2 Contribution of smallholder farmers in the Nation Economy**

Smallholders' farmers in Kenya account for 75 % of the agricultural output and 70 % of marketed agricultural produce derived from the fractional production contribution in their small parcels of land. Agricultural production is the source of livelihood for smallholder farmers practicing family farming characterized by subsistence and selling surplus at local authorities markets for income. They have limited access to reliable market outlets especially supermarket chains and weak representation in policy decision making processes in the dynamic operating environment.

In Kenya, Agriculture has continued to be the backbone of the national economy contributing directly Gross Domestic Product (GDP) and the export earnings. The National Development plan; the Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged under the economic pillar. The plan envisages transformation of smallholder agriculture from subsistence to an innovative, commercially-oriented, and modern agriculture. This will be accomplished among other strategies through improving market access for smallholders through better supply chain management and value addition of crops and livestock products before they reach local and international markets

Smallholders are vulnerable to economic and climatic shocks and spread their risk by diversifying their sources of livelihood, often including significant off-farm income. Different types of smallholders are differently integrated with outside markets, whether national or international, and this influences the way they are impacted by policy changes

Based on the above contribution and the operating environment, smallholder farmers are critical components to the national economy, it emerged that empowering smallholders is a prerequisite condition for achieving economic development in Kenya.

## **1.3 Genesis of ESFIM Programme**

ESFIM programme was designed to build capacity of farmers' organizations (FOs) in developing countries to influence research and policy development thereby creating a more enabling policy environment and innovative support

mechanisms and marketing strategies for farmers Organizations (FOs). The research will contribute to the effectiveness of support strategies by other donors, governments or NGOs working with FOs.

ESFIM is partnership initiative between research institutions and farmer organizations to assist a number of FOs in developing countries (Benin, Costa Rica, India, Kenya, Madagascar, Malawi, Peru, Philippines, South Africa, Uganda and Uruguay.) with formulating feasible, evidence-based propositions for changes in key elements in the institutional environment that will enable effective marketing strategies for smallholders., support FOs with information and through learning processes on innovative and replicable policies and institutional arrangements that empower smallholder farmers in markets. These studies and reflection on relevant market empowerment initiatives drawn from both industrialised and developing countries facilitate learning of FOs in both developed and developing countries to enable them to use evidence-based information to increase their capability to influence the lobby agendas and policy and market processes related with smallholder farmers' access to markets.

ESFIM Programme is anchored to Kenya National Federation of Agricultural Producers (KENFAP) strategic aim No.2; to foster the interests of smallholder farmers who constitute 99% of KENFAP membership, by stimulating beneficial policy changes through lobby and advocacy and focus on adoptable research through requisite engagement in research dialogue within 5 year strategic plan 2008-2012 "*Enriching the farmers voice*". This entails engagement of the government to create an enabling environment for agricultural sector

#### **1.4 Basis of the Case studies**

The case studies are part of Phase II of ESFIM collaborative research component. The Case studies build the previous ESFIM study on government intervention in inputs and output markets and responds to the demand by KENFAP members. The demand stems from difficulties encountered by smallholder farmers in marketing their produce and access to financial services, especially when there is seasonal glut.

Moreover, smallholder farmers may lack storage facilities which may be coupled with household cash constraints. This may perhaps compelled them to sell their produce to middlemen at throw away prices to meet the basic household needs and sustain other obligations such as paying school fees for their children. Furthermore, farmers could be experiencing difficulties in accessing better markets (e.g. selling directly to larger traders or

processors) and might have limited ability to handle farm produce after harvest. Partly, due to the above the challenges, smallholder farmers risk incurring massive post harvest losses which compounds food insecurity problems in the country.

### **1.5 Problem statement**

Agricultural markets operate in dynamic environment which is greatly influenced by supply and demand forces. These forces coupled with the effects of climate change and government policies impact significantly to the livelihood of smallholder farmers in terms of planning for production and access to markets. For instance in years of adequate rainfall, farmers realized bumper harvest but may lack storage facilities, inadequate capacity to handle the farm produce and the prices of farm produce sink low. This situation puts smallholder farmers in dilemma leading to heavy post harvest losses. These losses may have perpetuated waste hence reduced the economic returns commensurate to smallholder farmers efforts.

However, there is a growing trend towards development of innovative approaches such as warehouse receipts system aimed to reduce uncertainty and enhance efficiency. The initiatives lack legal and institutional framework to guarantee performance and minimize transaction costs. WRS is perceived to facilitate credit for inventory or products held in storage. These receipts, sometimes known as warrants, when backed by legal provisions that guarantee quality, provide a secure system whereby stored agricultural commodities can serve as collateral, be sold, traded or used for delivery against financial instruments including futures contracts. These receipts are documents that state the ownership of a specific quantity of products with specific characteristics and stored in a specific warehouse.

On the hand, lack of finance or appropriately packaged financial services pose great challenges to smallholder agricultural productivity in Kenya. It may make it difficult for farmers to procure inputs needed to increase farm productivity. This partly may compel smallholder farmers to sell at very low prices rather than wait to benefit from rise in producer prices which often occurs a few months after harvest. Likewise, smallholder farmers perhaps lack access to insurance instruments which can be used to manage risks to which might make smallholder farmers more vulnerable to vagaries of weather. This study is intended to help KENFAP define a strategy that will foster better access to secure markets with suitable financial and insurance services to empower its membership in markets.



## **1.6 Rationale and justification**

The demand by members of KENFAP for WRS that is accessible to smallholder farmers in Kenya. The demand stems from difficulties encountered in marketing grains, especially when there is seasonal glut. Most smallholder farmers have no storage facilities and face significant cash constraints in the household which partly drive them to sell their produce at low prices.

KENFAP is a member of WRS taskforce and has been participating in the ongoing processes of formulation of WRS policy, development of rules and regulations as well as legal framework. In the process, some information gaps emerged that triggered KENFAP to undertake a study to understand the underlying factors in order to articulate better the interests of smallholder farmers. In the proposed WRS policy, it is emerging that smallholder farmers are expected to benefit indirectly from the system. This is based on the assumption that there will be stable and transparent price formation.

In addition, Maize markets operate in a liberalized system which is characterised by lack of transparency, inadequate market information and lack of appropriate credit. These situations seem to be perpetuated by the new proposed policy framework which reinforces the status quo and price volatility in the prevailing conditions. Based on the lessons drawn from the pilots, the Warehouse receipts are not widely used because of the low return to storage resulting from high transaction, bureaucracy and inadequate legal environment regarding collateral laws, procedures, property rights, and lack of uniform grades and standards

The banks are sceptical on the ability of smallholder farmers to obtain personalized services due to their low income, lack of information and inappropriate packaged financial services and products. It is imperative to develop innovative approaches that restore trust and confidence.

## **1.7 Overall Objective**

The overall objective of the study is to identify factors that will improve produce marketing by smallholder farmers in Kenya through Warehouse Receipt System (WRS) and access to financial and insurance services.

## **1.8 Specific objectives of the case studies**

- i. To understand the operations, risks, challenges and enabling environment for WRS for smallholder farmers
- ii. To identify the capacity needs of smallholder farmers to engage in WRS

- iii. To determine how best WRS can improve grain management and marketing (scope & intensity) for the benefit of smallholder farmers and alleviate national food security in general
- iv. To identify existing financial credit sources and insurance services available for smallholder farmers.
- v. To examine terms and conditions of loans targeting smallholder farmers and identify impediments or difficulties hindering smallholder farmers in access to credit for production and marketing.
- vi. To identify the hidden costs embedded in bank loans and identify the cost of risk participation by Banks and Micro finance Institutions.

## **CHAPTER 2: AN OVERVIEW OF WRS APPROACHES**

Past studies revealed that warehouse receipts have been used since 2400 BC during Mesopotamian civilization WRS has been undergoing transformation and the systems vary from country to country. The changes include storage at farm level, communal grain bulking, manual warehousing, electronic warehouse receipting to futures market such as commodity exchange.

In the 18<sup>th</sup> century, In United States of America, entrepreneurs built steam-powered 'elevators', multi-storey buildings to receive farmers' and other suppliers 'grain, and store in bulk, prior to sale and onward shipment, and issued tradable warehouse receipts against the stock.

In Latin America, similar needs emerged in the 19th Century in Argentina and Brazil's agro-exporting economies. The system follows civil Law countries of passing General Warehousing Acts regulated by Ministries of Trade or banking authorities. The Acts provided for the licensing of 'General Warehousing Companies' to store all sort of commodities (agricultural and non-agricultural) and issue depositors with warehouse receipts, in two parts, one a title document and the other a pledge certificate which the depositor can use to raise financing.

In Colombia, banks are the main owners of these entities. Each bank/company has its own warehouses and silos Ownership by wealthy banks has prevented warehouse failure, and has reassured depositors that they would be protected from fraud.

In Eastern Europe and Former Soviet Union, have special WR laws for grains rather than broad legislation encompassing various commodities and different commercial practices. The Hungarian system consists of three very large and well capitalized warehousing companies carrying out a lot of field warehousing. All these countries have established well-structured and efficient government regulatory agencies and indemnity funds.

In India, sophisticated agricultural markets, including thriving futures markets once flourished, however, government interventions in setting and maintaining domestic prices have displaced the economic viability of many storage schemes and limited the demand for inventory-based credit.

In Mali, credit systems were established in 1997, based partly on inventory receipts, however a number of government-imposed conditions and delays render the system ineffective.

In South Africa's grain production is dominated by large-scale commercial farmers, who until the early 90s received state support within the framework of a State-controlled marketing system. The new ANC Government liberalized the trade in grains and abolished commodity boards, but at the same time encouraged the private sector to develop alternative institutional structure to support the trade. A range of needs had to be addressed including market information, systems for resolving trade disputes, systems of trade financing, grain pricing and the management of price risks. These needs were addressed through various institutional devices, starting with the upgrading of the information service (SAGIS), the issue silo certificates (SCs) and the establishment of future and options contracts for white and yellow maize, wheat, soybean and sunflower on the South African Futures Exchange (SAFEX) – which later became part of Johannesburg Stock Exchange.

In Zambia, agricultural land is abundant, producing maize, cassava, wheat, soybeans, mixed beans and other crops. Production is heavily skewed towards the larger producers with about 2% of producers accounting for 50% of the marketed surplus. Collateral management services have been widely use by leading traders and millers. A regulated warehouse receipt system was introduced (for grains) in 2001 under a project funded by the Common Fund for Commodities (CFC) and implemented by the Natural Resources Institute (NRI). Other donors subsequently provided co-funding, and continued supporting when CFC and NRI ceased their involvement in 2004. The project helped key stakeholder groups (notably farmers, bankers and food processors) establish a non-government regulatory institution, ZACA (Zambia Agricultural Commodities Agency Ltd.) and this certified companies to act as warehouse operators, take deposits from the public and issue transferable warehouse receipts against them. ZACA had a contractual relationship with the certified warehouses and was responsible for ensuring their compliance with regulatory requirements, and for setting and enforcing commodity standards used in the WRS.

In Malawi, the main food crop is maize, followed by cassava, while cash crops include tobacco, tea, cotton, sugar cane, macadamia nuts and groundnuts. Due to food security concerns Government has been heavily subsidizing inputs so that farmers can produce high yielding maize varieties, and this has caused a major increase in annual production. There was a successful pilot WRS in 2005, but the approach had to be abandoned in 2008, raising questions as to whether such complex technical operations can be institutionalized in a highly politically-charged environment.

Malawi is in the process of establishing a pilot regulated WRS and at the same time two large trading companies are seeking to provide warehouse receipting services on their own, with donor or public support. There are

various other initiatives to enhance rural storage and local bulking of surpluses, involving hermetic storage technologies, storage by producer organizations (linked to microfinance or banks), and grain bulking by certified trade intermediaries. However these initiatives are either at the design or pilot stage.

In Madagascar, rice is the dominant food crop and the approach of WRS adopted was a credit-led system. The system involves a process where soft loans are injected against member share capital, which serves as partial collateral, with a view to building the level of operations to a level where it can refinance itself with commercial banks. It has made major strides in this direction, but still needs donors to provide some funding and guarantees with the commercial banks. There are five loan products, including storage loans, production loans, hire purchase, commercial loans and social emergency loans. The storage loan component has followed a growing trend of paddy per annum and network of small stores usually rooms in domestic dwellings, under a 'dual key' arrangement.

The total quantity stored by all MF networks is estimated at 55,000 tonnes. All products enjoy a high level of acceptance, and the storage loans which account for around 40% of the portfolio, are particularly successful, due to negligible default, and because they enhance the financial viability of the overall network, open the way to productivity enhancing products, and facilitate repayment of production loans. Lending is almost entirely to individuals, as marketing/input supply cooperatives have largely failed in Madagascar.

In Kenya, main food crops are maize, wheat and potatoes. Attempts to establish a regulated WRS have focused on maize which mainly produced by smallholders. Most maize goes for direct human consumption, about one third of this being processed by large-scale roller mills, mainly for consumption by better-off urban consumers, while small-scale posho mills handle the rest.

On the other hand, literature review revealed that there are various initiatives seeking to enhance rural storage and local bulking of surpluses. These include first, hermetic storage technologies in Malawi, where the Ministry of Agriculture is disseminating the use of family-sized galvanized-iron silos using the *post-cosecha* technology which was implemented in Central America. A variant of this approach has also been massively implemented in Swaziland.

Second, Opportunity International Bank of Malawi (OIBM) initiative started 2005, has structured an agricultural lending portfolio where the main clients

are farmers producing a cash crop like tobacco, along with maize, groundnuts or soya, by hand cultivation, organized into joint-liability groups of circa 10 farmers, and enjoying the support of an independent extension service, which is funded on a cost-sharing basis. Farmers are individually profiled, using interviewing and GIS, with a view to ensuring their ability to perform as planned. It services the communities with mobile banking, and by providing clients with smartcards with biometric recognition. OIBM is now planning to support two pilot 'warehouse receipting' initiatives, one at the Millennium Village near Zomba (circa 1,600 tonnes capacity) and the other Kafuli, which will serve the dual purpose of helping farmers maximize benefit from their maize production, while minimizing side-selling of loan-financed maize. The warehouses would be controlled by farmer associations that would bulk up members' commodities, store them and sell them in the lean season, either for local consumption or to outside buyers

Third, USAID 'grain bulking centres' initiative, support existing rural trade intermediaries (e.g. agricultural input suppliers) into more versatile and cost-efficient service operators who can offer a 'one-stop service' to farmers including input supply, marketing, storage and eventually financial services including insurance, and build strong local networks of trust among the players. Government, traders and farmers. The centres to access information on certified quantities and grades of commodities held at the centres.

Farmers will either sell the grain to the Centre at current market prices, or deposit it for storage, to be sold later or withdrawn for personal use. All grain will be weighed and graded, a receipt issued and a storage contract signed. Small start-up grants will be provided on a cost-sharing basis, so as to enable prospective operators to upgrade or expand their storage facilities, or as operating capital. Each operator must get his Centre licensed by a certifying agent to ensure the facility is properly secured, insured and fit for storage, and verify that he/she is operating according to the rules, notably holding stocks according to stated grades and standards.

Moreover the certified Centers may develop into fully fledged licensed warehouses. The rural intermediaries running the Centers will be expected to adopt a new business paradigm and perform according to stringent set of rules; this requires an assurance that the certifying agency is there for the long-term, both to support and ensure compliance. Failing that, some intermediaries may be tempted to comply just enough to access the start-up grants.

Four, National Smallholder Farmers Association of Malawi (NASFAM) 'grain banks'; NASFAM has 41 affiliated farmer associations, with around 100,000

members largely devoted to production of cash crops. Associations increasingly found their members experiencing food security problems and this has led fourteen of them to establish grain banks, i.e. stores which buy and store grain for local consumption or market disposal. It was not possible to get much information on this scheme, though one bank was mentioned as having stored 80 tonnes.

In Kenya, attempts to establish a regulated WRS have focused on maize and builds on existing initiatives by some companies like Eastern Africa Grain Council (EAGC), Lesiolo Grain Traders Ltd. of Nakuru, and Grain Bulk Handlers of Mombasa, Kenya Agricultural Commodity Exchange (KACE)-provide market information, USAID and Government owned National Cereals and Produce Board (NCPB) that are already providing storage services to the public. NCPB has over 110 warehouses with around 1.8 million metric tonnes storage capacity, much of which is underutilized and could be leased or sold to commercial warehouse operators.

The literature revealed that there was no policy and legal framework that encourage farmers to deposit their grains in public warehouses. Hence, smallholder farmers sell their produce at throw away price during harvest time for cash income contrasts with buyers' need for steady and reliable supply. While large-scale end-users can structure long-term supply arrangements because they have easier access to working capital, smaller-scale buyers face acute liquidity constraints and face difficulties in obtaining production finance to procure inputs, hence hampers output growth hence low farm productivity.

On the other hand, literature review revealed that there are financial tools designed to meet the needs of the members. For instance, in Madagascar, *CECAM financing tools* has five main types of credit designed to meet members' needs within the agricultural production and marketing cycle. This include *production credit* which finances cropping or breeding costs over a 4-10 month period, *hire purchase* finance for small farm implements, farm animals, domestic equipment or capital goods required by artisans and traders. The first security is the good itself, and there may additionally be a group guarantee, *Storage credit*, channeled through what are known as Village Common Granaries (GCVs), *social emergency credit*, small credits repayable within two to four months and *commercial credit* to individuals, and to agricultural cooperatives involved in the supply of inputs and the bulking of produce for market Interest rates are normally 3% per month.

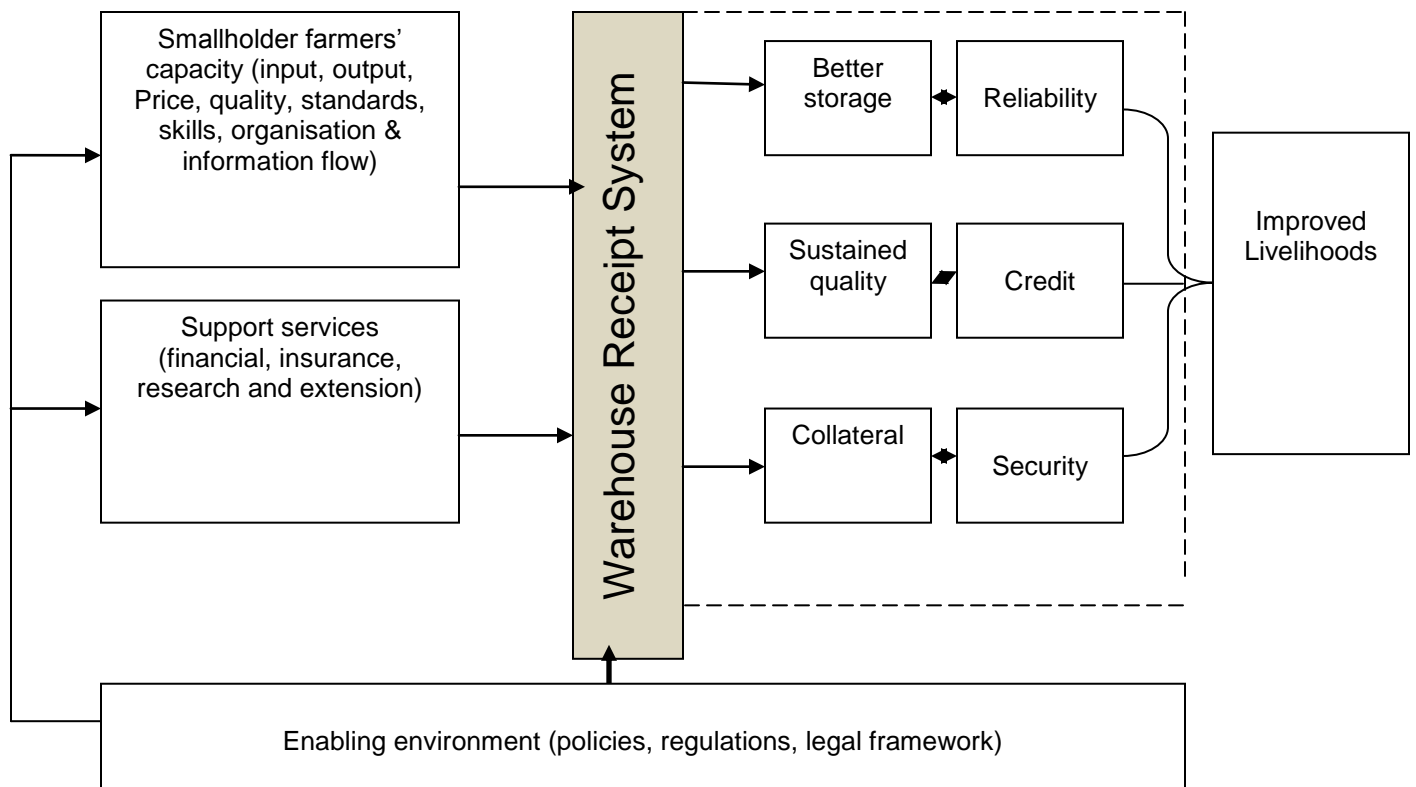
The overview of WRS approaches, indicate that WRS is a global concept and a lot of experience from industrialized countries such as United states of America, Europe, countries like Poland, Hungary, Slovakia, and Bulgaria,

several countries in Latin America and developing countries (South Africa, Malawi & Zambia among others) provides important lessons on the path of development of WRS and challenges encountered.

In developing countries, the overview showed that there is a general need to increase farmers' role in crop storage as food security measure. It is imperative to support initiatives that promote storage locally in villages, rural people will be more food secure and households who produce quality products that meet the standards to cover their needs and sell surplus for financial reasons. All over Africa there is lot of interest in initiatives involving marketing FOs. Drawing from lesson from Malawi, Tanzania and Madagascar tiered arrangement that originate from the village to national level can perform effectively in combination with commercial warehouses. This support gradual collection, consolidation and marketing of grain creating reliable channels and opportunities for financing and onward sale. The performance of this combination needs monitoring over time.

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## 2.2 Conceptual Framework



Source: KENFAP conceptualization, 2011



The study conceptualized capacity of smallholder farmers, support services and enabling environment as the key factors that determine the operation and functioning of Warehouse receipting System (WRS).

The capacity of smallholder farmers to engage in WRS depends on quality of inputs and output. Quality standards and grades are necessary to increase yields, guide trading and facilitate efficient use of storage space. Standardization of commodities stored ensures the quality deposited is the same as that withdrawn. Quality standards and grades determine the price of the stored products and facilitate business transaction. Information flow is essential for decision-making. It allows farmers to assess the best time to sell its grains. The degree of organization of smallholder farmers for collective action is crucial to obtain quantities of output to earn a warehouse receipt and other support services.

Support services such as research, extension, financial and insurance services are critical for the success of the WRS. These need to be properly packaged and timely.

Enabling environment facilitate interaction of actors and define the context of doing business. The policy gives direction, regulation through licensing and inspection of warehouse facilities and operations guarantee credibility of the system. Storage according to grades and standards create market segmentation and technically able to maintain quality standards during storage. Sound management is necessary to guarantee financial viability and reliability to be trusted by banks

The operation of WRS will facilitate better storage and main quality of grain stored for long time. It create confidence and reliability for the stocks to be used as collateral to secure credit hence increase economic returns to the farmer

## **CHAPTER 3: METHODOLOGY**

### **3.1 Research design**

The study was a cross sectional survey that involved studying the situation as it is by collecting both qualitative and quantitative data at one point in time. The study adopted Value Chain Analysis (VCA) framework in identifying points where different types intervention and modalities of storage and finance are required to take advantage of market opportunities (both pre- and post-harvest). The VCA framework guided the two case studies which were carried out towards the end August and early September 2011.

### **3.2. Description of the study site**

The study was carried out in four maize growing areas of Rift valley, Western, parts of Nyanza and Eastern regions of Kenya. The inhabitants in the four regions are largely smallholder farmers who own an average of 3 acres of land and practice mixed farming. Maize and beans, sweet potatoes, kales, coffee, tea and sugarcane are in order of importance crops grown in the regions. In each region, district was purposively selected based on their activities on the WRS, regional balance and Agroecological Zones. The districts were Nakuru, Narok, Marakwet and TransNzoia in Rift Valley, Makueni and Meru North in Eastern, Bungoma in Western and Siaya in Nyanza regions respectively.

**Figure 3.1: Map of Kenya showing the study sites**



The study targeted various stakeholders involved in the WRS and financial services at national, local, household or even individual level; ranging from farmers, researchers, service providers among others. The producers practising grain bulking and utilising financial services in each of the districts were targeted.

### **3.2 Sample Size and sampling procedures**

The study adopted a two stage sampling at the national and local level. The selection of the study sites was by purposive sampling based on the maize production levels as well as the involvement in WRS or cereal/grain bulking. At the national level, key informants were purposively selected for the WRS

case study based on the function and role of the organization/institution/companies. The seven organizations are:-

1. The East African Grain Council (EAGC),
2. Lesiolo Grain handlers Limited,
3. National Cereals and Produce Board (NCPB)
4. Kenya Agricultural Commodity Exchange (KACE),
5. Grain Millers
6. Ministry of Agriculture (MoA)
7. Ministry of Cooperatives and Marketing Development
8. Members of WRS Taskforce

At the local level, the key informants from the above institutions were interviewed especially in cases where the institutions had regional/district offices.

A total of 240 farmers were interviewed from the four regions for both case studies. The farmers were stratified based on their involvement in the WRS or cereal banks then individual respondents were randomly selected, thirty farmers were sampled from each region.

For the second case study, four financial institutions and four insurance companies were purposively sampled based on their coverage in the country, agricultural financial/insurance products and their involvement with smallholder farmers. The financial institutions interviewed were: the Equity bank, Kenya Commercial bank, Cooperative bank of Kenya and the Agricultural Finance Corporation (AFC). The insurance companies interviewed were UAP Insurance, APA Insurance, Jubilee Insurance and CIC Insurance Group Limited.

### **3.3 Research instruments**

A checklist was used to guide the primary data collection where the process started with desk review of past studies related to subject from the internet and various books. The information gathered from documented literature was used to identify gaps and weak areas for improvement. The overview entailed information gathering on ongoing and past experience in the global, regional and local initiatives on the subject.

Two c were used to collect primary data, from the smallholder farmers involved in the study; a separate questionnaire for each case study (Annex I and II). The instruments were administered to the respondents by three teams of enumerators during August- September 2011.

A reconnaissance survey was carried out in the regions by the respective field staff to identify the relevant information sources including farmer cereal banks, cooperatives and individual farmers. The instruments were pretested and the results used to improve the data collection procedures, the choice of analytical procedures used in data analyses.

### **3.5 Data collection**

The KENFAP Field staff had focus group discussions with identified stakeholders in the districts to explain to them the purpose of the study and how the farming community would benefit from the outcome of the research. From the discussion, schedules to visit the respondents in their respective groups were made. The study teams then administered the questionnaires to the smallholder farmers and the key respondents to collect the required data in face to face interviews and their responses were recorded accordingly.

### **3.6 Data processing, analysis and reporting of results**

Before analyzing the data, the instruments were edited to check completeness, clarity and consistency of the responses. Data was analyzed qualitatively where they were grouped in themes and reported accordingly. The report and relevant recommendations on policy and institutional reforms for both case studies were subjected to critique by KENFAP technical team to come up with a preliminary report.

## **CHAPTER 4: RESULTS**

### **CASE 1: IMPROVING MAIZE MARKETING BY SMALLHOLDER FARMERS IN KENYA THROUGH WAREHOUSE RECEIPT SYSTEM (WRS)**

The main purpose of the Case study was to generate a position paper to inform the ongoing WRS policy formulation, development of rules and regulation as well as legal framework. The study focused on the key elements that will assure the credibility and protect the interests of depositor such as farmers in the design of the WRS. These include performance guarantees, certification, quality standards, collateral management, storage infrastructure and identifying the capacity building needs of smallholder farmers. The study findings were reported per specific objective.

#### **4.1 Objective 1: To understand the operations, risks, challenges and enabling environment for WRS for smallholder farmer**

The study objective was set to understand the operations which entailed processes involved at the warehouse which included receiving, weighing, grading, receipting, storing, inspection, pest control, record keeping and services offered. Examined the potential process and business risks focusing on basic safety measures such as insurance cover, fire protection, food safety, security, theft and collateral management. The study explored possible limitations that may hinder wide scale adoption of the system among smallholder maize growers as well as other key stakeholders in Kenya. It focused on challenges encounter price volatility, shrinkage, logistics and technical. The listed parameters were investigated per organizations or entity interviewed.

The study results revealed that there are two WRS approaches undertaken in Kenya which included certified WRS and uncertified WRS. The certified WRS comprises of two different pilot warehouse receipts system in Kenya; one started by East Africa Grain Council (EAGC) in 2008 and a second initiated by the NCPB in September 2010. The uncertified WRS consists of several small scale grain bulking initiatives promoted in the rural areas by development partners. The details of the findings were captured and reported per organization as follows:

#### **4.1.1. EAGC pilot WRS-Certified**

The study revealed that Eastern Africa Grain Council (EAGC) promotes adoption of WRS through its membership. EAGC is a membership organization of interested stakeholders actively engaged in the grain market chain (production, trade, processing, finance, transport, export/import, warehousing, inputs etc). The members comprise of individual companies, Associations (affiliated) and allied industries. EAGC presently regulate and coordinate the WRS initiative in Kenya. EAGC commission inspection companies (SGS, ACE & BV) to certify Warehouses @ US\$ 4,400, provide WR protocol & rules, enforce the rules and coordinate arbitration, print warehouse receipts and issue to specific warehouses, register all WRs issued, confirm WRs to banks before loans are issued, transfer ownership of WRs, confirm WR to potential buyers, link potential buyers to WRs owners and categorise Warehouses Receipt. EAGC also arrange for financing of Warehouse Receipt with banks especially Equity Bank and cooperative societies. Engagement with Stanbic bank is at the definition stage. It was observed that the cost of certification of warehouses was extremely high and the basis of costing was not clear. This could be an impediment to adoption of the initiative by smallholder farmers.

In addition, EAGC is the main institution that offer training to its clients on how warehouse receipt is used to secure loan from the bank. Under the set guidelines where a depositor is given a unique reference number, must attain a minimum 100 Metric tonnes is required to qualify for a loan, The depositor opens an account with the bank and deposit WR, each bank will avail its interest rates and arrangement fee for loan amounts and bank gives maximum loan of 60-80 % of the value of stored grains at prevailing market price

Moisture content requirement, mistrust among group members, Aflatoxin, price volatility, information sharing and high cost of certification were key challenges encountered. EAGC main clients included Kenya Maize Development Programme (KMDP) and Cereal Growers Association (CGA)

EAGC recommended that to develop a well coordinated System, intensify engagement with Banks, embed input supply services, establish, equip and link bulking sites to Warehouses, better training to improve grain handling and reduce transaction costs, harmonization of standards and develop WRS that links WRS to Commodity exchange

#### **4.1.2 LESIOLO Grain Handlers (LGH)-Certified**

The study team established that EAGC appointed LESIOLO Grain Handlers Limited as Warehouse operator in 2008. LESIOLO grain Handlers Limited is a private initiative started in 2007 based in Nakuru with storage capacity of 50,000 Tonnes of grain and contracted by Eastern Africa Breweries Limited to store barley for brewing. In addition, the company serves five 5 large scale farmers dealing with maize which include Menengai Feedlots; Gogar Farm, Sansora, Remsonps and Lemuko Group. The company has been undergoing operational transformation with a view to accommodate smallholder farmers mainly by reducing the minimum number of bags to earn a warehouse receipt. For example, from 2008 to 2009, the minimum number of bags was 1,000 bags. This was reviewed in 2010 reduced to 500 bags and in 2011; it was further reduced to 100 bags.

Lesiolo had an elaborate automated procedure of receiving grains, sampling unit (quick sample-10% & comprehensive-whole load-tests), Weighing equipment were certified by KEBS annually. It has 2 quality control sites with ample parking & waiting area. The company contracts other private companies for offloading and loading. The facility had wet bins and testing laboratory connected with computer data base of clients (customer details; name, address, phone, variety, weighbridge No, delivery note, gate pass No & total weight (kgs)

Lesiolo offer services such as moisture content, drying, cleaning, fine cleaning, bagging, storage, fumigation, de-awning, and seed dressings & re-circulation. In the analysis during sample testing focus on Bushel weight, pregel, immature grain, weather damage, rubbish and foreign matter. in the comprehensive testing main focus on Bushel weight, moisture content, foreign matter, screenings, broken grains, weather damage, heat damage, germination, mixed varieties, insect damage, immature grains, datura, wild oats, danel, earth, sand & stones and infestation. The tests are conducted in the presence of the farmer. Lesiolo has a grading sheet for different commodities and drying facilities 2 main dryers with a capacity of 48 tonnes & 1 mini dryer and the company has two (2) Mobile dryers mounted on tractors to offer field services.

Lesiolo had directory of clients made up of comprehensive data base (web base) with manual register as back up and quality checks within 45 days fumigation. Each client is allocated a separate warehouse which include Eastern Africa Breweries-Barley (50,000tonnes -250,000tonnes), Sansora, Lesiolo, Gogar Farm, Remsonps, Lemuko-mwiko group and Menegai Feedlots. Lesiolo rent/lease the silos from NCPB and the premise inspection certificate by public health and business permit from municipal council of



Nakuru. In addition, Lesiolo Contract services from private to offer the following Housekeeping-BHC, process minders-HNM. Engaged permanent staff (6) and employed own security.

Despite the modernization and prudent management, Lesiolo encounters challenges which included; Government intervention in setting the floor price market prices reduced incentives for private storage and crowded out private participation. Distrust arising from absence of legal and regulatory mechanisms necessary to ensure confidence in local warehouses., the high cost of financing making it unattractive to farmers, traders, and speculators to store grains, Inadequate or low quality infrastructure makes warehouses unreliable in maintaining the value of a crop, Certified warehouses are often not spread throughout the grain-producing areas and so transportation costs become excessively high for distant producers. Farmers harvest at the same time, skewed market information flow towards traders and poor post harvest management skills pose challenge to the existing facilities.

#### **4.1.3 National Cereals and Produce Board (NCPB) pilot WRS-Certified**

The study established that National Cereal and Produce Board (NCPB) has a network of warehouses and silos located in 110 sites spread throughout the country with a combined capacity of over 1.8 million metric tonnes. Out of these sites 13 have been inspected and certified to handle grains based on EAGC certification criteria. This included Kitale Depot, Moi's Bridge Silos, Eldoret Silos, Bungoma Silos, Nakuru Silos, Narok Silos, Nairobi silos, Kisumu Silos, GCP Nairobi Depot, Kilgoris Depot, Meru Depot, Shimanzi Depot and Changanwe Depot. The research team visited Naork pilot Warehouse Receipt System and gathered the information that the storage capacity of warehouses was 200,000 bags of 90kg and the silos 70,000 bags hence 270,000 bags in total. The capacity utilized was 20%.

The team also established that the grains were graded into 2 categories (Grade 1 & 2) based on colour and impurities (broken grains) and warehouse were inspected and certified by EAGC. The minimum tonnage to earn a receipt was 10 Metric tonnes which equivalent to 111 bags of 90kgs each. The farmers pay some charges for the services rendered. The study established that warehouse operators charge different rates for different on services rendered. This charges included intake fee (once) of kshs 60.00, storage/maintenance/bag hire (per month) from the second month kshs 17.00, bagging into sisal bags was kshs15.00, cleaning kshs 30.00, Drying per 1 % moisture reduction) kshs 28.00, fumigation kshs 5, and bags hired

ksh 17 per month, Discharge/release (once) kshs 15. The payments cover grading, cleaning, weighing, bagging, handling in and out, fumigation, Insurance and all other grain management processes

#### **4.1.4 Grain Bulking or Cereal Banking-Uncertified**

The study revealed that there are various initiatives in the Kenya seeking to enhance rural storage and local bulking of surplus grain. The initiative was referred as Cereal banking. The study found out that in Western Kenya SACRED Africa spearhead the initiative especially in Bungoma, Kakamega, Vihiga & Butere Mumias. In Nyanza, the initiative was supported by Millennium Villages. In Eastern, it is supported by practical action (Makueni), Farm Concern International (Meru North) and USAID in (Makueni).

##### **4.1.4.1 Marenyo Community Cereal Bank**

The study team visited Marenyo Community cereal bank. The initiative was started in 2006 with support from millennium villages. The farmers realised bumper harvest and decided to stored their grains to sell when the price. The cereal bank comprise of three groups; Ulagai self help group, Rawa Church (ACK) and Marenyo Community Cereal Bank The Millennium villages introduce AgMark to train farmers on how to manage the grain and support to establish a Agro input shop, link to World Food Programme (WFP) and other buyers.

In that light, WFP engaged the community Cereal Bank in a contract-to supply 56MT of maize. During the survey period the cereal bank was engaged to supply 334 MT of beans & 445 Mt of maize. The cereal bank was unable to supply due to shortage and the prevailing good producer price (kshs 3000 per 90 kg bag of dry white maize) of grains in the country. However, the initiative encountered challenges whereby farmers prefer cash payment on delivery. WFP entails approval process which was seen as bureaucratic and delays payment to the farmers.

Storage charges are negotiable and were reviewed from time to time depending on the prevailing market conditions. The charges include-sorting, rebagging, loading & off loading, sealing, fumigation. The Inspection to ascertain grain quality was conducted by a company hired by WFP- from Mombasa..The group has procure quality control equipment such as moisture meters, Bags sewing machine-kshs 28,000, Moisture meter-supplied by USAID each unit costs kshs 45,000 while AGMark units cost kshs 80,000) receive only big size grains and accept only big white grains.. The

farmers have been trained to dry maize to right moisture by sun drying before delivering to the cereal bank. The cereal bank has minimal quality related rejection and no aflatoxin cases encountered since inception. The cereal bank has storage capacity 3,000 bags of maize and 2,000 bags of beans and rent storage space at nearby Yala NCPB warehouses.

In order to create publicity, the cereal bank has notice board where, commodity, quantity, quality, offer, bid, price, and location and contact price were displayed. The notice board was placed in an open and strategic position accessible to the entire community (members & Non-members). The community cereal bank had a membership of 300 who initially paid membership fee of kshs 50 which was reviewed to kshs 200 per month. Farmer buys shares and earns dividends at end of the year. The membership has steadily growing over the years. It was reported that the Cereal bank started with 175 which grew over the years to 300. In addition, the organization has been undergoing institutional transformation. The cereal bank was registered as self help group in 2008 and later transformed to a Cooperative society to position itself to do business.

It was found out that registration of community cereal bank as self help group was not adequate to transact business and access loans from the Commercial Banks as result of its legal status as self help group. This partly occasioned transformation into a Cooperative society Ltd. However, the cereal bank obtained a loan from saga micro finance amounting to Kshs 180,000 for a period of 1 month with interest. Loan was guarantee by the sponsor of the initiative (millennium villages). The loan proved to be very expensive forcing the cereal bank to stop any further borrowing after repayment of the loan in full.

Drawing from the lessons, some members of the community mobilized resources to form a community bank-Rabuor Ahono Sinaga (Area) Project. The cereal bank was adjacent to community bank. The Community bank give vouchers to the cereal bank to give farmers inputs. The bank was able to recover loan amount from the farmers. The organization is continuously improving the services offered to members and established community resource centre which consists of Radio room, Financial Centre, Library and computer services. In order to enhance financial services, Equity Bank Agent opened an outlet at community resource centre to offer the following financial services, Opening Account, Activate account, Deposit cash, Withdraw cash, Check balance, Transfer money and Re-activate a dormant account among other services.

The community cereal bank is managed by elected committee of 12 members who meet frequently to decide on day to day issues. Annual

General meeting (AGM) is held every end of the year to make major decision and declare dividends. the average dividends paid to members was kshs 400 per share and submit returns to commissioner of cooperatives and renew registration per year. The membership renew fee has been declining (2008-kshs 1,000, 2009 kshs 1,000, 2010 kshs-500 and 2011-kshs 200).

The study revealed that majority (80 %) of the beneficiaries of cereal banks were women. Each member supplies an average of 2 bags per season. Storage grains in their houses, sun dry and manual shell. The grains are stored for a period of ranging between 2-3 months, weighing using 2kg tins, control pest using ashes, no insurance and participate in cereal bank activities based on trust. The members benefit through cash sale on delivery, access to farm inputs for production and get dividends at the end of the year. Cereal banks display prices information on a Notice board and regular meeting to share ideas. The members also benefited from training on post harvest management. Cereal bank accept any quantity of grain conforming to the quality standard. This was achieved through proper shelling, drying and storage. Secure better markets through collective marketing and market linkages such a WFP and reduced storage risks.

#### **4.1.4 2 SACRED Africa**

Sustainable Agriculture Centre for Research and Development in Africa (SACRED-Africa) spear headed development of Cereal bank in Western Kenya. The study found out that SACRED Africa was serving 220 farmers in Bungoma County. They have a store in Chwele and their intake charges are ksh 60/90kg bag of maize. At the time of the study, they were getting very small quantities of grain from farmers for storage. This was partly because the prices were good in the market kshs 3000 per 90 kg bag. SACRED Africa has collection centers in all the locations of Bungoma South District. They accept and receipt any quantity grain delivered by the farmers. However their warehouse receipts were not honoured by Banks to access loans. The grains stored in the warehouse were insured against theft and fire. the farmers must collect their grain after 6 months less weight loss due to shrinkage.

The study found out that most of the financial institutions do not offer agricultural loans to farmers under cereal banking scheme. Farmers complain that the intake charges are very high at 60 shillings per 90 kg bag and have not been educated how the figure was arrived at and why they are being charged. They claim the intake procedures are very long hence a disincentive to adoption of the WRS innovation. The funding by the government to facilitate WRS is very small and comes late when most farmers have already sold their produce out of frustration. Farmers need to

be trained on moisture management as it is a big challenge at the time of intake. The warehouses are few and farmers incur very high costs of transportation to the few certified NCPB warehouses this compromises the need for WRS as profits will be taken by the transport costs, Political good will, in the farming communities the politicians sometimes advise farmers not to take their produce to NCPB and latter buy from them and Farmers need to be educated about WRS as a majority don't know about it.

The study revealed that farmers stopped delivering their maize to NCPB partly because of delayed payment, high intake charges and long queues. The farmers interviewed were willing to engage in WRS if it is well articulated and the warehouse receipt issued will honoured by the banks.

#### ***4.1.4.3 Mbeu Ushirika Cereal Bank***

Mbeu Ushirika Cereal Bank is community based organization comprising of 20 farmer groups with a membership of 1,140 members (400 Male, 600 Female and 140 Youth). The group was initially mobilized under National Agricultural and Livestock Program (NALEP) in 2008 where groups were organized to form common interest groups (CIGs) categorized into Dairy goat Farming, Cotton Farming, Poultry and Cereal Banking.

In 2010, ten (10) groups were identified and supported by Ministry of Agriculture under NAAIAP project where 300 farmers were given a package of certified maize seed, fertilizer & pesticides. In the first season they managed to deposit 420 bags of 90 kg each to the Cereal Bank and sold at Kshs 1,134,000 after 3 Months.

The group secured a rented store with capacity of 500 bags which is managed by democratically elected committee who maintain membership register, produce delivery register, financial records and individual members. From the proceeds, the group procured a plot, purchased hand sheller, drying cloth and safe use equipment. Consequently, the production increased from 8 bags to 25 bags per acre. The initiative is supported by Ministry of Agriculture, Farm Concern International, FarmChem in provision of farm inputs and KENFAP in institutional capacity building. The group projects to construct own store, start milling and packaging, establish their own farm input store and credit system. Despite the achievement recorded, the group encountered challenges in initial mobilization of farmer groups join the CBO.

#### **4.1.5. The Kenya Agricultural Commodity Exchange (KACE)**

The study team visited the Kenya Agricultural Commodity Exchange (KACE) Bungoma Market Resource centre, and established that. KACE collects prices and traded volumes of a wide range of products from nine wholesale markets and disseminates the same using Radio, SMS, interactive voice response service (IVRS), internet and email. The study team found out that KACE disseminates daily market price information to the farmers through SMS or e-mail and website [www.kace.ke.com](http://www.kace.ke.com). The organization runs a Radio program Soko hewani on Kenya Broadcasting Corporation (KBC) radio offering bids for items farmer want to buy or sell. It was established that the nature of services offered cannot be described as a commodity exchange. The initial idea was for the exchange to invite buyers and sellers to its trading floor to do business or to link them electronically. The organization provides market linkage to buyers and sellers of varied commodities including insurance products In addition, the interviewee reported that the organization has committed resources to develop a warehouse receipt service. It entails establishment of warehouses and have them certified by EAGC.

The study revealed that KACE encountered challenges which included clients availing wrong information for advertisement, poor timing of transaction and slow adoption of technological advancement e.g. price information through mobile phones. Lesson drawn from KACE would useful in development of robust WRS linked to Commodity Exchange.

#### **4.1 6 Multi-stakeholders Activities towards development of WRS policy, regulation and legal framework**

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The study investigated the relevant policy, regulatory and legal framework required to mitigate, promote and reduce transaction costs in the maize value chain. It focused on policy, regulation, legislation, certification, arbitration, inspection and procedures. The study revealed that there were ongoing processes spearheaded by EAGC and Ministry of Agriculture on development of WRS linked to commodity Exchange while Ministry of Finance and capital markets Authority were working on possibilities of establishing commodity exchange under Nairobi Stock exchange. The two processes run parallel and multi-stakeholders driven. These actions were intended to respond to players demand, and create an enabling environment for robust trading in the grain sector including futures markets in the country and beyond. Draft documents have been developed and findings of this report will be used to inform and enrich the process

## 4.2 Objective 2: To identify the capacity needs of smallholder farmers to engage in WRS

The study identified the existing capacity and needs of smallholder farmers to handle grains in a good year and the reasons behind the obtaining situation. It focused on production level including quantity produced per farmer, land size, existing cereal banks, awareness, contracts, procedures and timing. Enquire on quality standards with respect to moisture content and type of the cob. The study further examined the extent to which farmers have to be prepared to effectively adopt warehouse receipting as a grain storage option among smallholder communities in Kenya. It focused on ability to handle grain in terms of skills, management of grains. Look at transport in terms of distance to the nearest market and certified warehouse and costs. Examined the infrastructure available to smallholder farmers including storage facilities, drying, shelling, and capacity of storage facilities.

The study results were summarized in the below

Parameters	Western	Eastern	South rift	Nyanza
No. Bags delivered to grain bulking centre (90Kgs bag)	60-120 bags	1-20 bags	10-65 bags)	2-20 bags
Awareness level (WRS)	22.4%	10.8 %	39.6%	13.5%
Awareness level (Cereal banking)	75.8%	78%	67.8%	89.5 %
Level of quality standards adherence - NCPB	19.5 %	12.2%	21.4%	11.3 %
Average Storage period (grain bulking)	3 months	3months	2-3months	3 months
Average distance to nearest warehouse	≈15ms	≈25kms	≈15kms	≈25 kms
Average distance to nearest market	≈1km	≤1km	≈5km	≈1km

### **4.3 Objective 3. Determine how best WRS can improve grain management and marketing (scope & intensity) for the benefit of smallholder farmers and alleviate national food security in general.**

The study explore to understand the design of the WRS that is accessible and beneficial to smallholder farmers , including evidence to demonstrate benefits and meet their needs. It focused on information flow including market price, farm gate price, ware house price and flow information. Te study evaluate costs per 90kg bag, benefit, minimum quantity to earn a receipt, mode of payment, financial services and existence of collection centres

### **4.4 CASE 2: IMPROVING ACCESS BY SMALLHOLDER FARMERS TO FINANCIAL AND INSURANCE SERVICES**

The purpose of the study was to help KENFAP define a strategy that foster better access to suitable financial and insurance services specifically for WRS. The study identified existing financial credit sources ((banks, Microfinance) and insurances (companies, agents and brokers) services. it identified impediments or difficulties hindering smallholder farmers in access to credit for production and marketing. Examined terms and conditions of loans targeting to smallholder farmers in terms of loan repayment, and gather information on costs and consequences of defaulting loan repayment. Identify existing guarantee systems and evaluate the costs of brokering by middlemen .The study sought to identify the hidden costs embedded in bank loans and identify the cost of risk participation by Banks & Micro finance Institutions.

The study revealed that banks and insurance companies have refocused their attention toward agriculture and consequently developed products for the sector. However the product and services are largely not accessible to smallholder farmers. The table below summarized the findings for objective 4, 5 and 6 and identified existing financial credit sources and insurance services available for smallholder farmers, examined terms and conditions of loans targeting smallholder farmers and identified impediments or difficulties hindering smallholder farmers in access to credit for production and marketing as well as identified the hidden costs embedded in bank loans .the products



Financial Institution	Type of product	Description of product	Relevance and appropriateness
Cooperative Bank	Amiran Farmer Kit Finance	Greenhouse technology Loan=: 50-500,000	Interest=13%, Insurance=2.5 % Period =24 Months active account -6 months
	Maziwa Plus	Dairy farmers Scheme-HI/coop Loan=100,000-10 M	Interest =12% coy/coop Interest=14% =Farmer 500 liters per day Formal contract Active Account Period=60 months
Equity Bank	Agriculture commercial loan	Medium & large scale Loan=5,000-500,000	Interest =15 % Period =12 months Title deed, logbook

#### 4.4.1 Financial products and services

**Cooperative Bank of Kenya**, offer several products which are tailored made to suit the interest of both smallholder and large scale farmer. These products included Amiran farmer Kit finance and Maziwa plus. Amiran farmer kit finance; the Co-op Bank Amiran Kit Loan enables customers engaged in agriculture to access and utilize modern agricultural technology to achieve higher yields, better market returns, enhanced food security, creation of jobs and general improvement in family livelihoods. Amiran farmers kit finance is available to individual customers who are employed or self employed. Individuals who are members of a group that is under an organized farmers' scheme can also apply for the loan. Loan amount is a minimum of kshs.50, 000 and a maximum of Kshs. 500,000 (including insurance premium of 2.5%). The interest rate is 13% per annum with maximum repayment period of 24 months. Employed individuals need the following to apply for the loan: original national ID, active co-op bank account- operational for at least 6 months and 3 current pay slips. Self employed and other farmers need the following: Original national ID, Active co-op bank account- operational for at least 6 months and 3 delivery notes from an accredited buyer where applicable. The benefits, the loan is very affordable, being offered at an interest rate of 13% per annum yet no tangible security may be required. The loan is easy to access as the application process is easy and fast.

Maziwa Plus Loan, is product that aims at assisting individual dairy farmers, groups, federations/associations and dairy companies to finance their needs. To qualify for Maziwa plus loans, an individual dairy farmers need to meet the following criteria: Deliver milk to accredited processor(s) where formal contracts exist, Engage in commercial dairy farming and hold an active account with the bank, with at least one milk remittance handled through the account. Dairy self-help groups and dairy associations need to meet the following criteria to qualify for Maziwa plus loans. Delivering milk to buyers on formal contract basis, have been in existence for at least 24 months undertaking legal operations with positive net cash flows, maintain an account with co-op bank to facilitate disbursements and recovery, handling on average a minimum of 500 liters of milk per day and have by-laws, leadership structures and competent management. Dairy companies need to meet the following criteria to qualify for Maziwa plus loans, Should be dairy companies under the east African dairy development project financing scheme under the partnership of Co-op Bank and Heifer International (HI). The terms for the maziwa plus loan, loan size is kshs.100, 000 to Kshs. 10,000,000. Interest rate is 12% for companies or co-operatives under HI scheme and 14% for individuals under the HI scheme and outside the scheme. Maximum repayment period is 60 months working capital with equal monthly instalments and 12 months overdraft facility.

Financial Institution	Type of product	Description of product	Conditions
Cooperative Bank	Amiran Farmer Kit Finance	Greenhouse technology Loan=: 50-500,000	Interest=13%, Insurance=2.5 % Period =24 Months active account -6 months
	Maziwa Plus	Dairy farmers Scheme-HI/coop Loan=100,000-10 M	Interest =12% coy/coop Interest=14% =Farmer 500 liters per day Formal contract Active Account Period=60 months
Equity Bank	Agriculture commercial loan	Medium & large scale Loan=5,000-500,000	Interest =15 % Period =12 months Title deed, logbook

**Equity Bank of Kenya;** has five main products tailored made to meet farmers need. These products included Kilimo kisasa, Kilimo maendeleo, Kilimo biashara, Agriculture business loan and Agriculture commercial loans. Kilimo Kisasa, is loan given to individuals for farm developments. The loan range from Kshs 5, 000 to Kshs. 500, 000 with a maximum repayment period of 12months. Interest on the loan is 15% flat rate with monthly

instalments to be paid calculated on the loan amount. To qualify for the loan, you require having an account with equity bank or bring bank statement from another bank. Borrowers have to acquire life insurance cover from **BRITAK**(An insurance company) and pay 0.325% of the loan amount annually and processing fee of 3% of the loan amount. A farmer should have daily remittance through the account. Kilimo maendeleo and Kilimo kisasa products are very similar and only differ in the period of repayment of the loan. In Kilimo kisasa, the maximum repayment period is 12 months while in Kilimo maendeleo, the maximum repayment period is 24 months.

Third, Kilimo Biashara, is a loan given for farm inputs and developments. The loan ranges from Kshs. 5,000 -Kshs. 500,000. This product is different from Kilimo kisasa and Kilimo maendeleo because of its interest rate of 18% on reducing balance, that is, interest is calculated on the loan balance and not the whole loan amount. Kilimo biashara has a maximum repayment period of 12 months and payment is made at once, no paying instalments. Borrower must also provide tangible security like title deed, farm animals, produce to get the loan. Four, agricultural business loan, this is a working loan given to individuals who have been in business for at least one year and have been trained by AMIRAN. The loan is given to agro vets at a flat rate of 15% with repayment period varying depending on the nature of security provided. Minimum amount of loan is Kshs. 5,000 with maximum amount dependent on the nature of security. When using title deed as security, there is no limit on the amount to borrow with a maximum 36 months repayment period. When using farm animals/produce, the maximum amount of loan is Kshs. 500, 000 with a maximum 12 months repayment period. Five, agriculture commercial product offers loan to individuals with tangible security. The loan is fully secured with a title deed or a log book. The least amount of money borrowed is Kshs. 100, 000 Interest rate charged is 15% of the loan amount.

Financial institution	Type of the product	Description of the product	Conditions
Equity Bank	Kilimo Biashara	Small/large scale	Interest -15% flat, Period-3 yrs, Lacc-3% Title deed, logbook, shares, cash cover
	Kilimo Kisasa	Smallholder farmers Loan=50-500 T	Interest-15%, penalty -6% , Lacc 3% Affront pay=0.325% of loan, Daily deposit Chattel Mortgage , Period=12 months
	Kilimo Maendeleo	Smallholder farmers	Interest-15%, penalty -6% , Lacc 3% Affront pay=0.325% of loan, Daily deposit Period=24 months, Title deed, logbook
Kenya Commercial Bank	Mavuno	Small scale tea farmers Loan =100,-500 T	Interest=15.5%-18%, Period=12 months Delivery slip, Active account
	Dairy herd improvement	Dairy farmers Loan= 50 ,000-2 million	Interest=competitive Deducted from milk payment Chattel=dairy cows
	Dairy	Coy & coop	Interest=flexible

**Kenya Commercial Bank (KCB);** has been in Agriculture business for over 10 years. Currently KCB has three types of products tailored for both big and smallholder's farmers. These products KCB Mavuno Loan, dairy Herd Improvement Loans and dairy Instalment Sale Product. First, KCB Mavuno loan, is a personal loan scheme for small-scale tea farmers, which offers quick and convenient access to cash to be used for personal needs such as: home improvements and renovations, payment of school fees, purchase of farm inputs. Qualification for KCB Mavuno loan Should have maintained an account with KCB for at least three months, provide delivery slips as evidence of having delivered tea to the factory. A farmer can borrow up to 70% of the value of their tea deliveries subject to a minimum of kshs.10, 000 and a maximum of kshs.500, 000 at an interest rate of 15.5% to 18% which will remain fixed for the period of the loan. The Mavuno loan repayment is tailored to suit individual's tea bonus payments, however, the full loan amount must be repaid within one year. A farmer automatically qualifies for life assurance cover and the premium is paid only once. In the event of death or permanent disability, outstanding loan will be repaid by the insurance company. The benefits Loans of up to kshs.500, 000, Competitive interest rates, Quick loan processing, Flexible loan repayments, Life assurance cover and Top up facilities.

Second, dairy Herd Improvement Loan (NG'OMBE LOAN), boost production efficiency and returns for dairy producers by improving access to better breeds of dairy cows. Loans range from kshs.50, 000 to Kshs. 2 million and must be repaid within 18 months. Collateral consist of chattels over dairy herd purchased. Amounts from Kshs. 500, 000 to Kshs 2 million will require a title deposit. Above Kshs. 2 million, loans are fully secured. Loans are accessible by new and existing clients engaging in dairy production. Farmers' cooperatives are also eligible. Loans are disbursed directly to suppliers and loan repayments will be deducted from milk payments with balances rebated to clients account.

Third, dairy Instalment Sale Product is asset finance facilities available to individual clients in the dairy sector to purchase productive dairy assets. The loan size to an individual's- Ksh. 50,000 to 5 million, registered companies & cooperatives- Kshs. 5 to 20 million. This loan is targeted toward: Veterinary service providers for motorcycles and small 4x4 vehicles, dairy bulkers for milk chilling equipment with generators, dairy value addition equipments and transporters for refrigerated trucks and pickup trucks.

**Agricultural Finance Corporation (AFC)** has several products designed for the farmers to support production and marketing activities. The terms and conditions deter the farmers from accessing these loans.

Financial institution	Type of product	Description of the product	Conditions
Agricultural Finance Corporation	Seasonal Credit	Maize, Potatoes, Rice	Interest=10%, Period =12months Default=20%, Title deed
	Cash crop Credit	Sugar cane, Coffee, Tea	Interest=10%, Period =24 months Title deed
	Livestock credit	Beef, poultry, pigs, sheep & goats	Interest=10%, Period =24 months Monthly payment
	Machinery	Combine harvesters	Interest=10%,
	Business Loan	Butchery, cereal trading, all services	Interest=10%,

#### 4.4.2 Insurance Products and Services

Jubilee Insurance Company has a fully fledged agricultural insurance department in September 2010 with a major focus on smallholder farmers. The company has both livestock and crop Insurance First, the Livestock Insurance products; major on the dairy animals with the premiums ranging between 3% and 65% depending on the number of animals the farmer is putting on cover. The fewer the number of animals, the higher the premiums. This is a better agricultural insurance product for the company compared to the crop insurance for the following reasons: Dairy farmers are more organized mostly in co-operatives making it easier to access them. This is compared to the crop farmers most of whom are not organized in groups. -Dairy farming is more commercialized than crop farming. This means that dairy farmers would appreciate the need for insurance more than the crop farmers. -Livestock insurance products can be sold to the mass market without any need to customize it to a specific region.

The Crop Insurance products; are categorized broadly into multi peril and index. The company has developed several products mostly commodity specific and area specific. First, a product for the sorghum farmers, this product was developed to target sorghum farmers contracted by the East Africa Maltines Limited through other organizations/aggregators like smart

logistics. This product has been sold to sorghum farmers in Ukambani some of whom have been compensated for crop failure.

Second; a product for French beans growers; this product was developed to target French beans farmers contracted by frigoken (a sister company to Jubilee) since the farmers are irrigating the French beans, the major challenge was flooding and a product has been developed for the same.

Third; a product for Artemisia growers in Western, this product targets farmers contracted by the AgaKhan to grow Artemisia (an extract used to manufacture a drug called artemisin) the product has been developed but it is yet to pick.

Fourth; a product targeting sugarcane farmers in the western region, Jubilee has a contract with National bank where the sugarcane farmers who have financing arrangements with the bank have their crop covered against fire by the insurance company. The company sensitizes the farmers mostly through field days, agricultural shows and also through the use of electronic media i.e mostly radio. The company have not been able to reach many smallholder farmers and they are therefore developing a strategy to reach out to the farmers.

Despite the several products, the company was facing challenges which included, lack of organization of farmers, most smallholder farmers are not organized hence pose difficulties not only to reach out to them but also to develop customized products for them, inadequate data necessary to develop index products The department of meteorology, keeps its records manually hence making it difficult to retrieve required data. There is also the issue of funding gaps for the department affecting the operation of most weather stations. There is currently no insurance premium financing for the smallholder agricultural insurance products. There is a shortage of personnel who understand agricultural insurance concept and are able to explain it to the farmers. Most of the agents who sell insurance products have been unable to sell the agricultural insurance products mostly because they are not able to respond to the question raised by farmers. According to respondent interviewed, he has since Sept 2010 trained more than 300 agents but the performance is extremely low. Agricultural insurance is also affected by the poor history of insurance in general.

U.A.P, have set up an agricultural insurance department in 2006. The company offer two major products for small scale farmers. Livestock insurance and crop Insurance. First, Livestock insurance, there are a variety of livestock covered under livestock insurance which include: Dairy cattle, beef cattle, Poultry, pigs, sheep and goats. A farmer can insure or cover as few as 1(one) animal with poultry being the only exception where the minimum number of birds covered is 10,000. Livestock insurance (mortality) covers against losses due to accidental death, disease of terminal nature, emergency slaughter on advice of a recognized veterinary surgeon and theft of livestock in raising units or paddocks. Premium rate depends on livestock type of population. The rate ranges between 3% and 6% on sum insured subject to a minimum premium of ksh.12, 500 per farmer. Veterinary and valuation report acts as a basis of determining sum insured. However, livestock insurance does not cover; The first 10% of the loss for each and every loss, The first 20% of loss for theft, Famine malnutrition and feed poisoning impotence and infertility prior diseases and deformities and Death due to neglect and poor husbandry practice.

To acquire livestock insurance cover, one requires; current veterinary and valuation report from a registered veterinary surgeon, Identification by ear tag, tattoos or any other practical mode of identification, Completed application form and payment of premium. Currently UPA insures an estimate 5,500 livestock farmers from all regions in Kenya. The challenges encountered included *low market penetration rate* - market is available but farmers are not aware of livestock insurance services available and Outbreak of a calamity in an area leads to high payout.

Second, UAP has crop Insurance products which include Multi Peril Crop Insurance (MPCI) and weather index insurance. Multi Peril Crop Insurance (MPCI), this covers commercial field crops including wheat, maize barley, rice, tea crop, coffee, sugarcane, all horticultural crops, floriculture and tree crop. It also gives cover to farm assets and equipments including harvested crop, green house and irrigation facilities. MPCI mostly covers medium to large scale farmer but can also cover small scale farmers when they organize themselves in groups. It is cost effective to the company. Premium rate depends on crop type and number of insured perils; it ranges between 4.5% to 6% on sum insured.

Weather Index insurance, this cover is specific to an area covering not more than 20km radius. **Index** –a factor affecting a large group of people used to measure outcome of the cover. This cover (weather index insurance) best fits the small scale farmer because of its cost benefit which involves more research than actual visiting of the fields. It involves analyzing data, that is,

recording and interpreting of data collected. UAP collects the data which is then certified by Kenya meteorological department and then UAP analyze the data. Premium on weather index insurance varies depending on the region from 2%-10% on the sum insured. U.A.P works in collaboration with- Kenya Women Finance Trust, Sygenta, Kenya National Federation of Agricultural Producers, Kenya Meteorological Department, Farmers groups and many more. The key Challenges encountered, *Low market penetration rate*-market is available but farmers are not aware of the services available *Seasonal changes*-cannot predict with certainty the changes in weather, seasonal changes come with other costs, either positive or negative (mostly common in MPCI)

The general challenges facing Agricultural insurance, *low market penetration rate*-Farmers (market) are available but they are not aware of agricultural insurance products available., *Society attitude towards agriculture*- many people view agriculture as a profession for people who are not learned., *Seasonal changes*-changes in weather affect farmers' behavior. Government policies instituted are not sufficient to grow agriculture industry, *Organizations of farmers*- farmers are not organized and therefore end up producing one commodity at ago. This to an overflow of the produce and in turn leads to low pricing of the product. Low pricing of products discourages farmers from taking insurance for the next season and Market available for commodities is highly affected by forces of demand and supply. The highlighted challenges can be addressed through *publicity in the media* and showcasing of available agricultural insurance products. *risk management* through tolerant crops least affected by changes in seasons and amplify farmers to voice and to air grievance as one to get government attention.

#### **4.5 Discussion of the Results**

The study findings indicate that the beneficiaries of the WRS pilot initiatives in Kenya were mainly (90%) large scale farmers. Smallholder farmers have limited (10%) access to this innovation. However, some smallholder farmers in study area have been organized into groups by some development agencies including SACRED Africa in western serving 220 farmers in Bungoma, Butere Mumia & Vihiga. In this region, farmers deliver an average ranging from 60-120 bags to the local community cereal banks. The collection centres were located strategically in a radius of 1 Km. At the time of the study the centres were receiving very small quantities of grains partly because of the prevailing good prices (kshs 3,000 per 90 kg bag) in the market. In Siaya, Nyanza region, Millennium Villages supported the initiative and deals with smallholder farmers who deliver an average ranging from 2-20 bags to the community cereal bank. In Meru North, Eastern region, Farm



Concern International supports the initiative in collaboration with Grain pro using "cocoons". the farmers in this region who were engaged in groups cereal bulking or cereal Banks delivered an average ranging from 1-20 bags while in Narok, South Rift valley, under National Cereal and Produce Board (NCPB) pilot WRS, farmers delivered 20-65 bags to build up earn a Warehouse receipt. Lesiolo received a minimum of 500 bags to earn a receipt hence the main clients were five large scale farmers.

This scenario poses a fundamental question on the underlying factors for a successful WRS in Kenya. It is emerging that there is need to create awareness, repackaging of WRS to accommodate small quantities produced by smallholder farmers and establishment of an elaborate market information system for better understanding of price fluctuation. This allows farmers to assess when is the best time to sell, financial institutions to assess the market value of the security and processors to be able to assess the value of buying the crop at a particular time and quality.

The cost of storage for the 1<sup>st</sup> three months range from kshs 150 to 200 per 90 bag of maize which translates to 8 %- 11 % given the base price of Kshs 1,800 at intake time. The study revealed that the price increased from Kshs 1,800 to kshs 3,000 within 6 months of storage. This represents 66.67% increase hence suggest the incremental changes cover the costs of storage hence makes delayed selling of grain an attractive investment option for smallholder farmers It also confirm that price was key determinants in the operations of grain banks and WRS and storing commodities should be market-determined, so that farmers and traders store in expectation of higher prices or rush goods to market when spot markets are especially right (and prices are high).

Majority (85%) of the respondents interviewed do not meet quality standards. The respondents interviewed in Western (80%), Eastern (90%), South Rift (80%) and Nyanza (90%) did not meet quality standard especially moisture requirement. Smallholder farmers preferred selling their produce to middlemen to avoid quality tests.

The results suggests quality standards and grades are necessary to guide trading and facilitate efficient use of storage space as well as standardization of commodities stored to ensure the quality deposited is the same as that withdrawn. Quality determines the price of the stored products and facilitates business transaction. There is need for documentation of the transaction and provide description of the quality of the goods stored without physically examine the goods. Furthermore, initiatives were unregulated both private and public operating on gentleman agreement. These situations require WRS policy and a range of regulatory requirements,

covering physical facilities, qualifications and training of key staff especially on certification & standardization of grains. This will facilitate grading, financial innovation and insurance services for fire and allied perils and theft, hence performance guarantees.

The study revealed that EAGC has established a system for certifying warehouses to receive grain deposits and issue transferable warehouse receipts. A conventional set of certification criteria has been developed covering capital adequacy, insurance cover etc. Certification is provided on the basis of documentary information and the due diligence of inspection companies requirements are set out in [http://www.eagc.org/warehouse\\_Rules\\_protocols.asp](http://www.eagc.org/warehouse_Rules_protocols.asp).

EAGC is the main certification authority that certifies warehouses as well as licensing and inspection of warehouse facilities. This activity is very critical building blocks for regulation and guarantee credibility of the system. Storage according to grades and standards create market segmentation and technically able to maintain quality standards during storage. Sound management is necessary to guarantee financial viability and reliability to be trusted by banks

In order for warehouse receipts to be accessed by smallholder farmers, accepted traders and banks, there must be a performance guarantee for warehouses. The literature review revealed that performance guarantees are usually in the form of insurance bonds or letters of credit. These are sometimes supplemented with an indemnity fund, created through contributions from private warehouses, and collected as part of the fee charged to customers. Such funds reduce the cost of insurance bonds or letters of credit by spreading the risks and make guarantees accessible to smaller warehouses. This guarantee provides compensation if stored goods do not match what is specified by the receipt, either due to negligence or fraud by the warehouse. Without such guarantees smallholder farmers and traders will be reluctant to store crops and banks will be unwilling to accept receipts as collateral for financing. This broadens the market for warehouse services and increases competition in storage.

The study findings suggest that the government of Kenya was willing to facilitate development of an elaborate WRS linked to Commodity exchange envisaged to be promoting consistent with trading within the country and beyond. The processes of development of WRS bill, rules and regulations were on going. This study will go a long way to add value and enrich the process. It emerged that the main legal issues being addressed focus on development of mechanisms, systems and structures that recognize Warehouse Receipt (WR) as a document of title, transferable and negotiable

instrument for stored commodities which is enforceable legal document trusted by financiers.

The study further revealed that the available options for smallholder farmers to gain access to, and benefit from, WRS revolved around collective action i.e Cooperative approach. Out of all the smallholder farmers interviewed in the study area, 80 % were involved in group cereal banking of surplus grain harvested equivalent to 30% of their home consumption. Farmers deliver grain using traditional means including bicycle, donkey and carts to bulking sites but had difficulty in meeting minimum quantities of 10 metric tonnes of grain required by existing pilot warehouses to earn a warehouse receipt. This calls for collective action which requires farmers to form groups in order to access to WRS facility.

The study revealed that the volume, distance travelled to the nearest warehouse, long queues, quality requirement and reliable information system are critical factors to consider when establishing a sustainable warehouse receipt system. In rural area grain bulking points are more popular and accessible to smallholder farmers. The study found out that the average distance to nearest market centre was approximately 2kms while the nearest certified warehouse was located approximately 16 kms. The fixed costs of running standard warehouse are high and therefore grain bulking sites are typically rooms in houses holding around 5 tonnes of maize grains. It is eminent that mandatory licensing would be necessary to ensure the performance of existing cereal banks and pilot warehouses to mainstream the initiative as viable business venture and food security strategy in Kenya.

The prospects of farmers adopting the system are high with aggressive awareness creation. For instance, in Narok, the pilot NCPB WRS was launched in September 2010 and had received 22,959 bags of 90 kgs of maize and issued Warehouse Receipts to 15 large scale farmers by the time of the study. It was observed that the incremental changes on the market price of 90kg bag of dry white maize grains within six months from harvest time increased from kshs 1,000 to kshs 3,000. This implies that the margin realized was sufficient to cover storage charges and accrue reasonable profit for the farmer. The farmers were linked to Equity Bank and Farmers secured loans worth 80 % of the grain value in the store at base price of Kshs 1,800. The Bank required a letter of commitment from NCPB to effect transaction.

Warehouse receipts specify the quality and quantity of the goods stored. The rights, liabilities, and duties of each party to a warehouse receipt (producer, bank, warehouse, and so on) must be clearly defined. Ideally, receipts should be freely transferable by delivery and endorsement. Holders of

receipts must have the right to receive stored goods or their fungible equivalent if the warehouse defaults or its business is liquidated. And the lender should be able to determine, before granting the loan, if there is a competing claim.

Warehouse receipts scheme relies on clear division of responsibility and clear co-ordination between the public and private sector. First, public authorities key role include to pass and implement legislation on warehouse receipt law and the standard conditions for licensed warehouses. to set up a licensing and inspection system for the licensed warehouses, to set up a performance guarantee system and to work with the private sector to establish viable quality standards. Second, smallholder farmers are essential to ensure support of the system by depositing the grains and fuel the operation of warehouses. Third, the local banks have a critical role to play in credit support to the initiative. This requires training of bank staff and establishing clear internal procedures, including a system for daily monitoring of prices of commodities being used as collateral. Warehouses that already have an established relationship with financial institutions are most likely to be seen as credible participants of the scheme at the outset, with acceptability widening to more warehouses Four, international institutions are important partners in supporting the institutional development especially providing technical assistance in establishing quality standards, training to warehouse operators and inspectors, advising on draft legislation, help set up performance guarantee schemes and draw on best practices in other countries. This can greatly accelerate the establishment of warehouse receipts systems.

The study revealed that financial institutions and insurance companies have established agricultural business (Agribusiness) departments and special units. The institutions have been innovating new product targeting agricultural sector. Agricultural Finance Corporation (AFC) has several products including Horticulture and floriculture loans, seasonal crops, machinery, Agribusiness, livestock, water development, cash crops, oil crops, Stawisha group loans. Similarly, Cooperative Bank of Kenya, Equity Bank and Kenya Commercial Bank (KCB) has products in the market. Generally, there was growing interest in small scale farmers by financial institutions, banks MFIs and Insurance companies amongst others has increased the number of financial products available.

However, few farmers know of these financial and insurance products thus limiting their uptake and utilization. The interest rates ranges from 10%-18% with other additional costs such as affront cash in some cases, processing fee, conveyance and insurance among others These additional charges increase interest to accumulated figure which of ranged between

21%-24% hence making cost of money very high. There is need develop effective mechanisms to increase the awareness and access of farmers to information on the financial products and services available in the market, Provide space for the start of deal-making arrangements between farmers organizations and financial service providers. Encourage the development of financial services targeting farmers by sharing and create platforms to promote uptake of the innovative products

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

The study revealed that the beneficiaries of the WRS pilot initiatives in Kenya were mainly (90%) large scale farmers. Smallholder farmers organized into groups have limited (10%) access to this innovation. This could be attributed to inadequate information sharing and in appropriate packaging of WRS facility and in addition, establishment of modern warehouse require heavy capital investment hence difficult to reach rural areas. Therefore, there is need to innovate a user friendly simple storage facilities at strategic grain bulking sites at village level and promote use of simple technologies such as solar drying and moisture testing meters to expand the outreach at the farm level.

Moreover, it is imperative to organize smallholder farmers into association and built their capacity to engage collective action to manage and establish their own collection centers at strategic location in the village level. Price volatility and weather conditions pose a great challenge to the implementation of the WRS. It is important for the government to set floor price as base to guide supply and demand forces in the open market. Innovate insurance packages are necessary to mitigate the above risks.

Quality standards especially moisture content, mixed varieties, size of the grain, weight, weather damage , foreign matter , color and pre-germination hinder adoption of WRS by smallholder farmers. There is need to create awareness, improve extension services and fast development of irrigated agriculture and establish a training centre in the country to promote WRS. For instance the acceptable standards for wheat include Bushel weight (less than 76kg/HI), Moisture content (14 % Max), Foreign Matter (1% max), screenings (1% Max), Broken grains (2%), Weather damage (10% Max), heat damage (3% Max), Germination (3% max), Mixed Varieties (10% max), Insect Damage (2% max), immature grain (10%), Datura (2 seeds max per 0.5 L), Wild Oats (3 seeds max per 0.5 L), Darnel (0.5 % max) and .Earth, sand & stones (1%max).

The study results revealed that increasing smallholder farmers' participation in cereal banking empower them to take greater control over their local maize grains supply and store for sell at appropriate time. If more maize grains are stored locally in villages, rural people will be more food secure in the poor season. Therefore, it is imperative to develop WRS policy and legal framework to guide and regulate the operations at all levels. This will facilitate national and regional trade.

In Kenya, the pilot WRS and cereal banking initiatives operate on gentleman arrangement, it would be prudent to establish some form of accreditation or

affordable certification mechanisms with a view to building up the confidence in the industry. Such systems will assure standardized documentation and performance guarantees to protect depositors against warehouse failure or bankruptcy. The existence of these systems and safeguards will give comfort to the financing banks, and lower their transaction costs in dealing with the WRS.

Therefore, there is need for regulatory agency to harmonize activities, infrastructural development in the rural areas through significant investments, in some cases involving rehabilitation or building of storage facilities and capacity building involving a combination of trading and service provision, i.e. the provision to the public of drying, cleaning, storage and other services for a fee to guarantee sustainability of the initiative. There is need to develop e-WRS to facilitate information sharing and reduce the cost of doing business. This will be a major motivating factor to the banks. The legitimate holder of Warehouse Receipts can be easily identified, and the audit trail quickly checked. An effective electronic registry facilitates accurate documentation and transparent business transaction.

Elaborate information system will facilitate trust building among the actors especially the banks. The Banks requires that warehouse receipts must be legal document which is credible and acceptable to be used as tool to transact business. Banks must be involved at an early stage in devising the scheme to ensure that they are satisfied with the enforceability of the receipts in case of default. To accommodate such risks, most banks will only loan a percentage of the current market value of the crop stored. In countries where such schemes are well developed, it can be 80-90% of the value of the grain at harvest; where warehouse receipt schemes are less mature, it is more typically around 50-60% of that value

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## 7. ANNEXES

### Annex 1: Warehouse Receipt System (WRS)-Tool

OBJECTIVE	TASKS	ACTIVITY	
To understand the operations, risks, challenges and enabling environment for WRS	The levels of knowledge and understanding of the warehouse receipting as an option for the farmers and the reasons for the confirmed levels of awareness or otherwise		
	Operations	Receiving	
		Weighing	
		Grading	
		Receipting	
		Storing	
		Inspection	
		pest control	
	Record		
	Potential process and business risks		
	Risks	Insurance	
		Fire protection	
		Food Safety	
		Security	
		Theft	
	collateral management		
	Possible limitations that may hinder wide scale adoption of the system among smallholders grain growers as well as other key stakeholders in Kenya and advise on interventions which can improve sustainability and access.		
	Challenges	Prices volatility	
		Shrinkage	
		Logistics	
Technical			
Relevant policy and regulatory framework required to mitigate, promote and reduce transaction costs in the grain value chain.			
Enabling environment	Policy		
	Regulation		
	Arbitration		
	certification		
	inspection		
	procedures		
To identify the capacity of smallholder farmers to engage in WRS	The existing capacity of smallholder farmers to handle grains in a good year and the reasons behind the obtaining situation		
	Production level	Quantity per farmer	
		Land size	
		Existing cereal banks	
		Awareness	
		Contracts	
		Procedures	
		Timing	
	Quality Standards	moisture content	
		Color	

		Cob type	
	The extent to which farmers have to be prepared to effectively adopt warehouse receipting as a grain storage option among smallholder communities in Kenya		
	Ability to handle grains	Skills	
		Management of grains	
	Transport	Distance to nearest market	
		Distance to nearest certified warehouse	
		Transport costs	
	Infrastructure	storage facilities	
		drying	
		shelling	
		capacity of storage facilities	
		storage period	
To determine how best WRS can improve grain management & marketing (scope & intensity) for the benefit of smallholder farmers	The architecture of the WRS that is accessible and beneficial to smallholder farmers, including evidence to demonstrate its benefits and meets their needs		
	Information	Market price	
		farm gate price	
		warehouse price	
		Information flow	
	Costs-per 90kgs bag	intake charges	
		storage fee	
		bagging	
		cleaning	
		drying	
		fumigation	
		discharge/release	
	Benefits	price at intake time	
		price at discharge time	
		% of loan given against grain value	
		commitment fee	
		financial transacted	
		no. of farmers served	
	Minimum quantity to earn a receipt	Minimum tones/bags	
	Mode of payment	Cash on delivery	
		Paid through the bank	
Financial services	Requirement		
	amount loan		
	mode of loan repayment		
collection centre	No of collection centres		
	Number of farmers served		
To make recommendation to contribute toward developing suitable WRS policy and legal framework			

## Annex 2: Financial and insurance Services

OBJECTIVE	TASKS	ACTIVITY	
To identify financial products available for smallholder farmers	Review of the existing financial products in the market for the smallholder farmers/agricultural products		
	To identify existing financial service providers-	List all financial service providers	Type of financial packages
	Describe the products listed above	Description e.g. terms & conditions, interest rate, collateral required, service offered, collaborators etc	
	Who are the collaborators if any (add a column)		
	To what extent can farmers use their produce to access financial services		
To determine levels of access to financial products by smallholder farmers	How many clients have accessed the different financial products		
	Product	no of farmers	
	Where are these clients situated		
	What are the <b>challenges</b> in providing and accessing the financial services		
	How can we address the above challenges		
	What can be done to enhance better utilization of the existing and emerging products in the financial services' markets		
	What are the mechanisms utilized for the awareness creation for the financial products available		
To evaluate the suitability of the financial products to the smallholder farmers (relevance and appropriateness of products)	Packaging of the product (pre-conditions/requirements, need addressed etc)		
	Rate/frequency of default		
	Costs and consequences of defaulting loan repayment (penalties,		

	incentives/Rewards for conformity		
To identify and determine insurance products available for smallholder farmers	Review of the existing agricultural insurance products in the market for the smallholder farmers/agricultural producers		
	To identify existing insurance providers	<i>List all insurance providers</i>	
	Describe the products listed above	<i>Give the Product description based on: terms &amp; conditions, premium, service offered, collaborators, Determine the commission charged by agents</i>	
	Who are the collaborators if any (add a column)		
	How many clients have accessed the different insurance products		
	product		
	Where are these clients situated		
To determine levels of access to insurance products by smallholder farmers	What are the <b>challenges</b> in providing and accessing the insurance services		
	How can we address the above challenges		
	What could be done to enhance better utilization of the existing and emerging products in the insurance services' markets		
	What are the mechanisms utilized for the awareness creation for the insurance products available		