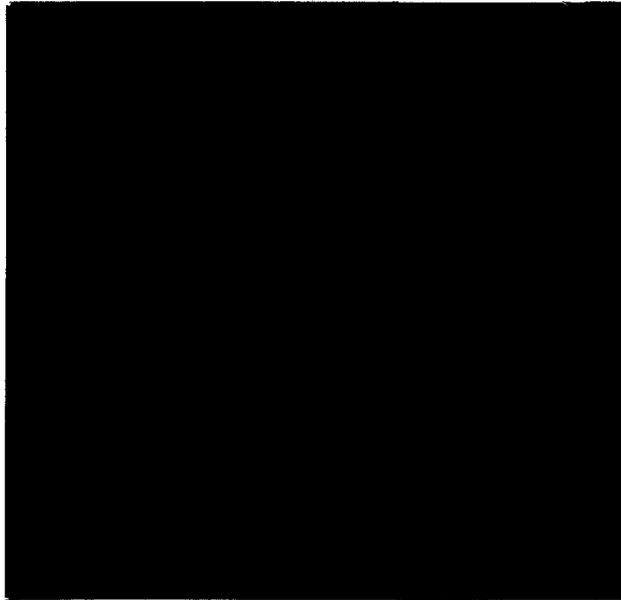


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## **AGRICULTURAL POLICY ANALYSIS PROJECT, PHASE III**

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PN-ACA-298

**ASSESSMENT OF THE  
FUTURE ROLE OF  
*INSTITUTO DOS CEREAIS  
DE MOÇAMBIQUE (ICM)***

**MARCH 1997**

**APAP III  
Research Report  
No. 1017**

**Prepared for**

**Agricultural Policy Analysis Project, Phase III, (APAP III)  
and  
The Government of the Republic of Mozambique**

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## LIST OF ACRONYMS

AGRICOM	State Company for Agricultural Marketing
DEA	<i>Direcção de Economia Agrária</i>
DINECA	National Directorate of Agricultural Marketing
FAO	Food and Agriculture Organization
FOB	Freight on Board
GRM	Government of the Republic of Mozambique
IARC	International Agricultural Research Center
ICM	<i>Instituto dos Cereais de Moçambique</i>
Kg	Kilogram
Km	Kilometer
MAP	Ministry of Agriculture and Fisheries
MICTUR	Ministry of Industry, Commerce and Tourism
MSF	<i>Medecins sans Frontierès</i>
MSU	Michigan State University
Mt	Meticais (@ 12,000 per \$ US)
MT	Metric Ton
NGO	Non-Governmental Organization
SIDA	Swedish International Development Agency
SIMA	<i>Sistema de Informação de Mercados Agrícolas</i>
US	United States
USAID	United States Agency for International Development
V&M	Mozambique brokerage firm

## PREFACE

This assessment of the *Instituto dos Cereais de Moçambique* (ICM) was undertaken through a work order with the Agricultural Policy Analysis Project, Phase III. The assessment was done by a three person team consisting of Donald G. Brown and Norman Rask, agricultural economists, and José Egidio Paulo, economist/enterprise management specialist, under contract with Abt Associates, Inc. The assessment was undertaken from January 13, 1997 to February 21, 1997. As part of the assessment, the team made visits to the provinces of Gaza, Zambezia, Nampula and Cabo Delgado. Government officials, ICM staff, donors and private sector individuals were interviewed both in the field and in the capital, Maputo. Several oral briefings were given to officials of the Ministry of Industry, Commerce and Tourism (MICTUR) and the Ministry of Agriculture and Fisheries (MAP). An early draft of the team's report was left with USAID and the government of Mozambique for their comments, which were later incorporated into this final report.

The team would like to thank Rich Newberg, Agricultural Officer, and Fernando Paixao, Sectorial Policy Advisor of USAID/Maputo for their time and support in arranging our field trip and providing insight into the maize market in Mozambique. In addition, the team would like to thank Luis Eduardo Siteo, Director of Internal Commerce, MICTUR, and José Paulo Marra, Director of ICM, for their generous offer of time to meet with the team to provide guidance during the course of our work. The team would also like to acknowledge the assistance of the SIMA office of MAP. We particularly thank David Tshirley, the MSU Chief of Party of the SIMA office, for his advice and support and associate researcher Ana Paula Manuel Santos for her efforts to bring together SIMA's data and prepare charts for the team's analysis.

Given the necessity of gathering information and forming impressions within such a short time, we needed to rely on much secondary data. Under these circumstances, factual errors and information gaps are possible. To the extent that such errors and gaps exist, they are the responsibility of the team members and in no way reflect upon the excellent insights provided to us by respondents.

## EXECUTIVE SUMMARY

### 1. BACKGROUND

Mozambique is entering a period of remarkable economic growth and expansion. After suffering from years of war, economic mismanagement and drought, Mozambique is finally experiencing the benefits of peace, good weather, and sound economic management. This assessment intends to see what role, if any, the *Instituto dos Cereais de Moçambique* (ICM) should play in the new economy.

Government policy in Mozambique encourages the integration of agriculture and the expansion of an efficient commercial sector in support of agriculture and rural development. An important issue is the role government should play in implementing this policy. In a free market economy, government intervention should occur only where there is an obvious market failure which government can correct.

ICM can be linked to organizations going back to 1961. Today, ICM is a public institution with the broad social mandate of its predecessors but without state funding. It is forced to act and compete in the market place like a private institution. This discrepancy between mandate and means creates a dysfunctional organization that underutilizes its resources and dampens the spirit and enthusiasm of its well qualified staff.

The present review of ICM's operations was made in light of the country's current and projected maize market. Maize markets in Mozambique are undergoing a great deal of change. Two important changes are the transition from a command to a market economy and the differentiation into a two tier — deficit in the south, surplus in the north — market. A number of market imperfections have been identified. These include lack of finance and poor roads. There are also market impediments that contribute to very large marketing margins 4-5 times as large as U.S. marketing margins. These imperfections and impediments limit the income potential in agriculture, restrict market access for remote farmers, limit the areas of the country that can supply the Maputo market, and constrain the country's ability to compete in international markets.

In terms of price efficiency, the markets are working well. Market margins between geographical areas and between stages of marketing are consistent and logical. This is especially true in the south and center of the country, which serve the deficit Maputo market. ICM had a large presence in the three northern provinces and Tete in 1996, purchasing and holding for export about 40 percent of the registered maize marketings there. Some noted price distortions may have resulted from this massive presence in the market.

### 2. ASSESSMENT OF ICM'S MANDATES

The assessment team looked at ICM's mandates and asked four questions: 1) Is the mandate an appropriate public intervention as determined by a market failure test? 2) Is

government capable, both financially and technically, to correct this failure? 3) If public intervention is called for, how much would it cost to implement the mandate? and 4) Which public institution is best suited to implement the mandate?

The 1994 decree creating ICM established nine distinct mandates. Of these nine, the team found six to be appropriate for public intervention and, of these, two to be suited for possible implementation by ICM. Activities in research and in extension are more appropriate to other existing government and private organizations. Market information and studies are being well handled by SIMA in the Ministry of Agriculture and Fisheries, and the team suggests expansion of this activity. Grades and standards presently apply only to export crops, and these standards are managed by the private sector. The mandates related to guaranteed purchase of agricultural surplus (buyer of last resort) and of management of a physical strategic reserve are suitable for potential ICM activity if these activities are properly financed by the government.

Purchase of agricultural surplus may be an appropriate government activity if there is obvious evidence that there is a market failure with large numbers of farmers not being able to obtain a reasonable market price for their product. The team could not find evidence for such a situation. If the government wanted to implement a program of purchase of agricultural surplus, ICM would be a likely state organization to do so, but the cost of implementing such a program would be high. We estimate that it would cost approximately \$ 7.6 million a year (91 billion Mt) to operate a buyer of last resort program involving approximately 60,000 MT. In addition to the direct costs of such a program, there would be indirect costs. These costs would include higher consumer prices and the strong likelihood that the activity would lead to domestic maize prices too high for export sales unless there were export subsidies from the government. Government must decide whether a buyer of last resort program would be the best use of its resources for supporting agricultural development and markets. The assessment team does not favor this activity.

Management of a strategic reserve is another potential ICM activity. A physical strategic reserve can be managed by either a public or a private concern. A private firm would be less expensive because it can spread its fixed costs over a range of other activities. The team estimates that the cost of a 1 month (43,000 MT) reserve stock for Maputo would be approximately \$ 5 million a year and that a three month (130,000 MT) reserve would cost some \$ 17.5 million a year.

If the management of a strategic reserve were combined with the purchase of agricultural surpluses, total cost would be higher than the sum of the costs of the individual programs. For this kind of combination, the assessment team estimates about \$ 6.4 million rather than \$ 5 million as costs for a one month reserve stock. These costs result from the strategic reserve's having to purchase product at higher than market prices. Government must weigh the cost of a physical reserve with that of a reserve based on private imports and foreign exchange. The latter type of reserve system has virtually no cost to the government. Unlike many of its neighbors, Mozambique has good ports and rail links for quick delivery of imports if the need should occur.

The assessment team recommends the consideration of a foreign exchange rather than a physical strategic reserve.

### 3. CONCLUSION AND RECOMMENDATIONS

The review of ICM's mandates and capabilities indicates that, unless the government is prepared to make significant expenditures on a physical strategic reserve and/or on a program to purchase agricultural surplus — moves which the assessment team cannot recommend on economic grounds — there is no public role for ICM.

If there is no public role for ICM, then the issue to be dealt with is what to do with ICM's physical and human resources. Ideally these resources should be used to improve market operations and efficiency in the country. The best way to look at this question is to examine the present and projected cereal market. As we have seen, while the country has three geographical regions, it has only two major but distinct markets for maize — the southern market with a deficit related to demand in Maputo and the northern market with surpluses.

#### ICM in the Southern Market

In the south the markets are working very well. There is a high degree of competition responding to a significant level of effective demand from the Maputo market. Market entry is easy and there are many informal traders in the market. ICM has almost no activity in the region and there is no need for state intervention in the market.

#### Recommendation for the Southern Market:

ICM's assets should be sold or transferred to the best use that supports competition and market efficiency. A commission or study should be undertaken immediately to inventory ICM's assets in the south to determine the best use of these assets.

#### ICM in the Northern Market

The situation in the north is more complicated. At present there is less competition in the market, with a small number of large traders and firms, including ICM, dominating. As a surplus area, the northern region's future depends on exports. Taking advantage of export opportunities will require efficient collection of high quality maize and other products for speedy removal from the region.

Market entry is more difficult in the northern region due to natural barriers of access into the export market. These barriers include need for a minimum quantity of goods that meet international quality standards and for contracts and brokerage outside the country. Informal traders will have to go through formal traders to access this market.

## Recommendation for the Northern Market:

Decisions on disposal of ICM's assets in the north should be based on three fundamental principles: 1) the assets should be used to increase competition, 2) the assets should also be used to expand exports of agricultural products, and 3) actions undertaken to remove these assets from the public rolls should not unduly disrupt the local market.

The first step is to remove ICM's public mandates. Next, in a phased program over four years, ICM's assets should be privatized. To increase competition in the region, the most desired action would be to assemble ICM's assets into logical groups — by province or markets. These grouped assets can then be sold to the private sector (as individuals or stakeholders) to create firms that will compete with the present traders and with each other. Ideally, to further increase competition the largest possible number of purchasers of these assets will be traders from outside the north region.

If these grouped assets cannot be sold, then the fallback position of government should be to selectively liquidate the assets in support of competition in the region.

## Role of Government

Government has a fundamental and essential role in the success of a market economy. The natural tendency of the private sector is towards monopoly and limiting of the market. It is the state which, through support, not direct intervention, assures competition in the market. Competition is the constraint that turns desire for profit into the motivating force that results in improved well-being of people in a free market economy.

The most important way the Mozambique government can improve farmers' welfare and increase agriculture's contribution to the national economy is to *reduce agricultural marketing margins*. Only the state has the capability to do this. Critical actions to be undertaken are the following: improve roads and transportation, expand market information, provide security of property and person, enforce legal contracts and facilitate contract dispute resolution, free both the formal and informal traders from excess regulation and "red tape", assure safe food in the market and, when the market demands, establish and maintain grades and standards. In addition, the state should not increase marketing margins through taxation on marketing. Maintenance of stable and rational macro-economic policy is an essential element in reducing marketing margins.

## SUMARIO EXECUTIVO

### 1. INTRODUCAO

Mocambique esta a entrar num periodo de notavel crescimento e expansao economica. Depois de sofrer muitos anos de guerra, seca e com dificil administracao economica, Mocambique esta, finalmente, a experimentar os beneficios da paz, boas condicoes climatericas e uma administracao economica sa. A presente avaliacao e para ver qual e a posicao e ate que ponto (se valera a pena) o Instituto dos Cereais de Mocambique (ICM) podera continuar a participar nesta nova face de economia.

A politica do Governo em Mocambique encoraja, em simultaneo, a integracao da agricultura e um eficiente sector comercial no apoio a agricultura e desenvolvimento rural. Uma importante saida e o papel que o Governo joga / assume na implementacao desta politica. No livre mercado a intervencao do Governo deveria ocorrer somente onde ha uma evidente deficiencia de mercado que o Governo pode corrigir.

O ICM esteve ligado a sociedade em 1961. Actualmente, o ICM e uma instituicao publica com posicao de mandato social dos seus precedentes mas sem fundos do Estado. E forçado a actuar e a competir no mercado como uma instituicao privada. Esta e uma situacao conflituosa de uma organizacao nao funcional que subaproveita os seus recursos e desmotiva / desanima a iniciativa e entusiasmo dos seus tecnicos bem qualificados das delegacoes.

A revisao das operacoes do ICM foram feitos a luz do actual e projectado mercado de milho, no pais. Os mercados do milho em Mocambique apresentam grande nivel de mudanca. Os dois mais importantes sao transicao para economia de mercado e para dois tipos de mercado: - um deficitario, no sul e outro excedentario, no norte. O numero de imperfeicoes de mercado tem sido identificados nomeadamente: financas, estradas degradadas, e uma serie de outros impedimentos, todos contribuindo para uma grande margem comercial, que é 4 a 5 vezes mais que as margens comerciais nos Estados Unidos. Isto reduz a renda potencial na agricultura, restringe o acesso de mercado para camponeses das zonas remotas, reduz as areas no pais que podem abastecer o mercado de Maputo, e restringem a habilidade do pais para concorrer no mercado internacional.

Em termos de eficiencia de preco os mercados estao a funcionar bem. As margens de mercado entre areas geograficas e entre os niveis de comercializacao sao consistentes e logicos. Esta e, especialmente, a verdade no sul e no centro do pais que serve para o mercado deficitario de Maputo. O ICM teve uma grande presenca nas provincias do norte do pais e em Tete, em 1996, comprando e armazenando para exportacao cerca de 40% do milho registado na comercializacao dessa zona. Algumas distorcoes de precos registados poderao ter resultado da sua presenca massiva no mercado.

## 2. AVALIACAO DOS MANDATOS DO ICM

A equipe de avaliacao do ICM verificou os mandatos do ICM e colocou 4 questoes / perguntas: 1) o mandato e uma intervencao publica apropriada (usando um teste de mercado deficiente), 2) o Governo e capaz, financeira e tecnicamente, corrigir esta situacao / deficiencia, simultaneamente, 3) se a intervencao estatal e necessaria, quanto isso devera custar para a implementacao do mandato, e 4) que instituicao publica e melhor adaptada / conveniente para a implementacao do mandato.

O decreto de 1994 de criacao do ICM estabeleceu 9 mandatos diferentes. Sobre os 9, a equipe encontrou 6 que sao apropriados para a intervencao estatal e 2 dos quais sao compativeis para a possivel implementacao pelo ICM. As actividades de pesquisa / investigacao e de extensao sao mais apropriados outras organizacoes do Governo e organizacoes do sector privado existente. Informacao e estudos de mercado estao a ser bem encaminhados / realizados pela SIMA do Ministerio da Agricultura e Pescas e a equipe sugere a expansao destas actividades. Por enquanto, a classificacao e padroes sao aplicadas apenas para produtos de exportacao e estes sao manejados pelo sector privado. Os mandatos referentes a garantias de compras de excedentes agricolas (comprador de ultimo recurso) e a gestao de reservas fisicas estrategicas sao proprios para a funcao / actividade potencial do ICM, se estas actividades forem devidamente financiadas pelo Governo.

A comercializacao de excedentes agricolas pode ser uma actividade propria do Governo se estiver claramente evidente que ha um deficiente mercado com um grande numero de camponeses incapazes de obter / conseguir um preco razoavel no mercado para o seu produto. A equipe nao encontrou provas. Se o Governo quisesse implementar um programa de compras de excedentes agricolas, o ICM pode ser provavelmente o organismo do Estado adequado para fazer isto mas, o custo para a implementacao do tal programa pode ser bem alto. Nos estimamos que isso podera custar aproximadamente USD 7,6 milhoes por ano (91 bilioes de Mt) para intervir como comprador de ultimo recurso de aproximadamente 60.000 toneladas. Mais ainda, o custo directo deste programa pode ter custos indirectos. Estes custos incluem precos altos ao consumidor e uma forte probabilidade de que esta actividade podera moldar / induzir a precos domesticos mais altos do milho de exportacao, excepto quando houver subsidios do Governo. O Governo devera decidir se esta e a melhor forma de usar / utilizar os seus recursos para sustentar / apoiar o desenvolvimento da agricultura e mercados. A equipe de avaliacao nao podera defender / encorajar esta actividade.

A gestao de reserva estrategica e uma outra actividade potencial para o ICM. A reserva fisica estrategica pode ser gerida por uma outra empresa publica ou privada interessada. Uma empresa privada podera ser menos cara porque ela pode expandir / alargar os seus custos fixos sobre uma area de outras actividades. A equipe estima que o custo de um mes de (43.000 toneladas) reserva de stocks, em Maputo, podera ser de, aproximadamente, USD 5 milhoes num ano e, para 3 meses (130.000 toneladas) a reserva podera custar cerca de USD 17,5 milhoes, por ano.

Se a gestao de reserva estrategica for combinada com as vendas de excedentes agricolas, o custo total pode ser mais alto do que a soma dos programas individuais. A equipe de avaliacao estimata em cerca de USD 6,4 milhoes por mes de reserva de stock. Estes resultados de reserva estrategica levam a comprar produto a precos mais altos. O Governo deve aliviar / aligeirar o custo de reserva fisica com a reserva baseada nas importacoes privadas e trocas externas. Este tipo de reserva nao tem, praticamente, custos para o Governo. Ao contrario de muitos dos seus vizinhos, Mocambique tem bons portos e linhas ferreas para rapida escoamento / entrega de importacoes se as necessidades exigirem / ocorrerem. A equipe de avaliacao recomenda a consideracao das trocas externas, preferivelmente, no lugar de uma reserva fisica estrategica.

### **3. CONCLUSOES E RECOMENDACOES**

A revisao do mandato e das capacidades do ICM indicam que, salvo se o Governo estiver preparado para fazer gastos significativos na reserva fisica estrategica e/ou um programa de compra de excedentes agricolas - accao que economicamente nao e recomendada pela equipa - nao ha funcao publica para o ICM.

Se nao ha funcao publica para o ICM, entao a questao a ser negociada e o que fazer com os recursos fisicos e humanos. Teoricamente estes recursos poderao ser usados para promover operacoes e eficiencia de mercado no pais. A melhor forma de resolver / solucionar esta questao e examinar o mercado actual de cereais e perspectivar o seu futuro. Do nosso ponto de vista, o pais tem 3 regioes geograficas que comportam somente 2 grandes mas distintos mercados para o milho - o mercado da regioao sul com um defice relativo a procura, em Maputo, e o mercado do norte com oferta excedentaria.

#### **ICM no Mercado da Regiao Sul**

No sul os mercados funcionam muito bem. Ha niveis altos de concorrencia, correspondendo para um nivel significativo de procura efectiva no mercado de Maputo. A entrada no mercado e facil e ha muitos comerciantes informais no mercado. O ICM nao tem, quase, actividade na regioao e nao ha necessidade de intervencao do Estado no mercado.

#### **Recomendacao para o Mercado da Regiao Sul**

Os activos do ICM poderao ser vendidos ou transformados para o melhor aproveitamento, que apoie a concorrencia e eficiencia de mercado. Uma comissao ou estudo podera ser realizado imediatamente, para a inventariacao dos activos do ICM na regioao sul, para determinar o seu melhor uso / aproveitamento.

#### **ICM no Mercado da Regiao Norte**

A situacao na regioao do norte e mais complicada. Actualmente ha menos concorrencia no mercado, com um numero pequeno de comerciantes e empresas grandes, incluindo o ICM,

dominando o mercado. Como uma regio excedentaria, o futuro da regio norte esta nas exportacoes. Para obter vantagens nas oportunidades de exportacao, sera necessaria a seleccao eficiente do milho de alta qualidade e de outros produtos de remocao rapida para a regio.

A entrada no mercado e mais dificil na regio norte do que no mercado da regio sul, devido as barreiras naturais de acesso no mercado de exportacao. Estas barreiras incluem: - a necessidade de uma quantidade minima de bens / produtos que encontram padroes internacionais de qualidade, e de contractos e correctagem de fora do pais. Os comerciantes informais poderao entrar atraves de comerciantes formais para terem o acesso a este mercado.

### **Recomendacoes para o Mercado do Norte**

Decisoes de alienacao / venda de activos do ICM na regio norte poderao apoiar-se e/ou resultar em 3 principios basicos:

os activos poderao ser utilizados para aumentar a concorrencia;

os activos poderao, tambem, ser usados para aumentar as exportacoes de produtos agricolas, e;

accoes empreendidas para alienacao / liquidacao destes activos poderao nao quebrar o mercado, indevidamente.

O primeiro passo e remover os mandatos publicos do ICM. Em seguida, num programa do periodo de 4 anos, os activos do ICM poderao ser privatizados. Para aumentar a concorrencia na regio, a accao mais desejada seria a de associar / juntar os activos do ICM em grupos coerentes - por provincia ou mercados. Estes activos agrupados podem ser vendidos ao sector privado (individualmente ou a proprietarios associados) para criar empresas que podem concorrer entre eles e com os actuais comerciantes. Teoricamente, a possibilidade de um numero maior de compradores destes activos pode ser de comerciantes de fora da regio do norte, para favorecer o aumento da concorrencia.

Se tais activos agrupados nao poderem ser vendidos, entao a posicao remota / recuada do Governo podera ser de, selectivamente, liquidar os activos em apoio a concorrencia na regio.

### **Funcao do Governo**

O Governo tem uma funcao fundamental e essencial para o sucesso da economia de mercado. A tendencia natural do sector privado e concorrente / rumo ao mercado de monopolio e limitado. E o Estado que deve assegurar que haja concorrencia no mercado. A concorrencia e o impedimento que torna o desejo de ganhar forza e motivacao que resulta no melhoramento do um bom comeco das pessoas na economia de livre mercado.

A via mais importante do Governo de Mocambique para melhorar o bem-estar dos camponeses e aumentar a sua contribuicao na economia nacional e reduzir as margens de comercializacao agricola. O Estado somente tem capacidade para fazer isso. As accoes cruciais / decisivas que devem ser empreendidas / desenvolvidas sao: - melhorar as estradas e trasnportes, expandir a informacao de mercado, providenciar a seguranca de propriedade e pessoal, obrigar contractos legais e facilitar contrato de resolucao de disputa, libertar os comerciantes formais e informais do excesso da legislacao e de “formalidades excessivas” para ambos, garantir alimentacao com qualidade no mercado e, quando o mercado de consumo exigir, estabelecer e manter a classificacao e padroes. Mais ainda, o Estado nao pode ser / constituir um factor no aumento da margem de comercializacao atraves de impostos no mercado.

## 1. BACKGROUND

Mozambique is entering a period of remarkable economic growth and expansion. After years of war and economic mismanagement, coupled with a recent drought, Mozambique is finally experiencing the benefits of peace, good weather, and sound economic management. Mozambique's rich land and dynamic people are now producing abundant crops. It is in this context of change and growth that the *Instituto dos Cereais de Moçambique* (ICM) is evaluated to see what role, if any, it should play in the new economy.

In section 1 of this report, we first summarize government policy related to food and agriculture. This is followed by a review of ICM, including its stated purpose, history, and present status. Next an overview of the 1996 maize market and of ICM's role in it is presented. These background sections serve to define the problems that need to be addressed to determine the future role of ICM. In section 2 of the report, each of the various mandates decreed for ICM is evaluated in terms of its appropriateness for public intervention. Where indicated, the evaluation includes assessment of the government agency appropriate to undertake the intervention. For three of the activities deemed appropriate for public action by the assessment, estimates of the cost of undertaking the activities are made. Finally, in Section 3, a series of recommendations for the future role of ICM is given, along with a suggested implementation plan for putting these recommendations into effect.

### 1.1 Review and Critique of Government Policy

In 1995, the Government of the Republic of Mozambique (GRM) published the *Política agrária e estratégia de implementação* (Agriculture Policy and Strategy for Implementation). This document establishes four main economic objectives: 1) food security, 2) sustainable economic growth, 3) reduction of unemployment, and 4) reduction of poverty levels. These economic objectives lead to a central agricultural development objective of increasing "the transformation of subsistence agriculture into an agriculture increasingly integrated into the functions of production, distribution and processing" which in turn will create "a self-sufficient family sector which contributes a surplus to the market" and "development of an efficient commercial sector which participates in rural development." In addition to these objectives, the document also establishes four fundamental principles needed for achieving these objectives. These principles include sustainable use of natural resources, development of human capital, recognition of the role of women and—most directly relevant to ICM—expansion of agricultural productivity and production.

A clear understanding of the role government should take in meeting its policy objectives is as important as establishing those policy objectives. In a democratic society, government has continual requests from its constituency for support and intervention on their behalf. Clearly, government cannot and should not respond to all of these requests. Limited finances and human resources preclude this possibility. How does government decide what it should and should not do? What activities should be done by government and what should be left to the non-

governmental sector? These issues are particularly important as we look at the long list of mandates decreed for ICM.

The recent World Bank Agriculture Sector Memorandum (World Bank 1996) provides a useful guideline for making these choices. Basically this memorandum proposes that government intervention should occur only in areas where there is an obvious market failure which government is capable of correcting. This criteria has two parts: 1) the market failure is obvious and 2) government is capable, both financially and technically, of correcting this failure. Economically speaking, market failures occur when "the market left to itself would generate suboptimal outcomes" (World Bank 1996, p.23). There are a number of reasons for market failures, but generally these failures occur when there is a public good involved. Public goods usually include such activities as building roads, providing education and information, and protecting public health and safety. With government resources so limited, choices to do one activity usually preclude doing other activities. Thus, government should focus on activities in which it has a comparative advantage. "In markets which are competitive or at least contestable, the private sector is usually a more efficient provider of goods and services" (World Bank, 1996).

## **1.2 Analysis of ICM's Purpose**

The purpose of ICM, as defined in the decree of January 1994, is to "encourage the production and marketing of cereals and other agricultural products as well as realize actions aimed at guaranteeing food security and management of strategic reserves." This purpose supports directly the government's overall economic objectives of food security and agricultural development (World Bank 1996). In addition, this purpose also supports directly the expansion of production capacity and agricultural productivity, one of the four fundamental principles used to achieve this overall economic objective.

ICM's purpose is similar to that historically used for grain marketing boards in a number of eastern and southern African countries. Within the last five years, several of these countries have re-thought the work of their marketing boards. The most radical change has occurred in Zambia, where the national marketing board has been abolished and responsibility for the strategic stock has been turned over to an autonomous board. The board is responsible for managing the reserve using resources owned by the reserve itself to finance its operations. Rent payments on unused warehouse space, for example, are used to help cover some of the reserve's operating costs. Malawi has taken a different approach. Admark—the former national marketing board in Malawi—has been restructured to separate its public or social activity from its commercial or private activities. Admark bills the state for its "social" activities. It purchases maize as a buyer of last resort, for example, under contract with the government. In the same manner, it bids for contracts to supply the national strategic reserve. Zimbabwe is moving towards an approach similar to Malawi's by separating the social from the commercial activities of its cereal marketing board.

All these countries are coping with restructuring and liberalization of their economies. The often massive financial burden of marketing boards and strategic stocks is being re-evaluated to find more efficient and effective ways of achieving similar results with different mixes of public and private sector participation. In addition, economic research is being used to reduce the size of physical strategic stocks to a minimal effective level and to depend more on foreign exchange reserves and imports to respond to shortfalls in agricultural production. In Zimbabwe, for example, the size of the strategic stock has been reduced from 900,000 MT to 500,000 MT, and the requirement of purchasing grain to stock the reserve at the minimum government price is no longer in effect.

As Mozambique evaluates possible implementation of the stated purpose of ICM in such areas as buyer of last resort (see section 2.1.4) or the establishment of a strategic reserve (see Section 2.4), two things are important to learn from the experiences of its neighbors. First, new models are being tested to find more cost-effective ways of reaching national objectives of food production, agricultural growth, and food security. These new models mark a sharp shift from patterns that were put in place as far back as colonial times. Today command economies are giving way to market economies. Thus, some activities which until recently had been considered the exclusive domain of the state are now being taken over by the market, leading to more efficient and cost-effective solutions to lingering agriculture and food security issues.

Secondly, those who borrow ideas from another country to design solutions to Mozambique's agricultural and food security questions need to take into account the unique situation of each country. Zimbabwe, for example, is land-locked, has limited areas of productive land, and has highly variable rainfall, and consequently, production. Mozambique, on the other hand, has good ports and rail infrastructure, abundant land, and relatively stable weather, particularly in the northern half of the country. What make sense in Zimbabwe is not necessarily appropriate in Mozambique.

### **1.3 History of ICM**

The government of Mozambique recognizes the importance of the agricultural sector in the national economy and through the years has provided public support for various activities to help promote all aspects of agricultural production and marketing.

Prior to independence (1974), much activity was channeled through the old Mozambique Cereal Institute (ICM). With independence, the National Directorate of Agricultural Marketing (DINECA) was created. Soon after independence (1981), the State Company for Agricultural Marketing was established (AGRICOM). AGRICOM was the last major effort by the state to control agricultural activities directly. While AGRICOM was established in 1981, it was not given legal status until 1990. In 1994 a new, but much reduced, Mozambique Cereal Institute (ICM) replaced AGRICOM.

### ICM Before Independence

The original ICM was created in 1961 with the purpose of marketing cereals and groundnuts. Other institutes were also created to market products such as cotton. Marketing infrastructure was developed, including transport (trucks) and warehouses. The purpose was to provide for the purchase, transport, and storage of cereals. Support for ICM activities in the pre-independence period came from state budget and from a number of special funds such as export taxes, import and export license fees, warehousing services, etc.

### DINECA and AGRICOM - 1975-1993

Soon after independence, the government opted for a centrally planned economy, and defined agriculture as the base for economic development. Agricultural marketing was defined as a fundamental state activity for the purchase of agricultural products to supply both the internal and export markets. DINECA, and later AGRICOM, had explicit mandates to: (a) purchase and sell agricultural products, in particular, maize, rice, beans, groundnuts, millet, sunflower, and copra; and (b) provide various services, including warehousing, storage and delivery of products from surplus production areas to consumption areas; balance the marketing of cereals with the objective of supplying the internal market; guarantee the holding of food security stocks while insuring the application of state-determined fixed prices for each of the production, marketing and consumption phases of the food market. AGRICOM received financial support from a combination of sources, including state funding, selling of products and services, and from SIDA, a Swedish development organization.

In 1994, as part of the restructuring/privatization of state enterprises, AGRICOM was terminated, and ICM was created. The mandate for ICM continued to be implementation of government policy, but now within the structures of a free market economy.

### The New ICM (after 1994)

ICM inherited the work force, warehouse structure, and equipment formerly used by AGRICOM, as well as a continued mandate to implement government policy. The specific mandates are detailed in Section 2.

ICM received a government budget of 10 billion Mt in 1995. Since then, however, all state and donor funding has been withdrawn, and ICM has been left to cover its operating and maintenance costs from commercial credit, selling of services, and warehouse rentals (see Section 1.5). ICM does receive an indirect subsidy in that they have free use of the warehouses and of the rents from warehouse use by third parties.

ICM was fortunate to act as a cereal buyer and provider of warehouse space for donor food aid shipments in 1995. In 1996, in collaboration with V&M, they initiated maize export activities with most of their maize purchases.

On the other hand, now that there is no public or donor funding, ICM has dramatically reduced its work force and has essentially eliminated its trucking fleet. Maintenance of warehouses and equipment is not adequate, and quality of these structures continues to decline.

Thus, in 1997, we find ICM to be a public institution with a broad social mandate but no funding. This discrepancy forces it to act and compete in the market place like a private institution. The conflict between purpose and means creates a dysfunctional organization that underutilizes its resources and undermines the spirit and enthusiasm of its well qualified staff.

#### **1.4 Status of Mozambique Grain (Maize) Markets, End of 1996**

Maize markets in Mozambique continue to exhibit a great deal of change resulting from a series of on-going transitions which will further transform the market in the years ahead. Thus, the status of the maize market at the end of 1996 is simply one point on an evolving continuum.

The most important of these transitions are the transition to a market economy and the transition to a cereal surplus economy. Both of these transitions require fundamental changes in the way policy makers view the market and the state's role in the market. Within this rapidly evolving market there are a number of market perceptions held by policy makers that are becoming less relevant than they were in previous periods. There are other perceptions that are increasingly relevant and require additional and immediate attention, and there are issues that are new to a free-surplus market. The interrelated problems of market access and unacceptably high marketing margins lead the list of those questions needing attention.

Finally, ICM, with a large mandate from Government, but no financial support from Government to carry out this mandate, is finding it difficult to determine and define its place or role, whether within the free market as a participant or as a hand of government policy. In fact, ICM market activity may be unintentionally distorting and delaying market reform in the north.

##### **1.4.1 Market Transitions**

We have noted five major transitions that are having or that will have major impact on future configuration of cereal markets in Mozambique. These transitions are:

- (1) from a command to a market economy;
- (2) from a deficit national cereal market to a two tier-market with deficit production in the south and export-oriented surplus production in the north;
- (3) to continued increases in cereal production resulting from expanded area under production and improved productivity levels, primarily in the center and north regions;

(4) to more market-oriented enterprise selections by farmers reacting to market prices and self-sufficiency food needs; and

(5) to an increased domestic livestock demand for cereal feeds as livestock herds are rebuilt and diet changes respond to higher incomes by including more animal products.

These changes are at various stages of completion. The change to a free, efficiently functioning cereal market is largely completed in the center-south of the country. This market is driven in large part by the large food deficit in Maputo. Informal traders are the major market participants who make this market function.

The cereal markets in the north are less well delineated. The 1996/97 market year is the first with a significant surplus production not needed for internal consumption. In previous years, the surplus in the north was purchased either by traders for the Maputo market or by donors for internal redistribution.

The identification of alternative markets (exports) for surplus production in the north has not proceeded smoothly, and a significant quantity of product (maize) remained in warehouse storage at year end. This surplus of stored maize resulted, in part, from an optimistic projection of price rises expected at the end of the marketing season. ICM maize purchases were the principal source of maize exports. Perceptions of the role of ICM as the principal buyer in the market and ICM's current market activities may have contributed to the slower development of efficient markets in the north (see Section 1.4.5).

The combination of the return of displaced people to agricultural areas, expansion of cultivated area on existing farm units, and favorable weather contributed to a major expansion in cereal production in the 1996/97 market year. A continuation of all of these conditions will probably result in modest additional production increases for the 1997/98 marketing year.

Enterprise change and livestock rebuilding transitions are at very early stages. Their market impact will not be felt for several years, though early enterprise changes may be evident in the north if market clearing prices are allowed to operate.

#### **1.4.2 Market Perceptions**

Policy makers and participants in the evolving free market hold a number of perceptions about imperfections in the present functioning of the market. Several have important implications for economic and/or social policy. We attempted to verify the existence, market impact, and relative importance of these imperfections (see Annex D). The imperfections noted are these: (1) finance (interest rate, eligibility, loan duration, quantity); (2) transport (road conditions, costs, vehicle availability, security [robbers]); (3) storage (availability and condition); (4) market access (especially for small and remote location farmers [this is related in part to transport costs]); (5); market information (type and coverage); and (6) private market capability (including price

discovery [price setting], market efficiency [margins], and the plight of disadvantaged participants [low prices and market access problems]).

**Finance.** The assessment team found finance to be an important concern. Liquidity in the market is very important for each stage. Farmers are increasingly demanding cash payment. Some traders (the informal traders) are not eligible for bank credit due to regulations concerning registration as traders. Others are ineligible because of poor performance on debts accumulated during the war.

ICM, a former provider of liquidity to the market through advanced payment contracts with traders, is itself forced to go to the banks for commercial credit and thus is more reluctant than it was in the past to finance trader activity.

High interest rates, loan rigidity, and other restrictive finance conditions are apparent. Credit interest rates continue at real rates of about 25-30 percent. Inflation is about 10 percent, the rediscount rate, 27 percent, and commercial interest rates, about 40+ percent. These are likely to be somewhat, but not dramatically lower for the 1997/98 marketing season. The banking system is newly privatized and reluctant to expose itself to the possibility of renewed inflation.

**Transport.** Transport conditions and costs are probably the number one contributor to high marketing margins. Very poor road conditions in many areas are largely responsible for these high costs. We find poor road conditions to be a continuing problem, though more so for the crops marketed in the rainy season than for maize which is marketed predominantly in the dry season.

Availability of trucks did not appear to be a major constraint. In the Maputo market supply area which stretches into Zambezia Province, there was considerable availability of backhaul at attractive rates. This is less evident in the market supply area for the north.

**Market Access.** Market access for remote small farmers is considered a major problem by some policy makers. In the areas we visited we did not find access a problem in an absolute sense. Access was a problem in the sense that remote farmers were offered lower prices and received fewer visits from traders.

Further, we found that farmers had a number of market options they were exercising, options not typically available to specialized market-oriented enterprises. For example, specialized farmers must either sell now or sell later. Subsistence farmers, however, plant a variety of crops for home consumption and/or for commercial sales and thus have additional options such as altering production, consumption, storage and marketing patterns.

In our visits we found farmers making rational economic decisions, including the following: changing their consumption patterns to eat more maize when maize prices were unacceptably low (Nampula); holding additional maize when prospects for next year's local

harvest were not favorable (Cabo Delgado); selling additional maize from storage when production prospects were good (Zambezia), and planting less maize and more cotton when cotton market conditions were more favorable (Cabo Delgado).

Also, some farmers were engaging in marketing functions either by traveling directly to district markets or by participating in group selling activities. These marketing activities generated significantly higher prices and incomes for these farmers.

Finally, market access was hampered by the government's stated minimum price, which was two to three times greater than market clearing prices in remote areas. This was a major impediment to commercial transactions, as farmers expected to be paid the higher price and often delayed sales until it was too late.

**Market Information.** This was a mixed situation. Regional and various market level price differentials (farmer, wholesale, retail) reflected expected market costs (see Section 1.4.3). Traders made use of and are satisfied with the *Quente - Quente* weekly price leaflet produced by the *Sistema de Informação de Mercados Agrícolas* (SIMA) within the *Direcção de Economia Agrária* (DEA) of the Ministry of Agriculture and Fisheries. They would like to know regional and international prices as well.

While the commercial market seemed well informed, there was confusion at the farm level. As noted above, the minimum price established by the Government was a source of disinformation that adversely affected the market, particularly the ability of farmers and traders to arrive at market clearing prices.

**Private Market Capability.** The private market appeared to be working quite well given the early stage of its development. Farmers are making market decisions to hold or sell products; informal traders set up local sites to accumulate product; some local farmers are taking on market activities; and margins, as noted below, are quite consistent with anticipated market costs. These market activities are covered in more detail below.

### 1.4.3 Seasonal Market Performance

The information regarding market performance in this and the remaining parts of section 1.4 comes from an analysis of weekly maize price information collected by the MSU/Ministry of Agriculture and Fisheries SIMA office. The data set covers a period of 19 months, July 1995 - January 1997 (see Figure 1.1). A more detailed description including tables and graphs is contained in Annex E.

Seasonal pricing patterns are remarkably consistent across and within all regions. In 1995, lower prices were evident at the peak of the harvest season in July, the point where the price data series begins. Prices rose steadily throughout the marketing period, as would be expected in a deficit production year. The rise was particularly steep in the December-February period, peaking

in February and March in most areas and then declining rather abruptly as the new, much larger, 1996 crop began to reach the market. This price drop occurred in March and April of 1996 in the south and a month later in the north. By June of 1996, the market had stabilized at about the same level as a year earlier, though if adjusted for inflation the price would have been at a somewhat lower real level. Prices remained at this level through the remainder of the year in most markets, though the Quelimane and Pemba markets showed some shortage of supply at the end of the year, as prices were beginning to rise.

These consistent seasonal patterns across regions would appear to reflect accurately supply and demand in the various regional markets as well as the transmission of prices and product across the markets. The high level of prices at the end of the 1995/96 marketing season (January-February 1996) reflects a condition of very short supply which will not be repeated in the 1996/97 marketing year.

#### **1.4.4 Regional Marketing Margins**

The dynamics of the internal maize market should reflect Maputo as the primary deficit market. With freedom of imports, the Maputo market is able to choose between imports at international prices or domestic supplies at import parity prices. Domestic suppliers can thus compete for the Maputo market if sufficient supply and competitive regional marketing margins exist. In addition, within each region there are major urban markets such as Beira, Quelimane, and Nampula that attract surplus production from surrounding areas.

If surplus conditions exist in the domestic market beyond that which can be supplied to Maputo, then the prices in the surplus regions would reflect export parity price levels. This price level would occur either because demand in Maputo has been met or because the surplus region cannot transport excess supplies to Maputo at import parity price levels. In 1996 the maize market in the northern provinces was strongly surplus.

In an efficiently functioning market, one would expect, therefore, that regional prices in the 1996/97 marketing period would reflect a gradual regional decline from import parity prices in Maputo to export parity prices in the Nampula area, with perhaps some regional differences reflecting local supply and demand conditions. As noted below, regional markets reflect these conditions, especially in the south.

**Evidence of Market Efficiency.** During the first six months of the 1995/96 marketing year, Maputo maintained a fairly consistent and constant price of about 2550 Mt/kg. This is approximately equivalent to an import parity price of \$230/ton. At the other extreme, Nampula maintained a consistent price of about 1150 Mt/kg. At an estimated transport cost of 200 Mt/kg (rail) to the Nacala port and a port cost of \$8 per ton, this would translate into an export parity price of about \$130 per ton. This is close to the export price received for a limited quantity of maize exported in 1996, but it is slightly above long run expected export parity prices.

It is evident that the Maputo price influence reached well into the central region of the country and into southern parts of the north region. Beira, at about 1500 Mt/kg, and Quelimane, at 1200 Mt/kg, reflected transport margin differences of about 0.5 Mt/kg/km to access the Maputo market. This transportation margin is somewhat less than the stated costs of truck transport and reflects the availability of less expensive backhaul possibilities along the major transport routes to Maputo.

The only regional market that does not follow the logical economic construct described above is that of Pemba and, by extension, the interior markets of Cabo Delgado Province. ICM stock inventories, anecdotal evidence, and team observations of large quantities of maize in storage at Pemba and in the interior of the province in the off-season (late January 1997) place this region in a strong surplus maize production position during the 1996 season.

Other things being equal, this leads to the expectation that price levels

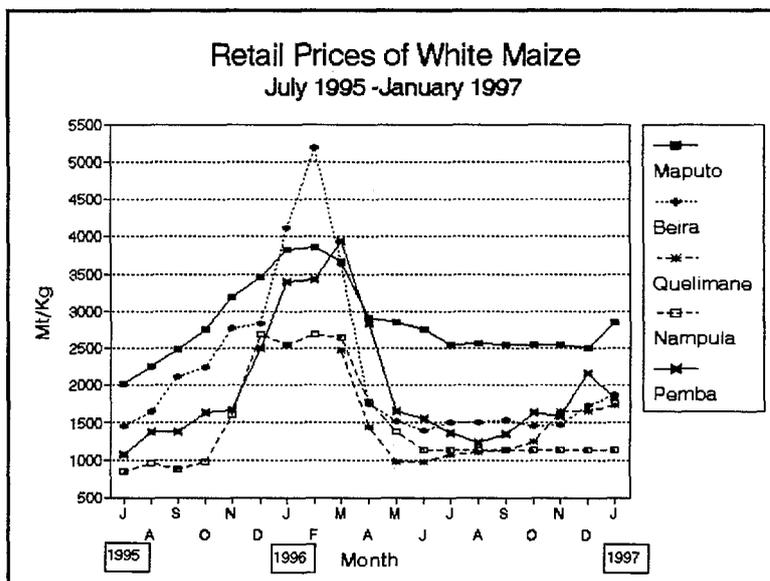


Figure 1.1

in Pemba and in the interior of Cabo Delgado would reflect surplus conditions and be low enough to access export markets and thus be similar to prices in Nampula. Retail prices in Pemba, at over 1500 Mt/kg, however were substantially above Nampula's (1150 Mt/Kg) and equal to or greater than prices in Beira. In fact, in early January 1997, maize prices in Pemba were approaching 2000 Mt/kg. Possible explanations for this aberration are discussed in section 1.4.5.

**Within Region Marketing Margins.** To illustrate marketing margins between producing areas and regional consumption centers, we chose four examples, each from a different region; Beira-Manica, Quelimane-Mocuba, Nampula-Ribaue, and Pemba-Montepuez. In the first three cases, the local market prices follow very closely the regional market, but at a slightly lower level. The difference represents the margin necessary to deliver product to the regional center. For example, the retail market price in Manica was about 350 Mt/kg less than in Beira. The spread in the Quelimane-Mocuba markets was close to 500 Mt/kg.

The spreads observed in the Nampula Market were more variable, ranging throughout the market season from 1,000 Mt/kg to 100 Mt/kg. In Pemba, the markets did not show a distinguishable margin until the last three months of the season when prices in Pemba were about 500 Mt/kg greater than in Montepuez. Actually, there was a price inversion during the first five

months of the marketing season (May-September) when prices in Montepuez were equal to or greater than prices in Pemba.

Of the above examples, the lowest interior prices were observed early in the season in Mocuba in Zambezia Province (700 Mt/kg). Prices in Mocuba, however, became sharply higher at the end of the season (1,400 Mt/kg). Again, this may be an example of the shifting dividing line between the influences of the deficit Maputo market, the Nampula export market, and the Quelimane regional market.

The Quelimane regional market, which is served by most areas of Zambezia Province, showed more volatility than did the regional markets of Beira and Nampula. Again, this volatility probably reflects a convergence of the effects of three markets, the deficit southern region, the surplus northern region, and the local Quelimane market all operating with various strengths in Zambezia Province. The dividing line for products going south to Maputo and those going north to Nampula would be expected to move north and south in the Zambezia province depending on production levels, costs of transport, and international parity prices (both world and Southern African regional prices).

**Summary and Implications of Market Performance.** The markets for the 1996 marketing season appear to have been working well and efficiently, though some aberrations are noted. Price discovery within and between markets and in terms of defining marketing margins between geographical areas and stages of marketing appear consistent and logical. This is especially true in the south and center of the country. In the north there is more variability. Within this variability, Nampula markets appear to be functioning reasonably efficiently. In Cabo Delgado, however, we note apparent seasonal price inversions and a significantly higher price level than expected. This occurs at all levels of the province marketing chain.

With this one exception, it appears that the markets are operating efficiently, given the present state of infrastructure (roads, warehouses, transport vehicles, etc.), government tax and licensing procedures, finance availability and cost, and other marketing conditions. We note, however, that the overall poor state of these marketing conditions creates significantly high marketing margins. These high margins in turn limit the income potential in agriculture, limit market access for some remote small farmers, raise food costs to consumers, limit the areas of the country that can supply the Maputo market, and constrain the country's ability to compete in the export market.

As noted earlier, we did not observe a significant problem of small farmer access to markets. We suggest, therefore, that the primary focus of policy should be to create market conditions that will lead to substantial reductions in the marketing margins. Reducing marketing margins is the most economical way to assure that small remote farmers have access to markets.

### 1.4.5 ICM Market Activities

ICM's market activities are primarily with maize and primarily located in the northern provinces. In the 1996 marketing season, ICM purchased 56,407 tons of maize (see Table 1.1). This was 24 percent of the official count of marketed maize in the country, though the official record probably understates the amount actually marketed, and some of the 1996 crop is still coming to market. Of this quantity, 45,612 tons, or 40 percent of the marketed maize, were purchased in the four northern provinces of Nampula (34 percent of the marketed maize in the province), Cabo Delgado (37 percent), Tete (39 percent), and Niassa (76 percent). As of January 15, 1997, over 19,791 tons remained unsold in storage, or about 35 percent of ICM's purchases.

**Table 1.1 ICM's Marketing of Maize, 1996  
(000 MT)**

Province	Total* (1)	MARKETED		ICM	STORED (1-15-97)	
		ICM %ICM (2)	(2/1)		%Total (4)	%ICM (4/1)
Niassa	9.8	7.5	76%	5.9	60%	79%
Cabo Delgado	26.5	9.9	37%	4.5	17%	46%
Nampula	50.1	17.0	34%	2.0	4%	12%
Total North	86.4	34.4	40%	12.4	14%	36%
Tete	28.8	11.2	39%	3.8	13%	34%
Zambesia	53.5	5.6	10%	3.6	7%	64%
Manica	52.7	5.0	10%	?	?	?
Total Central	135.0	21.8	14%	7.4+	5%+	34%+
Others	10.1	0.2	2%	?	?	?
Total	231.5	56.4	24%	20.0+	9%+	35%+

\* Registered total with MICTUR does not include informal trade.

Source: DNCI/MITCUR

The maize is being held either for potential export or because buyers cannot be found at an acceptable price. Most of the maize sold by ICM has been exported. In some areas of the north, ICM has played a leading role in setting the market price for maize. These large purchases, together with the holding of large stocks has probably helped put a floor under prices there and may explain the higher than expected prices in Cabo Delgado. In fact, the results of ICM market activity in the north probably unintentionally perform a 'buyer of last resort' function by raising prices there, though the costs and risks are borne by ICM and its funding sources, not by government.

**ICM's Vulnerability in the Market.** As noted above, ICM has no public financial support, except that it has free use of its storage warehouses and/or receives rent from their use by others. Thus ICM must seek financial operating funds from commercial banks or delivery contracts from buyers. Yet its operations are largely limited to a single commodity, maize, and it tends to hold this commodity for relatively long periods of time. Thus, in the absence of a delivery contract, ICM's market activity becomes pure speculation.

In a deficit market with pronounced seasonal price variation, speculation with buying and holding of product can be remunerative if storage costs are low. However, in a domestic export market that is seasonally counter-cyclical to the dominant world market, expectation of off-season price rises is problematic. This situation is further exacerbated by high storage costs created principally by high interest rates.

In the case of Mozambique, there is a small favorable maize market window in the June-August period before the massive North American crop comes on the market in September. The likely result, therefore, for maize prices under surplus conditions is for a long flat price through the major marketing period. Under these conditions, there is little or no advantage to holding stock. The need is to buy and sell quickly at the high point of the international market. ICM has little advantage, therefore, since its major asset is storage capacity.

With operations depending completely on borrowed funds with no backup reserves or other diversified activities and no collateral, storage becomes a poor bank risk and is unlikely to receive continued funding support.

#### **1.4.6 A Probable Long Term Maize Market Profile**

As noted above, the maize market in Mozambique is evolving from a deficit to a two-tier — deficit in the south, surplus in the north — market. For the north, this will require a fundamental change in approach to marketing. In short, prices will be externally driven and comparatively low, efficiency in marketing will be of paramount importance, quality of product will be at a premium, and the window of high market prices will be short and anti-cyclical when compared with price cycles experienced in the last few years.

World maize prices, for both yellow and white maize, track U.S. yellow maize prices

closely, since the U.S. is the major supplier of maize to world markets. Below, we have described the conduct of the U.S. maize market in a normal year (see Figure 1.2). This will serve as a benchmark to predict the probable normal year market situation in the surplus north of Mozambique.

First, a long run average FOB price for maize at U.S. export ports is \$115/MT. The current price is about \$130/MT both in New Orleans and in Nacala, indicating that export prices are quite similar at the two ports. If this price relationship holds, we can expect the long run export parity price at Nacala to be \$115/MT as well. The 115/MT translates to about 1380 Mt/kg. This will be the long run average FOB price expected at Nacala. Therefore, internal prices will be lower than this and will reflect the average marketing margins. Note that this will be for good quality maize. Damaged and infested maize, both of which are commonly found in Mozambique, will trade at lower prices.

Currently the average marketing margin for the interior producing areas of the north to the Nacala port, including port charges, is 840 Mt/kg (assuming a distance of 500 k). This leaves 540 Mt/kg for the farm price. Note this is 180 Mt/kg less than the current average farm price (720 Mt/kg) with an export parity price of \$130/MT.

A comparable marketing margin in the U.S. is 180 Mt/kg for a distance of 1500 k. The U.S. has a very inexpensive marketing system primarily because of cheap barge costs on the Mississippi river system. However, with marketing margins in the north of Mozambique almost five times as high as in the U.S. for only one-third of the distance traveled, it is evident that marketing margin is an important area of concern if the north of Mozambique is to become an efficient competitor in international maize markets.

Finally, since the maize harvest system is somewhat counter-cyclical to that of the U.S., and since Mozambique is a price taker in international markets, normal seasonal price cycles representing grain holding costs will normally not apply in export areas of Mozambique. In fact, the price for export will normally be highest at or just before harvest time in Mozambique. This will give Mozambique a short window of higher prices in the June-August period just prior to the large U.S. harvest.

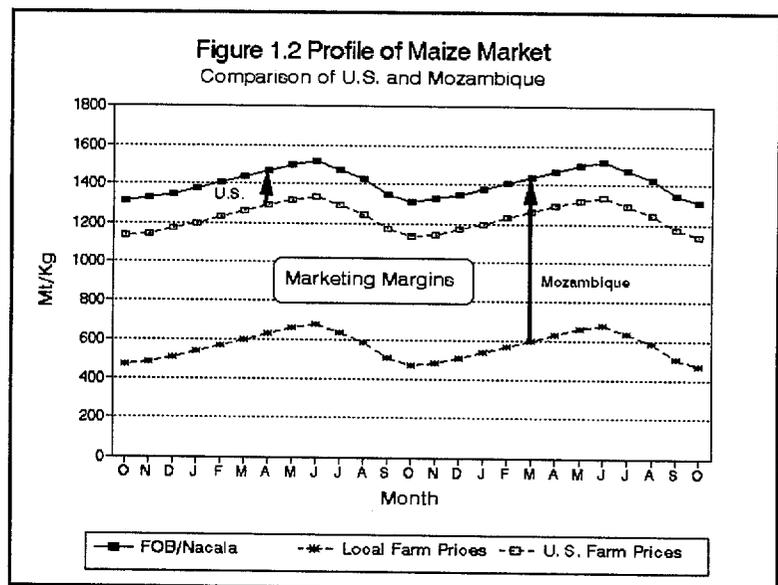


Figure 1.2

In this case, storing and holding grain for later sale in international markets will not be a profitable activity in normal years. The seasonal price cycle in the U.S. starts in October at a low point of about 95 percent of average, or in our example above at 1311 Mt/kg (.95 x 1380). It peaks at 110 percent of average in June, or 1518 Mt/kg (1.10 x 1380). Costs of storage in the U.S. are 16 Mt/kg/month plus 8 Mt/kg/month for finance charges, making a total of 24 Mt/kg/month. In Mozambique, current finance charges are four times larger. This gives a total monthly cost of storage in Mozambique of about 45-50 Mt/kg/month. Thus, even if purchases were made in the low price month of October (1311 Mt/kg) and held until the high price month of June (1518 Mt/kg), the storage cost of 360 Mt/kg (8 x 45) would raise the total cost of the maize in storage to 1671 Mt/kg, or 153 Mt/kg above the potential selling price.

This evaluation of a probable marketing profile for an export market demonstrates several important issues.

- Reduction of excessively high marketing margins is a necessary step if Mozambique is to be an efficient competitor in international markets. Marketing margin reduction is also necessary to provide market access to farmers in remote areas and improved incomes to farmers generally.
- Storage for later resale in the export market will not be a profitable activity in most years.
- It is essential that farmers and traders understand and produce to international quality standards if international prices are to be realized and maintained.

We have described the export market profile for normal years. In years when neighboring countries have production shortfalls, Mozambique could become a privileged supplier at somewhat higher prices. But these are conditions that cannot be forecast and cannot serve as the basis for planning or market projection.

## **1.5 Statement of the Problem**

The current assessment of ICM is being undertaken for several reasons. The most obvious reason is to deal with the inconsistency of having a public institution with a lengthy mandate (see Section 2 below) and yet no direct public funding. In addition, although ICM was created only three years ago, there have been such fundamental changes in Mozambique's economy and in its agricultural production during this period that serious questions have arisen about both ICM's projected role and its actual role in this new marketplace for cereals. This assessment attempts to provide information and analysis of these issues to guide decisions by government and donors on ICM's future role and activity.

Many of ICM's mandates come from AGRICOM, its predecessor organization. In 1994, under pressure from donors and the IMF, the government reviewed the major borrowers of resources from the banking system and sought to eliminate or reform the non-productive

borrowers. One of these non-productive borrowers was AGRICOM. The government subsequently ended AGRICOM's operation and shifted much of its mandate to ICM. Under additional IMF pressure to keep direct subsidies to less than 1 percent of gross domestic product (GDP), the government further decided that ICM should not receive a direct subsidy for its operation. ICM was to cover its costs from its day to day market operations. As has been noted, however, ICM does continue to get an indirect subsidy through access to and free use of the former AGRICOM and other government owned warehouses as well as the former AGRICOM vehicle fleet. ICM has sold or rented the vehicles to acquire operating funds. In addition, ICM rents out some of its existing warehouse facilities to generate additional resources to pay for its operation. These generated funds do not go back to the general treasury but are retained by ICM. ICM pays no rent nor depreciation on these warehouses.

In its first two years of operation, ICM was able to obtain funding through government banks under liberal terms. This last year, however, these government banks were being privatized and no longer lent to ICM. ICM was finally able to obtain a loan from a commercial bank at commercial bank terms and interest rates. The result of this situation is that, while ICM is technically a public institution with an extensive public mandate, it operates as a private marketing and speculation firm under commercial bank funding. The achievement of most of ICM's public mandate is not even being attempted because trying to do so would jeopardize ICM's ability to repay the commercial loans.

Under these circumstances, an assessment of ICM's mandates needs to be undertaken. Using the market failure criteria noted in Section 1.1, government can identify those mandates more appropriate to private rather than public sector activities. Mandates judged suitable for possible public sector consideration can then be evaluated on basis of the ability of government to resolve the market failure and the cost of doing so. If a given mandate should be undertaken, decisions would have to be made on which public sector agency should undertake that mandate and on how this activity should be funded. In this way, it could be possible to rationalize ICM's future role and mandate.

Finally, it is also important to evaluate the role of ICM in terms of the country's increasingly active free market for cereals. This issue is particularly important in periods of surplus production as seen last year and as expected again this year. As seen in Section 1.4 above, ICM is not active in large parts of the southern half of the country. In other parts of the country it acts in parallel with private traders.

## 2. ASSESSMENT OF ICM'S MANDATES

The January 1994 decree creating ICM contained six overall mandates for ICM. As noted in Section 1.2, many of these mandates date from the AGRICOM era. Specifically, these mandates are the following:

- "Promote agricultural production and marketing through: actions in support of agricultural production, especially inputs to the family sector; development of the technologies and capacity for storage of agricultural products in the country; participation in the definition and extension of grain conservation technologies in order to minimize post-harvest losses; and action to guarantee the purchase of agricultural surplus, acting as a reserve market."
- "Manage and coordinate projects to stimulate agricultural marketing through the distribution of inputs, elaboration of studies and proposals for pricing, among others;
- Plan and collect statistics concerning agricultural commercialization, analyze these data in order to permit an understanding of the evolution of the sector;
- Purchase, storage, conservation and sale of agricultural products with the objective of: guaranteeing strategic reserves and food security; and contributing to price stability for marketing and supply;
- Classify, according to pre-established criteria, products to ensure consistent nomenclature among different types and grades, issue quality certificates; and,
- Participate, in collaboration with all the other national institutions concerned with cereal and other requirements, in balancing the import and export of cereals with production and internal consumption, with a view to rationalizing the internal production of these products."

Each of these mandates and their sub-sections are reviewed below with four questions in mind. First, is the activity appropriate for government intervention? Second, is the government capable, both financially and technically, to correct this situation? Third, if the activity is a public good, how much will it cost government to implement? Finally, for public activities, which public entity is most appropriate for implementing this activity?

### 2.1 Promotion of Agricultural Production and Markets

This mandate is really composed of four sub-units: supporting input supply to the family sector, development of storage technologies, extension of storage technologies, and guaranteeing the purchase of agricultural surplus. The intent of the mandate appears to be to provide broad-

based support to the agricultural sector of the country for the expansion of agricultural production and marketing. Much of this mandate replicates the former role played by AGRICOM, and parts of it are redundant to other mandates in the decree.

### **2.1.1 Support of Inputs to Family Sector**

This mandate is a direct carryover from AGRICOM, which had a monopoly on distribution of inputs to the family sector. While this type of activity may have been consistent with the orientation of the former command economy, in Mozambique's present market-oriented economy there is little reason to support the state's involvement in this type of activity. The only exception would be for emergency relief to get farm families back on their feet again, as in the last drought. The present level of input use in the family sector is quite low, but that low level does not argue for state distribution of inputs. There is no evidence of a market failure in input delivery. Rather, there is lack of basic economic structure and incentives to support expanded input use. As the agricultural economy develops, it would be expected that the larger farms will use more and more inputs and that this increase will gradually expand into the family sector. This has already been demonstrated in the cotton export area where, under the right circumstances, small scale farmers who grew cotton also carried over to maize production improved farming practices with inputs (MOA/MSU). In a number of developing countries it has been seen that as demand for inputs increase, both large and small input dealers quickly respond by putting more supply on the market. There is no reason to believe that such response would not be the case in Mozambique. State intervention in this area often retards this development, and an inefficient and high priced input supply system results.

### **2.1.2 Development of Storage Technologies and Capacity**

This sub-mandate has two parts, development of storage technologies and development of storage capacity for agricultural products. The first part is a research activity, and the second is a construction and warehousing activity.

There is a potential role for the state in research if the research is in areas where benefits are not likely to be captured by private sector concerns. This would not be the case for large scale commercial storage technologies, but it could be the case for on-farm storage in the family sector. While there is a potential state role in developing on-farm storage technologies, it is highly unlikely that ICM would be the appropriate state organization to carry out this research. Such research is a more appropriate task for the national agricultural research system. At the present time, however, there is not strong evidence of a priority need for additional research in this field. There has been considerable research in post-harvest loss by other African countries and by the International Agricultural Research Centers (IARC). In addition, a number of NGO's have been doing research in this area. The issue, then, is not the development of storage technology but the extension of existing technology (see Section 2.1.3 below).

The development of additional storage capacity for agricultural products also does not seem to be an important need at this time. Results of the team's visits and interviews suggest that at the present time there is excessive storage capacity for agricultural products. During the 1996 campaign, out of a total usable capacity of 158,000 MT, ICM utilized only about 60,000 MT. Most of ICM's storage was under conditions of low throughput, often with only a single rotation of stock per year. In addition, much of the warehouse space ICM has rented out to the private sector is not being used for storing agricultural products, but for storing industrial and other non-agricultural goods. In none of the interviews the team had with private traders was a need for additional storage for agricultural product raised as a concern, even though this question was asked specifically. Possible reasons for this low demand for storage capacity are explained in Annex D. Basically, much of the maize is marketed by the informal sector which has a minimal use of storage as they prefer a quick turn-over of their inventory. Quick turn-over of stock is also the objective of many of the commercial traders as well. ICM appears to store its product longer, but its resources to purchase maize are small in proportion to its warehouse capacity. An additional factor limiting need for commercial storage is the duration of time farmers store and market their maize crop throughout the marketing season. The longer farmers store their maize on the farm, the less need there is for commercial storage. In many regions, farm households' on-farm storage appears to be a major component in the storing of the crop during the season.

Even if there were an evident need to expand storage capacity for agricultural products, it is highly questionable that the state should undertake this role. The private sector appears to have no constraints on constructing warehouse capacity if there is demand for it. There is no evidence that there is a market failure in supplying adequate storage capacity for agricultural products. Experience in other countries indicates that it would be much more cost-effective for this capacity to be constructed by the private sector and then rented as needed to the state for strategic stock storage. In any case, development of additional storage capacity for agricultural products does not seem to be an appropriate role for ICM.

### **2.1.3 Extension of Grain Storage Technologies**

As mentioned above, there exists considerable on-farm storage technology. The question is not the technology but rather how to get this technology into use in family sector farm households. Extension services in the country are spread out and are not standardized. The government extension system is supported with funding from the World Bank. This system is generally focused on geographical areas with high agricultural production potential and not on the whole country. In the government's extension effort, there has been little emphasis on post-harvest losses or marketing of crops. While small farm extension services are a legitimate public sector activity, they would not be suitable for ICM with its present personnel and logistics configuration. Extension is a personnel-intensive activity requiring a fairly large and mobile staff. ICM does not have that. It would be much more cost-effective to add post-harvest information into the existing extension systems' package of deliverable goods than to create and support a parallel extension staff dealing only with post-harvest technology questions.

The most effective extension operations at the present time are supported within NGO and private sector activities. These activities deal with both the production of specific crops and their storage and marketing. The private firms generally support specific export crop production, but some—particularly in cotton areas—also support food crop production. These private and non-governmental extension activities should be encouraged in order to expand the extent of information they can provide their clients on post-harvest loss prevention technologies appropriate to family sector farms.

#### **2.1.4 Guaranteed Purchase of Agricultural Surplus**

This mandate calls for ICM to "guarantee the purchase of agricultural surplus, acting as a reserve market." This type of activity is commonly referred to as a "buyer of last resort" program. This type of activity is a public sector action undertaken by the state. If this type of activity were to be undertaken in Mozambique, ICM would be the most likely organization to handle it. The principal issue is how much this activity would cost and the state's willingness to incur this cost.

Buyer of last resort activity can be interpreted in a number of ways. It could, for example, be interpreted as a classic buffer stock — buying from farmers to support a floor price to producers and selling on the market to support a price ceiling for consumers. It could also be interpreted as just being a floor price to protect farmers from falling prices in surplus situations. To gain some idea of the magnitude of the cost of such efforts under different assumptions, a spreadsheet was developed to model the maize marketing done by ICM in the country (see Annex G). This model has some 28 variables that can be manipulated to test various configurations of purchases, sales, exports and price levels.

The model assumes that the cost of such guaranteed purchase activity would include the purchase cost of maize (under various assumptions) plus storage and transportation costs either to Nacala for export or to Maputo for retail sale. Revenue generated by the activity could include export sales in Nacala and wholesale sales in Maputo. While the model can handle both exports and domestic sales, the assumption made in the following calculations is based on only export sales. The actual operation of ICM and the market is more complicated than shown in the model, but the model at least gives some indication of the scale of the possible costs or gains of this operation.

A series of "runs" were made with the model to pattern various possible implementations of the buyer of last resort idea. Basic assumptions of some of these runs are seen in Annex G. The base or average model run uses a purchase price of 1,200 Mt/Kg for maize delivered to ICM warehouses. This is a price thought high enough to induce traders to seek out maize in the more remote areas. Sixty percent of the purchases are in the north region and 40 percent in the central regions. These percentages reflect estimated surplus in the two regions. As previously noted, no maize is estimated to be purchased in the south region. Interest used in these calculations is estimated at 30 percent, reflecting the expected downward trend in interest rates in the near future.

A low estimate of five percent is made on storage losses, and it is anticipated that maize would spend on average six months in the warehouses.

Transportation cost estimates are made on the basis of 1,500 Mt/MT/Km, which is an average for non-backhaul transportation in the north and central regions on generally good roads. Finally, it is estimated that the maize would be exported at \$115 /MT, which is lower than that received this last year in Nacala, but is the long run average international price for maize. The result of these calculations is that a 60,000 MT intervention to purchase surplus production would cost the government about \$7.6 million a year to cover ICM's losses for this operation.

While we can put a figure on these direct costs, it is the less easily calculated indirect costs which are a greater barrier to the implementation of these programs. A program to purchase surplus production to maintain a higher price for maize than would normally be supported by the market has enormous negative consequences and costs. In the export- oriented scheme noted in the basic model, for example, increasing the price to the farmer over a market rate will translate into raising the level of the FOB Nacala export cost. The reason for this increase is that the marketing margin connecting the farm level price to the FOB Nacala price will remain unchanged. An increase of the farm price by 100 Mt/kg directly relates to an increase of the FOB Nacala cost by 100 Mt/Kg equivalent. Since Mozambique is at the higher level in terms of cost of product for sale on the world market, even a slight artificial rise in the farm level price may quickly put the cost of Mozambican maize above the world price. If this higher cost were to occur, the government would have to provide an export subsidy to adjust down the FOB Nacala cost in order to continue to export into the world market.

An additional problem is the cost to the economy resulting from disturbance and hindrance of the private sector grain market. By playing both an active role in the market and paying prices higher than the going market rate, ICM would dampen or even stop private sector involvement in maize marketing and eventually in maize exports. This in turn would mean that ICM would have to be more involved in the market to take up the slack in demand as the private sector traders pulled away from the market. Finally, raising market prices would also raise consumer costs.

The greatest cost of a guaranteed purchase activity is the resultant waste of funds and resources diverted to help raise the price received by farmers. Farmers' prices are linked by a given marketing margin to the fixed world market price or to a given Maputo price. Neither the government nor the farmer can effect a change in the world market price. This price is fixed by the action of the international market for maize. The Maputo market is so large that it would take major resources to affect its price level. The easiest element government can affect is the marketing margin that links the farmer to these given prices. A 100 Mt/Kg reduction in size of this margin should lead, in a competitive market, to a 100 Mt/Kg increase in the price the farmer receives for his production. The most effective way to increase farmers' revenue is to reduce the marketing margin. To spend funds on activities that in the long run hinder that process is wrong and wasteful.

## 2.2 Management and Coordination of Projects to Stimulate Marketing

A number of activities seem to be anticipated under the decree for this mandate. Two are mentioned specifically. These are projects for the distribution of inputs and projects related to studies of agricultural pricing. Projects for distribution of inputs are redundant to other input delivery activity noted in Section 2.1.1. For the reasons already given in that section, input delivery is an inappropriate public sector activity.

The elaboration of studies and proposals on pricing and other market activity, on the other hand, can be considered appropriate for public sector action, but not for action by ICM. The most logical place for such activities is within the on-going program of the *Direcção de Economia Agrária* (DEA) of the Ministry of Agriculture and Fisheries. This office is already doing these types of studies and has both the trained personnel and the equipment required. There is no reason to create a parallel organization within ICM to do what is already being done.

## 2.3 Collection and Analyses of Market Information

Market information is an important public good. Private firms can and do collect and analyze market data, but only for the use of those firms or individuals who can pay for this service. Since a basic condition of a well functioning market is free access to market information, reliance on only private sector collection and analyses of market data would result in an obvious market failure resulting from asymmetrical information available in the marketplace.

At the present time there are a number of private, non-governmental, and public agencies and offices that are collecting and analyzing market information. In the private sector, a number of trading, storage and brokerage firms in Mozambique and in neighboring countries such as South Africa are collecting and following specific price and commodity indicators within Mozambique for their own internal decision making. Among the non-governmental organizations, World Vision has a fairly extensive data collection and analysis system for agricultural markets in their project areas. *Medecins sans Frontières* (MSF) is also collecting and analyzing data on food security issues. There are smaller data collection efforts by other NGOs related to their specific projects and areas of operations.

In the public sector, a number of agencies collect and use market data. ICM, for example, collects cereal price data from its warehouse operators for internal operational decisions. The largest agricultural market information system in the government is the *Sistema de Informação de Mercados Agrícolas* (SIMA) within the DEA of the Ministry of Agriculture and Fisheries. SIMA has a large number of enumerators throughout the country collecting price information on a variety of agricultural commodities. It has a well trained and equipped staff that can do sophisticated presentation and analysis of price information. In addition to collection and analysis of data, SIMA has in place an extensive information dissemination system with a weekly fax publication (*Quente Quente*), a flash bulletin, and a weekly and monthly price series. It also

provides information to a private information service that faxes information to local and international traders (Media Fax).

The most cost-effective way for government to provide market information is to build upon the SIMA operations rather than develop a parallel structure within ICM. There is no financial, bureaucratic, or economic reason to transfer the present SIMA into ICM.

Interviews by the assessment team with traders and government officials found a strong appreciation for the marketing information now being collected by SIMA. There was also a request for more market information. Some of the specific information requested included price information on not only domestic but relevant regional and international markets. In addition, there was a desire to have information on quantity as well as price of marketed goods. World Vision makes rough estimates of quantities in the markets it is surveying, but SIMA does not. Several traders wanted simpler market information with a designation of which markets were in surplus and which were in deficit. Even though the free market for cereals in Mozambique is only a few years old and still in its infancy, there is already a growing awareness among traders of markets, and with this awareness has come demands for more complete and sophisticated market information.

The present USAID/Michigan State University (MSU)-supported SIMA project ends on September 30, 1997. It is estimated that it would cost \$150,000 a year to continue this activity at its present size and operation without external technical assistance. If some of the additional information needs of the market noted above were added to SIMA's work, it is estimated that it would cost about 20 percent more to operate, or about \$180,000 a year. In addition, the expansion of market information to include quantities would require the services of an external technical assistant, to provide whom it would cost another \$150,000 a year. It is assumed that technical assistance would be provided by a donor and would not be a government cost. Given the expected expansion of the agricultural market and the importance of market information, these sums seem to be a reasonable public expenditure.

#### **2.4 Management of a Strategic Stock**

Another mandate that ICM could potentially implement would be the management of a physical strategic reserve in the country. There are several possibilities on how such a reserve could be established. Sometimes a strategic reserve is part of a buffer stock scheme. In this format, the store of maize for strategic reserve would also serve as a stock which could be used to intervene in the market to support floor and ceiling prices. The cost of such activity would be extremely high. A modification of this approach would be to use the strategic reserve as part of a program to help purchase agricultural surpluses. We look at the cost of this option later.

The basic model (see Annex G) used in our calculations is based on several assumptions. The first assumption is that the strategic reserve would be established to provide, during a natural disaster or production shortfall, short-term supply of food for humanitarian purposes until such

time as imports and donor food aid could be delivered into the country. In our model, the strategic reserve would not be part of a price manipulation scheme. We relax this assumption later to look at the cost of using the strategic reserve to support farmer prices. The second assumption is that the maize held in the reserve would be purchased in the country and not be imported. As we shall see, using imported maize could be considerably less expensive, depending on market conditions. Thirdly, we assume that maize in the reserve would be purchased in the central region and trucked to Maputo where it would be stored. Finally, using FAO figures of 516,000 MT of maize utilization per year in the south region, we assume that a one month reserve stock would be 43,000 MT. Using these assumptions, we calculate that a reserve for one month's consumption in the south would cost the government \$ 5 million a year. If only 25,000 MT were needed, the total cost would be reduced to about \$ 3 million.

Various runs were made with the model to look at alternate scenarios. For a three month reserve of 130,000 MT, for example, it is assumed that purchases would have to be made in both the surplus central and north regions. Assuming 80 percent were purchased in the central region and 20 percent in the north, the cost of a three month reserve would be \$ 17.5 million a year. These higher costs reflect the additional transportation cost of moving maize from the north region to Maputo.

If the government wanted to use the strategic reserve to help purchase surplus agricultural products (at above market rates), then the costs would be even higher. Our basic model assumes a market clearing price of 1,000 Mt/Kg for purchases. To also undertake a buyer of last resort scheme would require prices to go above the market rate. We assumed a purchase price of 1,200 Mt/Kg in the model in Section 2.1.4. Using this higher price for purchase of maize for the strategic reserve would raise the cost of a one month reserve from \$ 5 million to \$ 6.4 million a year.

The cost of a strategic reserve could be reduced if maize to fill and stock the reserve were imported rather than obtained through local purchase. In our model it would cost approximately \$ 208/MT to deliver maize from the central region to Maputo. If world market prices of maize were in the \$ 115/MT range, maize could be delivered to Maputo from the world market at \$ 30/MT less than the cost of local purchase. This would be a significant saving. The problem with this approach is that sale of imported maize on the Maputo market as part of the normal stock rotation procedure would displace effective demand for local production. This, in turn, would dampen incentive for local markets in maize and discourage production and marketing within the country.

More significantly, the maintaining of a physical reserve stock is most likely an unnecessary expense for government. With the reconstruction of Mozambique's ports and rail linkages, it is easy to arrange delivery of imported grain into the country within a short period of time. By shifting from a physical stock to a humanitarian reserve based on foreign exchange reserves and private sector imports, the same objective could be obtained at virtually no cost to government. In addition, this use of the market to provide food security enhances overall market

operation and efficiency unlike use of a physical reserve stock that can be a potential market hindrance. With the present technology for prediction of the future crop, it is possible to have a very good idea, as early as a year beforehand, of the food situation which will occur in the country in the next critical January - February period. Private traders could be encouraged at this early date to forward contracts for delivery of maize in the November - December period to respond to projected shortfalls in production. The only cost to government in using this type of approach would be to support an effective early warning system coupled with good market information about local and international markets. In addition, the government would need to assure that the banking and port facilities operate effectively and efficiently. The cost of this type of program would be a tiny fraction of the cost to manage a physical reserve stock.

## **2.5 Management of Cereal Grades and Standards**

A fundamental element in the shift from a simple to an integrated agricultural market is the establishment and enforcement of grades and standards for agricultural commodities. The structural transition needed to move into a modern economy requires a shift from subsistence-oriented, household-level production to integrated production based on specialization and exchange. At the heart of this shift is a movement from personal systems of exchange to non-personalized systems of exchange (Jayne 1995). Specifically, to go from face to face negotiation over the price of a sack of maize in a village marketplace to the buying and selling of futures contracts while sitting at a computer terminal can only happen if there are agreed upon grades and standards.

Mozambique's cereals markets are not yet at the level where transactions commonly take place at a non-personalized level. Nevertheless, these markets, like the others in the rest of the world, are moving in that direction. This change can already be seen in Mozambique in the emerging export market that is just now beginning to develop for maize and for other crops.

Management of grades and standards can be both a public and private activity. In international trade, contracts are based on international standards of quality for the commodity being traded. Private companies are often hired to judge whether the standards specified in the contract have been met. These companies' judgments can be used for acceptance or rejection of commodities in any given transaction. There is no need for public intervention in such a situation, as there is no market failure.

Grades and standard in the domestic market need public management. Since there are no effective grades and standards for cereals in the Mozambican domestic market at the present, there is no role for public intervention. It is inadvisable for government to attempt to introduce grades and standards prematurely into the market, as such action would be likely to raise transaction costs and marketing margins. The best procedure would be to let the market provide the lead in the introduction of grades and standards. It is anticipated that grades and standards will be slowly introduced into the Mozambican domestic cereals market through their initial acceptance, by necessity, in the export market for cereals, particularly to South Africa. As the market demand

for grades and standards develops, the public sector should respond with appropriate action to introduce and manage grades and standards. This development will most likely be part of a general standardization of contract law and adjudication.

Thus, for the near term there is no need for public intervention in cereal grades and standards. When that need develops, it is unlikely that ICM would be the most appropriate public agency to manage these grades and standards. More likely this activity would be the responsibility of the Ministry of Industry, Commerce and Tourism, although it could just as well be done by the Ministry of Agriculture and Fisheries. This is an issue that can be dealt with at a later time.

## **2.6 Rationalizing of Internal Production of Cereals**

This mandate seeks to coordinate the import and export of cereals among "all other national institutions concerned with cereals" with a view to establishing rational production and markets. The problem with this mandate is that this type of activity is not the responsibility of government but of the market. This mandate seems to be a carryover from the former command economy and its idea that the state should control, and is capable of controlling, market forces to achieve some predetermined conclusion. The cereal market in Mozambique is already strong enough so that it is extremely unlikely that the state can manipulate it directly. The state's proper role in a market economy is more indirect and supportive. The instruments available to the state to direct a market economy revolve around such things as investment and banking policy, information and disclosure, and health and safety regulations. In a command economy, a cereals board like ICM was often used to coordinate the market. There is no such role in a market economy. In the past year, ICM has played a role in exports of maize but the role has been that of a commercial warehouse and trader in the market rather than that of a public entity with a public mandate.

### 3. CONCLUSION AND RECOMMENDATIONS

The assessment of ICM's mandates is summarized in Table 3.1 below:

**Table 3.1 Summary of the Assessment of ICM's Mandates**

Mandate	Appropriate for Government?	for Whom?
1. Agricultural Input Distribution	No	Market
2. Increase Storage Capacity	No	Market
3. Rationalize Grain Market	No	Market
4. Technology for Storage	Yes	Ag. Research
5. Extension of Storage Technology	Yes	Extension Systems
6. Manage Grades & Standards	Yes	Min of Commerce
7. Market Information	Yes	SIMA/Min of Ag
8. Purchase Agriculture Surplus	Yes	ICM
9. Manage Strategic Reserve	Yes	ICM

From this assessment summary it can be seen that of the nine distinct mandates in the 1994 decree creating ICM, two mandates — guaranteed purchase of agricultural surplus and management of a physical strategic reserve — would be potentially suited for possible ICM implementation if these activities were properly financed by the government.

As documented in Section 2.1.4 and 2.4, it is the view of the assessment team that neither of these two mandates has economic justification supporting government expenditures of resources. Not only economic but also political considerations guide governments' decisions on allocation of their budgets. Given the fact that during ICM's three years of existence, government has chosen *not* to fund any of ICM's public mandates, it can be reasonably assumed that there is limited political support for funding the two mandates which seem appropriate for potential ICM

implementation. Unless the government is prepared to make significant expenditures on a physical strategic reserve and/or on a program of purchase of agricultural surplus, there is no public role for ICM. It is not tenable to assume that private funds from ICM should fund public activities.

If there is no public role for ICM, then the issue to be dealt with is what to do with ICM's physical and human resources. Annex F provides an inventory of ICM's physical assets. By ICM's estimate, they have some 103 warehouses in useable condition, out of 136 in their inventory. These 103 warehouses can store some 158,400 MT of produce. Fifty-four of these warehouses are in the north region, with a capacity of almost 80,000 MT. There are 24 warehouses in the central region with 24,300 MT capacity and 25 warehouses in the south region with 54,904 Mt capacity. The capacity in the south is dominated by ICM's 31,921 MT warehouse near the Maputo Airport. In addition to warehouses, ICM has some 240 employees, most of whom are guards, and a small remnant of the fleet of vehicles it was given from AGRICOM.

Ideally these resources should be used to improve market operations and efficiency in the country. How to achieve this objective can be best understood in the context of the country's present and projected cereal market. As we have seen in Section 1.4, while the country has three geographic regions, it has two distinct markets for maize — the southern market, with a deficit related to demand in Maputo, and the northern market, with surpluses (see Figure 3.1).

### 3.1 ICM in the Southern Market

Markets in the south are working very well. There is a high degree of competition responding to the significant level

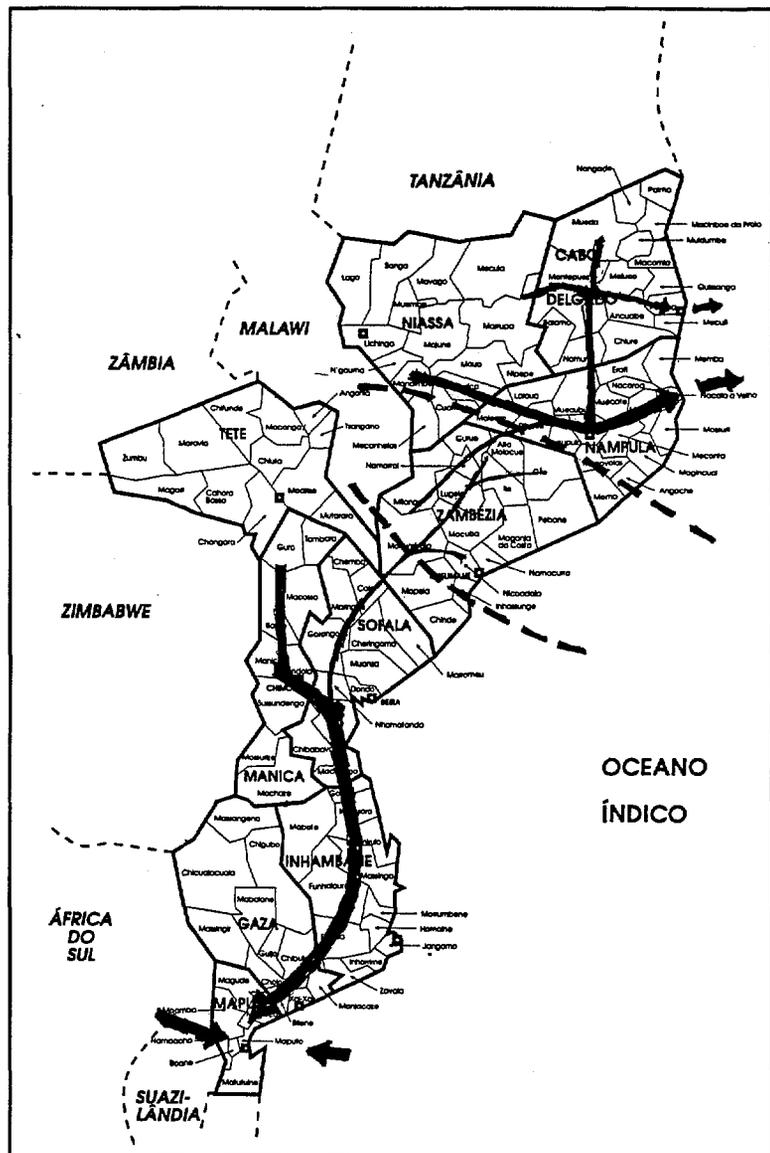


Figure 3.1 The Northern and Southern Maize Markets

of effective demand of the Maputo market. Annex E demonstrates how well retail prices and margins seem linked and integrated within the southern market and how well the market sends price information. This integration demonstrates the degree of competition within the region. While the level of competition is high, high competition does not mean the market is cost-effective. As we have seen, a number of factors, including roads and information flows, have resulted in an extraordinarily large marketing margin.

The high degree of competition demonstrated in the southern market reflects the fact that entry into the southern market is relatively easy. There are many informal traders in the market, and they compete actively among themselves. Ease of entry results from the fact that there are many wholesale and retail outlets in Maputo that can accept maize brought in by traders. With the size of demand in the Maputo market and this large number of selling points, traders find it easy to turn over their stock quickly and return to the countryside to make additional purchases. Thus, there is limited demand for financing and storage. In addition, there are no quality standards to meet, as the product becomes differentiated within the large Maputo market by de-facto standards at the point of sale. Thus, poor quality maize is diverted, within limits, into a low quality/low price category for sale on the retail market. The Maputo market is large enough that the poor quality maize would be sold at an appropriate price.

These market attributes favor the informal trader who can quickly make and implement marketing decisions. The formal traders must cope with a larger asset base that is more inflexible and that raises their fixed costs. In addition, the informal traders generally operate outside of government regulatory and taxation requirements. Both of these conditions mean that the informal trader's operating costs can be lower than those of the formal traders.

ICM has almost no activity in the southern market. Most of its warehouses are inactive or are being rented to cover local operating costs. Part of the reason for this lack of activity is that with the highly competitive market, ICM cannot effectively compete with the informal sector. In addition, with this degree of competition there is no need for state intervention in the southern market.

#### Recommendation for the Southern Market:

Since ICM has no role, either theoretical or actual, in the southern market, ICM's assets within that market should be shifted to the best possible use that supports competition and market efficiency. These assets can be either sold or transferred.

The best disposition of each warehouse could not be determined in the short time the assessment team had in country. To be able to make the best use of these resources, it is suggested that a commission or study should be undertaken immediately to inventory ICM's assets in the southern market to determine their best use. This determination can be only indicative. At the initial level a determination can be made of which resources should be transferred to other public agencies. This should be a minor part of these resources. The rest would be sold to the private

sector. Ideally, but not necessarily, these warehouses would be used for the storage of agricultural products. Some of the warehouses in need of extensive repair would simply be disposed of. The large warehouse complex in Maputo would need to be looked at carefully to determine how best to use it. Among a number of options, it could be transferred to the NGO community for storage of humanitarian relief assistance.

Another issue this study or commission will need to look at is the difficult question of deciding which of ICM's assets support either the southern or the northern market. As we will see, the disposition of ICM's assets is different in each market. In Section 1.4 we have seen that the dividing line between these two markets moves up and down the country, depending on the price relationship between the Maputo and the Nacala export market. In general, the line marking the division between the two markets occurs within the central region. South of the Zambezia Province, maize generally goes towards Maputo. North of the Zambezia Province, maize tends to go towards Nampula and then towards Nacala, if it is exported. Within the Zambezia Province, maize can go either way depending on prices and trader availability to buy and transport the grain. The line between the two markets is not clear cut. In a short season such as that of 1994/95, for example, traders went as far north as Cabo Delgado in search of maize for the Maputo market.

### **3.2 ICM in the Northern Market**

The market situation in the northern market is more complicated than that in the southern market. At present the northern market has less competition than the Maputo market. A relatively small number of large traders and firms, including ICM, dominate the northern market. While informal traders do operate in the market, their numbers are small compared with those in the south.

There are a number of reasons why there is less competition in the northern markets. Demand in the market comes from two sources: 1) a limited demand generated by the urban populations of Nampula and other small urban areas, and 2) demand generated for maize to be exported out of the ports of Nacala and Pemba. Informal traders have the same advantages in the local market as they do in the market in Maputo, but the local market is much smaller, so fewer traders service it, even though entry into the market is easy.

For the export market, the formal traders have a distinct advantage. As a surplus region, the northern market has a future in exports. To take advantage of export opportunities, however, requires that a number of restrictive marketing conditions be met. Prices on the international market for maize are determined to a large extent by maize production in North America. The high point in prices generally occurs in the May - July period. This is also the time of Mozambique's maize harvest. To take advantage of this peak in world market prices requires efficient collection of a quantity of maize to get it to the port for speedy removal from the region. A month's delay in the export market can mean the loss of millions of dollars.

In addition to the need to assemble quickly and to transport an exportable quantity of product, it is required that the product also meet detailed and strict international quality standards. If even one element of quality does not meet these standards, then the entire shipment may be downgraded substantially in price or may not be sold at all. Quality control of the grain purchased and of the storage and transportation process from producer to the port is essential. Most informal traders are not capable of doing this type of quality control.

Finally, export trade requires that an international contract be made and brokerage be done to cover shipping and handling of the product at the port. Access to information on international markets, international buyers and brokerage services is required for export of agricultural products. Again, most informal traders do not have this access. All of these restrictions make entry into the export market difficult in the northern market. It is likely that exports can only be handled by formal traders. Informal traders will have to go through formal traders to access this market.

At the present time, the import-export brokerage agent V&M, with ICM as the collection and storing agent, is handling all maize exports from the northern market. An issue that has been raised is whether or not other formal traders can handle the complexity of maize export trade. The assessment team questioned both formal traders in the north region and other individuals familiar with the export trade about this issue. It is estimated that about 60 percent of the maize exports made this last season were handled outside of ICM's warehousing and storage system. Formal traders bought, stored, fumigated and transported the maize directly to the port for shipment under contracts brokered by V&M. In addition, formal traders in the region have been exporting other agricultural products for the last several years. These products include beans, groundnuts and cashew nuts. The process of exporting these products is the same as for maize. To be sure, export of agricultural food products from the northern market is still in its infancy. Most formal traders are not very good at it, but it appears that they can do it. Some of the public services noted in Section 3.3 below will enable formal traders to do export trade more efficiently and effectively.

A final important feature of the northern market is the dominant role ICM plays in the market. In Cabo Delgado, ICM handled some 40 percent of the marketed maize and in Niassa it handled some 78 percent. This dominance in the maize market may, in fact, be artificially raising market prices in these provinces (see Annex E). For much of the northern maize market, ICM acts as the *de facto* financier by providing formal traders contracts that include advance funding. The formal traders can then quickly turn over these funds by rapid delivery of maize. The biggest complaint the team heard from formal traders was that ICM should have let more contracts, with attached funding, for maize. These complaints were made even though ICM's warehouses were backed up with more than 2,000 MT of unsold stock. In fact, the back-up in ICM's warehouses in Cabo Delgado, coupled with artificially high prices for maize on the local market, may have resulted in the premature stopping of maize marketing in that province.

### Recommendation for the Northern Market:

Given the characteristics of the northern market described above, the disposal of ICM's assets has to be done differently and with greater care than in the southern market. To assure that the maximum social benefit can be obtained, decisions on disposal of ICM's assets in the northern market should adhere to three basic principles:

- 1) the assets should be used to increase competition,
- 2) the assets should also be used to expand exports of agricultural products, and
- 3) actions undertaken to dispose of these assets should not unduly disrupt the market.

The first of these principles reflects inherently more limited competition in the northern market and the need to increase this level of competition. The second principle reflects the importance of agricultural exports for creating demand necessary to drive the economic growth of the region. Finally, the third principle reflects the dominant role ICM now plays in the market and the need to systematically phase the draw-down of ICM's operation so the market can adjust and continue operation with minimal disruption.

The first step in implementing these principle is to remove ICM's public mandates. ICM should be freed of mandates it does not and cannot carry out. This would put the organization in a rational mode so that it and its staff can focus attention on the phase-out operation.

Next, in a phased program carried out over four years, ICM's assets should be privatized. How the privatization is undertaken needs to be well planned and well executed. Descriptions of details of this activity are beyond the scope and resources of the present assessment team and will require additional study.

The general concept, however, can be laid out. The basic goal is to increase competition in the region by rational sale of ICM's assets to the private sector. These assets would be assembled into groups that are economically viable and logical — by province or markets. It would be expected that at least four of these asset groups would be created out of the present ICM operation in the northern market. These assets would consist of ICM's present warehouses, vehicles, and equipment. These grouped assets could then be sold to the private sector (as individuals or stakeholders) to create firms that will compete with present traders and with one another primarily for the export market. The purchasers of the asset groupings would bring expertise in business management and marketing to add to ICM's warehousing skills and facilities. It is assumed that ICM's trained and experienced warehousing staff would be employed by these new ventures. Ideally, the largest possible number of purchasers of these assets would be traders, business people, or investors from outside the northern market to assure additional competition with existing firms.

If these grouped assets cannot be sold, then the fallback position of government would be to selectively liquidate ICM's assets in support of competition in the region. These assets could be sold to existing traders or to other investors in the region. To the extent possible, government should set the terms of such sales to encourage use of these warehouses for storage of agricultural products.

### 3.3 Role of Government

Government has a fundamental and essential role in the success of a market economy. It is the state that by its supportive action allows a market economy to work. Businessmen and sometimes donors admonish government to step aside and let the private sector do its work unhindered to achieve a better economy and society. Nothing could be further from the truth. Any student of capitalism knows that a market economy is driven by profit and greed. The miracle of market economies is the alchemy of competition that turns these unsavory human attributes into virtues. Competition is the constraint that turns the desire for profit into the motivating force that has resulted in the remarkable well-being of people who live in market economies.

The private sector is not the market; it is only a participant in the market. The state is also a participant, not by actively engaging in market activity but by guaranteeing that the market works. The natural tendency of the private sector is towards monopoly and limited markets. A private monopoly is as bad as or worse than the public monopoly that is characteristic of a command economy. It is the state that is responsible for seeing that the market actually operates. It carries out its responsibility by providing public goods to facilitate the market and by assuring free access and a level playing field for all market participants. Thus the state supports, but does not direct, the market.

The most important way the Mozambique government can improve farmers' welfare and increase their contribution to the national economy is to *reduce the agricultural marketing margins*. Only the state has the ability to do this. Among the critical actions that need to be undertaken to reduce marketing margins are the following:

- **Improve roads and transportation.** Almost every document about Mozambique's development stresses the need to improve the country's road network and transportation facilities. Every trader and farmer whom the assessment team met also mentioned roads as the top priority for improvement of agricultural marketing and development.
- **Expand market information.** As seen in Section 2.3, both the quality and quantity of market information being demanded by traders and some farmers has increased. As Mozambique moves closer to international markets and to a more sophisticated marketing system, market information will be critical for success.
- **Provide security of property and person.** It is the primary responsibility of all

governments to protect the security of their citizens and of the citizens' property. Costs required for security guards, theft of shipped goods, and all the other extra expenses of poor security add to the marketing margin.

- **Enforce legal contracts and facilitate contract dispute resolution.** The market is founded on contracts between buyers and sellers. As the market develops, more non-personal transactions take place. The efficiency of the market depends on how easily a contract can be made and on the effort needed to enforce it or to resolve disputes about it.
- **Free both the formal and informal traders from excess regulation and "red tape."** At the present time the informal traders have an advantage over formal traders in their ability to avoid the excessive regulation and bureaucratic requirements imposed on the formal sector. The answer to this situation is not to try to impose this bureaucratic structure on the informal sector but to free the formal sector from all but the most basic required licenses and regulations. This would create the "level playing field" needed to energize both the formal and informal sector.
- **Assure safe food in the market.** Safety of the product sold in the market is required to allow consumers to purchase goods without the additional cost of fully inspecting and testing it themselves. Just as the structure of legal contracts and security of property facilitate exchange in the market, so does assurance of public health and safety of the products being exchanged.
- **As the market demands, establish and maintain grades and standards.** We have seen in Section 2.5 that the export trade is imposing international grades and standards in the export market. Over time, grades and standards will spread to the domestic market as well. Following the markets' demand, the government has primary responsibility for grades and standards in the domestic market.
- **The state should not be a factor in increasing the marketing margin through taxation on marketing.** The state can play a positive role in keeping the marketing margin down by keeping taxes on marketing processes to a minimum. Taxes such as the circulation tax adds directly to the marketing margin. Taxes are better placed on consumption. A VAT is an example.
- **Maintain stable and rational macro-economic policies.** One of the principal roles of the state is to establish the basic macro-economic framework for its economy. Maintenance of a free exchange rate, low inflation, and a free and efficient financial sector are essential elements in reducing marketing margins.

#### **4. IMPLEMENTATION PLAN**

If government accepts the basic thrust of these recommendations, implementation could begin almost immediately. This implementation could be done in the following steps:

1. The first step would be to free ICM officially from the burden of mandates established in the 1994 decree. This action could be done by a directive or decree from the Ministry of Industry, Commerce and Tourism.
2. Next, a complete and detailed inventory of ICM's assets should be undertaken. This inventory could be done internally within ICM or by outsiders. The inventory should take into account all of ICM's assets, both in the southern and northern market areas. It is critical that the inventory be standardized to allow judgments on the most appropriate uses of the assets. The inventory should include such items as location of the warehouse, its capacity, present use, contents, state of repair, cost to repair, potential users, distance to rail links and other transportation, and any other pertinent information needed to make comparative judgments and evaluation by planners and potential buyers. In addition to the warehouses, all auxiliary vehicles and equipment should also be inventoried in the same manner. Of particular importance is to identify any outstanding ownership questions concerning the assets.
3. Once the inventory is completed, then the next task would be to separate these assets between the southern market and the northern market. Assets in the southern market would be liquidated, and assets in the northern market would be grouped into coherent packages to be sold. This could be done by a special study group appointed by MICTUR, a commission from several ministries, or by a contract consultant.
4. The assets of the southern market could then be turned over to the proper authority for sale or transfer as appropriate. Assets found to have unclear title would be processed to adjudicate ownership so they could be disposed of.
5. Assets deemed part of the northern market would then be reviewed by a commission, study group or outside consultant to group them into coherent and economically logical units in order to sell them to form independent warehousing and assembly firms that would compete with the existing traders in the region. This review would also establish a timetable to phase over a four year period the transfer of these grouped assets to assure a smooth transition.
6. Following the timetable thus described and the recommendations of this review, the assets of ICM would be transferred to the private sector.

**ANNEXES**

## ANNEX A: SCOPE OF WORK

### A. Purpose

The purpose of this contract is to assess the degree to which the mandate and performance of the *Instituto Nacional de Cereais* (ICM), taking into account the current state of the commercial network, contributes to overall government policy objectives in the agricultural sector, and to make recommendations how government can best achieve its policy objectives. Recommendations could include the reformulation of policy, changes in ICM's mandate, or operations, the transfer of critical tasks to other actors, private or public, the abandonment of parts of the mandate – in all cases the consequences of the changes should be carefully analyzed and an implementation timetable should be proposed, along with a concrete workplan for government for implementation of the report's recommendations.

### B. Scope of Work

#### 1. Government Policy

The Government's overall objectives in agricultural marketing and production, as set forth in the *Política Agrícola* are to: (a) achieve food security; (b) contribute to sustainable economic development; maintain and create employment; and (d) reduce poverty.

The consultants will critically examine these policy objectives as they relate to ICM and discuss how in theory the government might best promote them. The consultants will make general recommendations on ways in which the government can effectively achieve its objectives in the agricultural sector -- issues to be discussed include pricing policy, buffer stocks versus cash reserves, infrastructure development, maintenance and storage, and promotion of agricultural production and marketing.

#### 2. The 1996 Agricultural Commercialization Campaign

In order to provide background for the analysis of GRM policies and ICM's performance, the consultants will describe and analyze the activities of the participants in the 1996 agricultural commercialization campaign. This description and analysis should include a review of the government policies affecting the campaign, the implementation of those policies, the characteristics of the private commercial participants, and the constraints they have faced in engaging in agricultural marketing, such as transport infrastructure, access to bank credit or other forms of prefinancing to purchase commodities, truck fleets, storage facilities, and market information.

The consultants should examine closely the role ICM has played in this campaign to stimulate private cereals marketing. The vast majority of surplus commodities are produced in the north of the country, while the south always has a deficit. Therefore, the consultants should examine production and marketing trends, including regional trade flows, and suggests ways that marketing can be made more efficient. For the many isolated areas of Mozambique

the consultants should examine the pros and cons of government intervention in the marketplace where no private sector is sufficiently active.

### 3. ICM's Purpose

The purpose of ICM is to "encourage the production and marketing of cereals and other agricultural products as well as to realize actions aimed at guaranteeing food security and the management of strategic reserves."

The consultants will analyze the rationale for ICM, within the context of the government policy, and summarize the experience with similar agencies in southern Africa (and beyond taking into consideration differences in society and stage of economic development). Various examples should be adduced to illustrate the costs and benefits that similar organizations have entailed, both in theory and practice. This section will examine alternative ways of achieving the objectives of the government and summarize the experience in other countries with different approaches.

The consultant will examine the linkages between this purpose and government's overall policy discussed earlier. In particular, the paper should summarize the experience of other countries with strategic reserves and discuss the pros and cons of physical reserves and alternatives such as increased foreign exchange holdings.

### 4. ICM's Mandate

For many years, Agricom, a parastatal was the major purchaser of agricultural commodities and supplier of production inputs in Mozambique. In the mid-1980's, the private sector began to assume a greater share of the market and in 1993, the government closed Agricom. To perform other specific functions which needed to be performed by government, ICM was created. The government decree establishing ICM (dated January 1994) states the organization is specifically mandated to do the following:

- a) Promote agricultural production and marketing through:  
actions in support of agricultural production, especially inputs to the family sector; development of the technologies and capacity for storage of agricultural products in the country; participation in the definition and extension of grain conservation technologies in order to minimize post-harvest losses; and actions to guarantee the purchase of agricultural surplus, acting as a reserve market.
- b) Manage and coordinate projects to stimulate agricultural marketing through the distribution of inputs, elaboration of studies and proposals for pricing, among others;
- c) Plan and collect statistics concerning agricultural commercialization, analyze these data in order to permit an understanding of the evolution of the sector;

- d) Purchase, storage, conservation and sale of agricultural products with the objective of: guaranteeing strategic reserves and food security; contributing to price stability for marketing and supply;
- e) classify, according to pre-established criteria, products to ensure consistent nomenclature among different types and grades, issue quality certificates; and
- f) Participate, in collaboration with all the other national institutions concerned with cereal and other agricultural requirements, in balancing the import and export of cereals with production and internal consumption, with a view to rationalizing the internal production of these products.

The consultant will discuss whether these specific tasks contribute to the overall objectives of the government and to ICM's purpose, and make recommendations on how to most effectively and efficiently carry out those that appear successful. Where it is found that ICM is not the most efficient provider of the service, the consultant will provide recommendations for how to phase out ICM without undue disruption to the market. Where it is found that ICM has a role, the consultant will provide recommendations on how it could be made more efficient. Where appropriate, and perhaps particularly where it is recommended that the private sector take over ICM activities, the consultant will discuss the extent to which regulation is required and feasible.

5. In order to accomplish the proceeding analysis the consultant will:

Describe the key characteristics of ICM – how it is organized, financed, staffed and administered, what its marketing practices are, what its share of the market is in different parts of the country, how commercially sound are its practices, etc.. Document the current role, buying points, infrastructure, etc... Examine alternative (more effective) arrangements and discuss how they would be implemented.

On the basis of secondary literature and interviews, the consultant will examine the current state of the market for agricultural produce, major players and important constraints and trends. This should include an assessment of the capacity of other actors, including the private sector, to carry out the roles currently ascribed to ICM. Particular attention will be given to storage and marketing, and the consultant will assess the current capacity (physical and institutional) to efficiently perform these functions in Mozambique.

The consultant will also, through interviews with merchants, ICM and government officials, bankers, and producers, assess how ICM has actually performed its mandate over the last two years. In addition, the consultant will investigate the capacity of other actors to carry out ICM's tasks and assess the relative efficiency of the alternatives.

The consultants will identify and conduct interviews with ICM partners and competitors in selected field sites. Assess ICM's market share, access to credit, control of

infrastructure (particularly storage) and analyze whether it has made effective use of these assets. Comment on whether the other actors are capable of making better use of ICM's resources.

Document the operations of ICM during the 1996 agricultural buying season, assess the degree to which they contributed to the government's objectives, and comment on whether these practices contribute to increased producer income.

### **C. Level of Effort/Qualifications**

These tasks will be carried out by two consultants, a level 3 agricultural and food policy specialist and a level 3 agribusiness and marketing specialist, assisted by a local consultant. Both expatriate consultants should have considerable experience working on issues related to food security and agricultural marketing in developing countries, particularly in southern Africa. Portuguese language ability is required. At least one of the consultants must be fluent and be able to carry on conversations and give briefings in Portuguese. The other should be able to follow and understand conversations in Portuguese. A Research Assistant will be provided by Abt in Washington to support the team for a total of 5 working days. The two consultants (team) and the Research Assistant will spend 2 days in Washington to review documents prior to the team traveling to Mozambique. The team will then spend six weeks in Mozambique. Afterward, the team leader will spend up to one additional week in the U.S. preparing the final report.

### **D. Required reports**

Within a week of arrival in Mozambique, the consultants will present an inception report (with a workplan and detailed outline of the final report), for discussion with the government and USAID. An oral presentation in Portuguese will be made when the draft final report is submitted, before the consultants leave Mozambique. The draft will be in English and will include an executive summary in Portuguese. USAID and the government will provide comments within ten days, and the final report, not to exceed 30 pages (in English) not including annexes, will be delivered in Portuguese and English no later than 30 working days after those comments are received by the consultants.

The main report will conclude with detailed practical recommendations to government for policy change in support of its overall objectives in the sector, including specific suggestions as to the how the government can best promote its objectives and what role, if any, ICM should play. The main report should include a workplan and timeline for these recommended actions. The final report will include an executive summary, not to exceed three pages, setting forth the main conclusions and recommendations.

## ANNEX B: LIST OF PEOPLE CONTACTED

### USAID/ Washington, DC

Jeff Hill	Economist	Africa Regional Bureau
Ralph Cummings	Economist	G/EG/AFS/FP
George Like	Economist	G/EG/AFS/FP

### USAID/ Maputo

Rich Newberg	Agricultural Officer
Jime Jackson	Food for Peace Officer
Tim Born	Project Coordinator
Jullie Born	Program Advisor
Fernado Paixao	Sectorial Policy Advisor

### Other Donors

#### World Bank

Adelina T.B. Palva	Economist	Washington, DC
Peter Moll	Economist	Washington, DC
Simon C. Bell	Senior Financial Economist	Maputo

#### Dutch Embassy

Jules Jongma	Counselor	Maputo
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#### European Community

John Rook	Economist	Maputo
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### Government of Mozambique

#### Ministry of Industry, Commerce and Tourism

Luis Eduardo Siteo	Director of Internal Commerce	
Anselmo Xavier	DPICTUR	Gaza
Joao M. Ventura	DPICTUR	Zambezia
A. Baptista	DDICTUR - Mocuba	Zambezia
Horacio Figueiredo	DDCTUR-Gurue	Zambezia
Paulino C. Nampuruma	DDICTUR - Alto Molocue	Zambezia
Bonifacio Saulosse	DPICTUR	Nampula
Mutica	DPICTUR	Cabo Delgado
	DDICTUR - Mueda	Cabo Delgado

### ***Instituto dos Cereais de Moçambique (ICM)***

Jose Paulo Marra	Director	Maputo
Natalio Xavier	ICM	Gaza
Gomes Saize	ICM	Zambezia
Antonio Simio	ICM - Alto Molocue	Zambezia
Sulemane Girao	ICM	Nampula
	ICM - Nacala	Nampula
Mamudo	ICM	Cabo Delgado
Dique	ICM	Cabo Delgado
Fernando Miguel	ICM - Mueda	Cabo Delgado

### **Ministry of Agriculture and Fisheries**

Leopoldina Dias Fakir	MAP	
David Tshirley	MSU Chief of Party MAP/SIMA	
Mamade Vala	DPAP	Gaza
Francisca	DPAP	Gaza
Vitorino Xavier	DPAP	Nampula

### **Others**

Porto Nacala - Director	Nampula
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### **Private Sector**

Commercial Traders (5)		Xai Xai
Joao Ribas	JFS	Maputo
Paulo Alexandre	CAPELAS	Maputo
Almeida	Comerciante Macia	Gaza
Hussein P. Missia	PROINVEST - Mocuba	Zambezia
Almeida Malango	Presidente Assoc. - Mocuba	Zambezia
Mamade Akbar Abdula	Comerciante - Mocuba	Zambezia
Yacub Darvesh	Comerciante - Mocuba	Zambezia
Isabel Pinto	COGROPA - Mocuba	Zambezia
Mamade Yahain	SONIL - Mocuba	Zambezia
Hussen Ibrahim Jussub	Armazens Gani, L.da - Gurue	Zambezia
Abdul Rashid M. Siddik	Muliba Comercial - Gurue	Zambezia
Adriano Roite	Restaurante Bar Namuli - Gurue	Zambezia
Abubacar Ibrahim	Comerciante - Gurue	Zambezia
Joao Baptista Abrao	Comerciante - Gurue	Zambezia
Jaime Alberto	Pousada Monte Verde	Zambezia
Mohammed Iqbal Omar	Padaria / Comerciante - Gurue	Zambezia
Mohammed Muhibullal	ACIMOL - Gurue	Zambezia
Jaime Jose	Agricultor/Comerciante - Alto Molocue	Zambezia

Informal Traders	Alto Molocue	Zambezia
Antonio P. Momade	ACIANA	Nampula
A.Murarh	Casa Damodar	Nampula
Abdul Wahab	CICOMA L.da	Nampula
Raja Hussen Gulamo	Armazens Al-Owail	Nampula
Fernando Ezequiel	JFS	Nampula
Kishor Ratilal	Comerciante	Nampula
Amir Mamendrasing	Gordandas	Nampula
A.Bernardo	Entrepoto	Nampula
A.Sahid A. Gafar	Gani Comercial, L.da	Nampula
Ibraimo Ismail	Africa Comercial	Nampula
Issufo Nurmamade	Armazem da Cidade	Nampula
Agostinho	Comerciante - Murrupula	Nampula
Sulemane	Comerciante	Cabo Delgado
Jose Sigaletti	PAICD	Cabo Delgado
Informal Traders	Mueda	Cabo Delgado
Naru	Comerciante - Mueda	Cabo Delgado
Boaventura M. Manjate	LOMACO - Montepuez	Cabo Delgado
Mansur Cassamo	Assoc. Comercial - Montepuez	Cabo Delgado
A.Y. Chothis	Manica	Maputo
Amade C. Camal Junior	Sir Motors	Maputo
Andre Vonk	V&M Import and Export Agents	Maputo

### Non-Governmental Organizations

Jose Carlos Trindade	AMODER	Maputo
Brian Hilton	World Vision	Zambezia
Paulo	World Vision-Gurue	Zambezia
Renato G. Gordon	World Vision	Nampula
Alex Serrano	CLUSA	Nampula
Scott Clark	Food for the Hungry International	Beira

### Farmers

5 Farmers	Namilasse	Nampula
20 Farmers	Namiope	Nampula
Farmer	Mueda Market	Cabo Delgado
Farmer/trader	Alto Moloque	Zambezia

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## ANNEX D: OBSERVATIONS ON CEREAL MARKET PERFORMANCE

### General Observations on Market Transitions

There are a number of market transitions under way that will affect the final configuration of agricultural production and markets. These transitions are at different stages of evolution and will have differing impacts on the agriculture and markets of each region. Also, the principal participants in the markets, including government officials, are often at different stages in their understanding, acceptance, and involvement in these transitions. Brief descriptions of five market transitions follow.

#### 1. Transition from Command to Market Economy

The transition from a command to a market economy is generally lead by the informal traders (ambulantes) and trailed by the formal traders. Government has a diminished but important role in supporting and facilitating this change but not in directing this market. The private market is working well in this early phase with some inefficiencies noted later.

#### 2. Transition from Deficit to Surplus Production

The transition from a deficit cereal production market to two distinct markets - a deficit market in the south and a surplus market in the north is becoming more evident this year. In addition, special markets exists at the borders with Malawi, Zambia, Zimbabwe, South Africa, and Tanzania; especially for Tete Province. The movement to a surplus cereal market in the north is in an early stage (first year) and raises a number of production and marketing efficiency questions that remain to be resolved. There are also several government efforts needed to support this new market focus.

#### 3. Transition to Greater Agricultural Production Levels

Strong increases in the quantity of agricultural production and marketing have occurred in each of the past two years as the agricultural regions recover from the effects of war and draught. In 1996, increases of all agricultural products marketed totalled 42.3 per cent, while for corn alone the increase was 57.7 per cent. The eventual equilibrium level of surplus marketable production will not be known for several years until all farming systems and populations are restored and adjust to free markets. We are not able to estimate this equilibrium level but we note that individual on-farm cultivated areas are increasing incrementally in Sofala Province and that there are significant amounts of unused and underutilised land resources generally. We conclude that labor supply and technical inputs are the principal constraints to increased on-farm production.

#### 4. Transition in Enterprise Choice and Combination

There is a strong potential for change in the mix of agricultural products as markets increasingly determine production choices. This is especially true for export markets that need to be developed for the north. i.e. While corn may be the excess crop this year, it may not be the best choice for export markets. Many traders consider corn to be a low margin commodity and given the present cost of transport would favor higher value products.

#### 5. Transition in Diets to More Livestock Products

A diet transition to more livestock products will occur. The population is currently at very low diet levels with almost no consumption of livestock products. We noticed almost no livestock in the countryside, though there was some poultry evident in urban markets. Based on experiences in other countries, an eventual consumption transition to more livestock products as incomes grow will occur. This will be accompanied by a gradual decline in per capita consumption of maize and cassava associated with a slow rise in wheat consumption. Production of livestock products will rise from a very low base as livestock herds are rebuilt.

## 2. **Specific Observations On Market Imperfections**

A number of market failures and market imperfections were noted in earlier reports by the World Bank, The Ministries of Agriculture and Commerce, Consultants (Coulter, Miller), various NGOs, and in our pre-trip discussions with individuals and institutions in Maputo. During our provincial visits we made special efforts to verify the status of these imperfections in the 1996 marketing season. The specific imperfection and our observations concerning the imperfections follow.

### 2.1 Finance

#### Common Perceptions

*The lack of appropriate market finance (both liquidity in the market and high interest costs) was identified as an important impediment to timely and efficient functioning of the market.*

#### The Team's Observations:

We found finance to be a major concern. Inadequate and inappropriate finance was the number one complaint of traders and ICM Directors and takes several forms:

- Many farmers are demanding cash payment for crops which increases traders need for liquidity.

- ICM (AGRICOM) previously provided the financial resources for many formal traders through advance payments on purchase contracts. This practice was still evident in 1996 in some areas of the North ( particularly Cabo Delgado) and then was used by ICM only after some delays occurred in fulfilling there planned purchases.
- Formal traders in many cases cannot get access to bank loans because of lack of collateral or carryover debts from the war period.
- Informal traders cannot secure credit because of non-registration as traders.
- Cost of credit is excessive given inflation rate. And, seasonal price difference may not justify storage financed with formal credit.
- Formal banking system is too rigid in terms of timing of loans, loan duration, and repayment schedules.
- Central Bank has placed limits on loanable funds for the agricultural marketing activity (290 billion Mt in 1996) and ICM is using a portion of that total for its activities in direct competition with private traders. [note: this point was contradited by another source]

## **2.2 - Destroyed and Inadequate Storage**

### **Common Perceptions**

*Concerns were noted about the availability of district and regional storage capacities to handle promptly and adequately the increased levels of marketable production.*

### **Team Observations:**

Storage capacity appeared to be adequate to excessive in all regions. Several factors contributed to this finding.

- ICM is not using its full warehouse capacity even with a single throughput (no turnover in product). Some ICM facilities are being rented to third parties for non-cereal storage usage. Excess ICM storage was more noticeable in the south and center of the country i.e. regions supplying the Maputo market.
- Trader capacity is not being fully used, but has considerably shorter duration (more turnover) and product diversification.
- Corn often remains on farms for several months and is marketed slowly as income needs dictate rather than immediately after harvest. This leads to more direct marketing and less need for intermediate storage.

- Informal traders bring product directly to local and Maputo markets without storing in production region.
- Early production of maize (May-June) is for immediate consumption and is not stored (high moisture content).
- In some regions (especially the south) there is a short season crop that is harvested in the July-August period, principally for immediate consumption.

## 2.3 Transportation

### Common Perceptions

*Transportation infrastructure problems (poor and sometimes impassable roads) and scarcity of trucking services add considerable cost to marketing margins and make the timing of product delivery uncertain.*

### Team Observations:

We found this to be a continuing problem. However, there are minor improvements being made, especially with secondary roads in some regions. Further, the problem is less acute with maize since the major marketing activities occur during the dry season (as contrasted with cashew which is marketed in the rainy season). Lack of trucking facilities did not appear to be a problem in the areas we visited. Clearly the costs associated with moving vehicles over badly deteriorated roads increases the marketing margin and will continue to be a strong deterrent to accessing competitive international markets from production areas in the north. However, poor roads are not acting as an absolute market constraint in the same manner that lack of finance is.

## 2.4 - Market Access for Remote Farmers

### Common Perceptions

*The feeling is that lack of passable roads in remote areas, small marketable amounts for each farmer, and lack of market knowledge by small farmers, collectively lead to a situation of few or no market opportunities for remote small farmers. That there are, therefore, stocks of unmarketed product existing on these farms which is deteriorating in quality. This situation then leads to the need for market interventions like minimum prices, buyer of last resort (an ICM mandate), improved market information systems, and improved infrastructure.*

### Team Observations:

Since this market imperfection paradigm often leads to solutions involving a series of

government interventions in the market, we made every attempt to assess how widespread the market access problem was in the 1996 season, and to also assess the need as well as the effects of the market interventions undertaken to deal with the problem.

We found no direct evidence that remote farmers are denied access to markets, or that large quantities of product remain involuntarily unsold or unused at the farm level. Farmers were found to have a number of options to deal with annual production differences (surpluses) which they were exercising. There was evidence that farmers in some regions chose not to sell at initial prices offered by traders. And, that some traders, when faced with no product available to purchase at their offered price, did not return to some remote areas. Specific observations follow.

- The minimum (or reference) price for maize established by the government was considerably in excess of market clearing prices and was a strong disincentive to market operations for small farmers. They knew of the minimum price and often refused lower prices offered by traders. In addition to reducing small farmer operations in the market, the minimum price delayed marketing generally as market participants, including provincial governments tried to sort out what price levels should prevail.
- Often farmers choose not to sell at offered price and in remote areas there may not be repeated opportunities as trader costs are large in going to these areas. However, some farmers walk 30-40 kilometres to delivery product to market, and receive a substantially higher price for their marketing efforts, an indication that markets are available if actively sought out.
- Small farmers have a number of production and marketing activities and if maize is not sold after several months many farmers adjust their consumption patterns to eat more maize and market other products such as cassava, beans, etc.
- An independent study by the Nampula Director of the Ministry of Agriculture and Fisheries responding to notices of lack of market activity could not find excess maize on farms.
- ICM market activities are generally done through commercial traders with some direct purchases from large farmers. Further their market operations are constrained by availability of commercial credit which is secured in global amounts in Maputo and allocated to districts on a predetermined basis. Thus, their market activities are often terminated well before the conclusion of the heavy marketing season. In either case the mandate of being a buyer of last resort was not and can not be carried out under these conditions.

## 2.5 - Scarcity of Market Information

### Common Perceptions

*A free market can only operate efficiently if there is adequate price information available to all participants. The feeling was that there was not enough current price information available, especially to small farmers and this situation limits farmers ability to negotiate with traders.*

### Team Observations:

We found this to be a mixed situation. Regional and various market level price differentials (farmer, wholesaler, port) seemed to reflect expected market costs. A summary of the weekly prices from the MSU/Ministry of Agriculture and Fisheries price information (*Quente Quente*) demonstrate a very close approximation of expected marketing margin differentials between market levels in defined regions and between major regions of the country. (Cabo Delgado was a regional exception in that price levels were well in excess of those expected. Probable causes for this are discussed in Annex E).

While the general market seemed to be well informed, there was confusion at the farm level. Farmers knew of the minimum price level but had difficulty understanding that the market price may be different. In this case, the minimum price was a source of disinformation that adversely affected the market.

Traders use and are satisfied with the *Quente-Quente* weekly price leaflet. They would like regional and perhaps international prices as well, especially in the export potential regions of the north and center.

## 2. 6 - Private Market Capability

### Common Perceptions

*There are a number of conflicting statements and opinions concerning the ability of the private market to operate efficiently for all participants. They range from confidence in complete reliance on the market to the need for continued major government interference in various aspects of the market, including price setting, product purchasing and storage, and assistance to disaffected participants.*

### Team Observations:

A general observation is that the market appears to be working quite well given the early stage of its development. This is more evident in the maize deficit areas of the

south, and in the production regions serving the Maputo market. The informal traders are quite active in setting the tone for the market, the formal traders more hesitant. Many of the observations noted above support this view.

- Farmers make market decisions to hold or sell products.
- Informal traders set up local market sites where they appear for several days to accumulate truck loads of maize.
- Some local farmers take on marketing activities, marketing both their own production and assembling product for other traders.
- In Alto Molocue, in Zambezia Province, at the extreme reaches of the Maputo market we observed 14 informal traders (ambulantes) in the local square accumulating truck loads of good quality maize estimated at 150 tons. They were moving the maize south. This was a good six months after harvest and is one indication of the quality of on farm storage, of farm marketing patterns, of the extended length of the marketing season, and of the degree of competition in local markets.
- Marketing margins between major regions and within regions between production areas and regional consumption centers are quite consistent in reflecting transportation distance from the major markets. For example, the margin between Beira and Maputo is about 1000 mt/kg, between Beira and Manica about 400mt/kg, and between Quelimane and Maputo about 1300 mt/kg.

### **Additional Market Observations**

1. Commercial traders are extremely frustrated with most aspects of the evolving free market. They appear to be the last to want to give up the security of the command economy but do have some justification for demanding a level playing field. They feel ICM should not be a commercial competitor with them. Some specific concerns are:

- Finance as discussed above
- Inequity between formal and informal traders in application of taxes, licensing, and other regulations, and "lack of local responsibility" of informal traders when no more product is needed.
- The need for ICM to be able to purchase their products quickly so they (the traders) can have rapid turnover. Most traders do not have interest in long term storage.
- Pricing problems caused by the high minimum price set by Government.

- Reference prices are not well understood by farmers who continue to consider them as minimum prices.

2. There is almost no visible presence of livestock in the country side (there was some evidence of poultry in the market place). As livestock numbers rebuild and diets adjust to better income situations, some excess corn production may be absorbed in livestock production.

3. The concept of a Campaign of several months and associated quantities and prices is not very useful. There is a year round market with seasonal differences. While there are defined months of major activity peculiar to each crop, selling and buying are going on every day in the country side and price discovery is occurring. You don't need a calculated reference or minimum price. The reference price is being set each day in the market. You just have to let it be known.

4. Farmers like to grow maize but are not maize dependent. They have diversified product and income flows for both cash and consumption crops. Sales and consumption are adjusted to reflect production (realized and prospective) and prices.

- Maize stored for home consumption and security was being liquidated in the Zambezia-Nampula production regions in anticipation of a good 1997 crop, while some farm sales in Cabo Delgado were ceasing as prospects for 1997 were less positive and the need for carryover supplies was more evident.

- Product harvest and sales typically extend from May (beans, ground nuts, rice), July-December (corn), and September to January (cassava). Consumption and sales patterns for these crops are adjusted according to markets (prices).

5. The excess production in the north should not be viewed as a problem to be resolved but an opportunity to exploit. Farmers will adjust production and consumption to market realities. The Government needs to provide infrastructure, access to domestic, regional, and international market price information, and reduce other disincentives (such as taxes) to reducing marketing margins.

6. In changing to a surplus production - export oriented region in the north, the export of products will be guided somewhat by the markets in neighbouring countries. However, in the long run the surplus production areas must compete in non-regional world markets. This will require significant reductions in internal marketing margins to the point where a positive price signal is transmitted to farmers to produce the excess production.

7. In general, people appear to be happy (with the exception of formal traders), well dressed, well fed, and eager to develop opportunities for economic growth.



## ANNEX E . ANALYSIS OF CEREAL MARKET PERFORMANCE - 1996

### 1. Pricing Efficiency and Marketing Margins in the Maize Market

The purpose of this annex is to determine and demonstrate the current level of pricing efficiency and marketing margins within and between various maize markets in Mozambique. This is done by assessing the level and consistency of price discovery in local and regional markets for the 1995-96 marketing seasons.

Maputo is the major deficit maize market. Import prices to Maputo serve as the upper limit to domestic market prices. Thus, the Maputo market is used as the benchmark for comparing regional marketing margins and price responsiveness across regions. Within each region, important local markets in major production zones are compared with the regional center to determine within-region marketing margins and local market price responsiveness.

#### 1.1 Information Sources

The analysis is based on weekly maize price information collected by the MSU/Ministry of Agriculture and Fisheries 'Food Security Project'. The data set covers a period of 19 months beginning in July 1995 and continuing through January 1997 (see Table E 1). It includes information on retail, wholesale, and producer prices for five major regional and 20 local markets including:

Maputo -	Xai-Xai, Chokwe, Inhmbane, Maxixe, Massing, Vilanculos, Hoinine,
Beira -	Caia, Sena, Manica, Chimoio, Tete, Nutarara
Quelimane -	Mocuba,
Nampula -	Ribaue, Monapo, Nacala, Angoche, Lichinga
Pemba -	Montepuez

Regional and local market data reflect retail prices at each level. Producer prices are prices paid by traders to farmers who are located close to major maize collection points or to traders who perform the first farm product collection effort. Producer prices do not reflect the price at more remote farmer locations in the country side. Prices at each of these more remote locations would be quite variable reflecting the added costs of transport and time involved in disparate and small volume transactions. In our field observations, the margin for these initial market collection services varied from 0 to 250 Mt/kg.

The price information is presented in a series of graphs and tables at the end of this

annex. As noted above, the price information covers a period of 19 months beginning in July of 1995 and continuing through December of 1996. Thus, it starts at a point two to three months into the major marketing period of the 1995 harvest and ends at the end of the major marketing period of the 1996 season. Thus, while it covers a period of 18 months, it does not include the complete market season for either the 1995 or the 1996 crops.

It should also be noted that agricultural production is still recovering from the effects of war displacement and drought in the 1995 season. Thus, the estimate of excess or marketable production of maize in 1996 exceeded that of 1995 by 58 per cent. As noted below, this larger crop in 1996 resulted in a somewhat different seasonal price level and price pattern.

## 1.2 Seasonal Market Performance

The seasonal pricing pattern was remarkably consistent across and within all regions. In 1995, lower prices were evident at the peak of the harvest season in July, the point where the price data series begins (see Figure E1). Prices rose steadily throughout the marketing period as would be expected in a deficit production year. The rise was particularly steep in the December-February period, peaking in February and March in most areas and then declining rather abruptly as the new much larger 1996 crop began to reach the market. This price drop occurred in March and April of 1996 in the south and a month later in the north.

By June of 1996, the market had stabilized at approximately the same level as a year earlier, though if adjusted for inflation would have been at a somewhat lower real price level. Prices remained at this level through the remainder of the year in most markets, though the Quelimane and Pemba markets showed some shortage of supply at the end of the year as prices were beginning to rise.

These consistent seasonal patterns across regions would appear to reflect accurately the supply and demand in the various regional markets as well as the transmission of prices and product across the markets.

The high level of prices at the end of the 1995 marketing season (January-February 1996) reflects a condition of very short supply and will not be repeated in 1996. This price spike probably contributed to the establishment of a minimum (or reference)

maize price for 1996 that was considerably above the market clearing prices observed as the market stabilized in June and July of 1996.

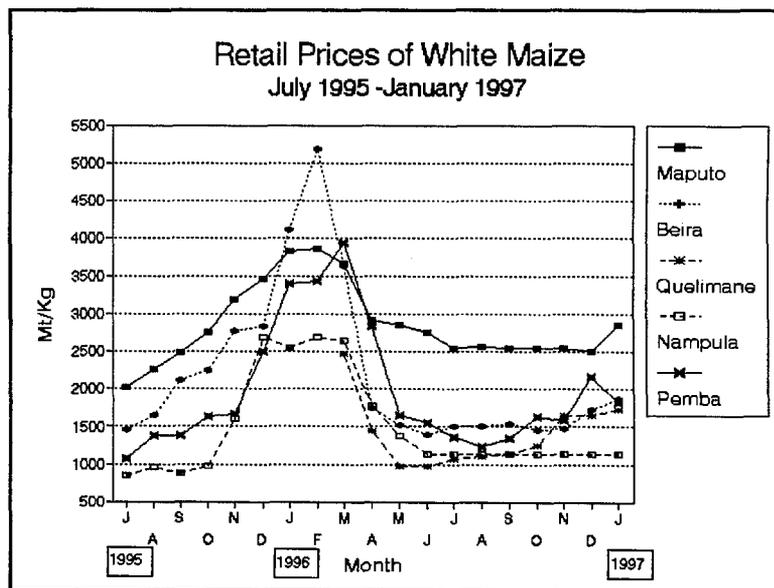


Figure E1.

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## 1.2 Regional Marketing Margins

The dynamics of the internal maize market should reflect Maputo as the primary deficit market. With freedom of import, this allows the Maputo market to choose between imports at international prices or domestic supplies at import parity prices. If there is sufficient domestic supply, Maputo price levels could trend lower than import parity prices.

Domestic suppliers can thus compete for the Maputo market if sufficient supply and competitive regional marketing margins exist. In addition, within each region there are major urban markets such as Beira, Quelimane, and Nampula that attract surplus production from surrounding areas.

Finally, if surplus conditions exist in the domestic market beyond that which can be supplied to Maputo, then the prices in the surplus regions would reflect export parity price levels. This would occur either because demand in Maputo has been met or because the surplus region cannot transport excess supplies to Maputo at import parity price levels.

Clearly the 1995 production and marketing season was one of deficit in many regions. In 1996 the overall market was slightly deficit but approaching if not reaching surplus in the north in terms of accessing the Maputo market.

In an efficiently functioning market one would expect, therefore, that regional prices in the 1996 marketing period would reflect a gradual decline from import parity prices in Maputo to export parity prices in the Nampula area, with perhaps some regional differences reflecting local supply and demand conditions.

### 1.2.1 Evidence of Market Efficiency

Given the newness of private markets, it is surprising but gratifying to discover how efficiently and quickly price discovery has occurred in these markets during the 1996 marketing season. Maputo has maintained a fairly consistent and constant price of about 2550 Mt/Kg. This is approximately equivalent to an import parity price of \$230/ton.

At the other extreme, Nampula maintained a consistent price of about 1150 Mt/Kg. At an estimated transport cost of 200 Mt/Kg (rail) to the Nacala port and a port cost of \$8 per ton this would translate into an export parity price of about \$130 per ton. This is close to the export price received for a limited quantity of maize exported in 1996, but slightly above long run expected export parity prices.

It is evident that the Maputo price influence reached well into the center region of the country and into southern parts of the northern region. Beira at about 1500 Mt/Kg and Quelimane at 1200 Mt/Kg reflected transport margin differences of about 0.5 Mt/Kg/km to access the Maputo market. This is somewhat less than the stated costs of truck transport and reflects the availability of less expensive backhaul possibilities along the major transport routes to Maputo.

### 1.2.2 Some Market Aberrations

The Quelimane regional market, which is served by most areas of Zambezia Province, showed more volatility than the regional markets of Beira and Nampula. This probably reflects a convergence of the effects of three markets, the deficit southern region, the surplus northern region, and the local Quelimane market all operating with various strengths in Zambezia Province.

The dividing line for products going south to Maputo and those going north to Nampula would be expected to move north and south in the Zambezia province depending on production levels, costs of transport, and international parity prices (both world and Southern African regional prices).

The only regional market that does not follow the above logical economic construct is Pemba and by extension the interior markets of Cabo Delgado Province. Anecdotal evidence and team observations of large quantities of maize in storage at Pemba and in the interior of the province in the off-season (late January 1997) would place this region in a strong surplus maize production position during the 1996 season.

Other things being equal, this leads to the expectation that price levels in Pemba and Cabo Delgado would reflect surplus conditions and be low enough to access export markets, and thus similar to prices in Nampula. However, prices in Pemba, at over 1500 Mt/Kg, were substantially above Nampula and equal to or exceeded prices in Beira. In fact, in early January 1997, maize prices in Pemba were approaching 2000 Mt/Kg. Possible explanations are the following:

1. The region is a deficit production area. However, this belies the large stocks of maize currently held in the Province.
2. Pemba is an important port for local deficit markets along the coast of northern Mozambique and southern Tanzania.
3. Farmers are holding back maize for consumption in anticipation of a short 1997 crop.
4. ICM buys a major portion of the marketable maize crop (40 per cent in 1995), and holds most of it for a long period of time in anticipation of selling outside the region. This removal of product from the market has distorted the market by creating a local deficit in supply, which in turn results in elevated prices. During our visit to three districts in Cabo Delgado Province we observed 6,700 tons of maize stored in ICM and private trader warehouses. This is 25 per cent of the estimated maize marketed in the Province from the 1996 harvest. Clearly, additional quantities are stored in other districts.

Our judgement is that elements of the last three items are operating, but that given the

level of maize production in relation to local population numbers in Cabo Delgado Province that the price distortions noted result primarily from ICM purchase and storage activities in the Province.

### 1.3 Within Region Marketing Margins

To illustrate marketing margins between producing areas and regional consumption centers, we chose four examples, each from a different region; Beira-Manica, Quelimane-Mocuba, Nampula-Ribaue, and Pemba-Montepuez. In each case, the local market prices track very closely the regional market, but at a slightly lower level. This difference represents the necessary margin to deliver product to the regional center. For example, the retail market in Manica was about 350 Mt/Kg less than in Beira. The spread in the Quelimane-Mocuba markets was close to 500 Mt/Kg.

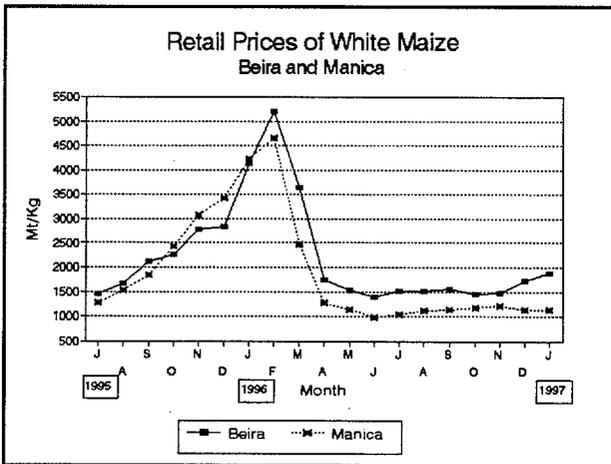


Figure E2. Beira - Manica

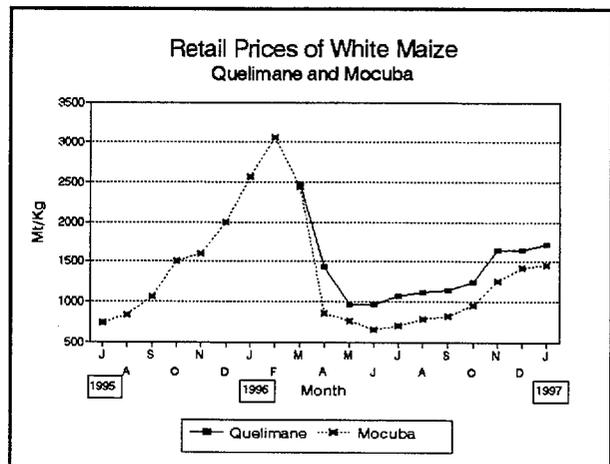


Figure E3. Quelimane - Mocuba

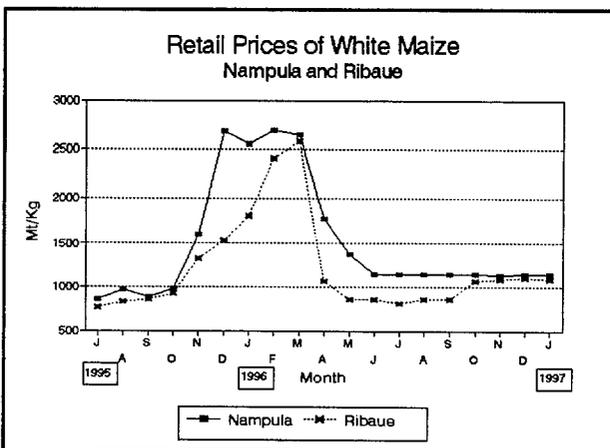


Figure E4. Nampula - Ribaue

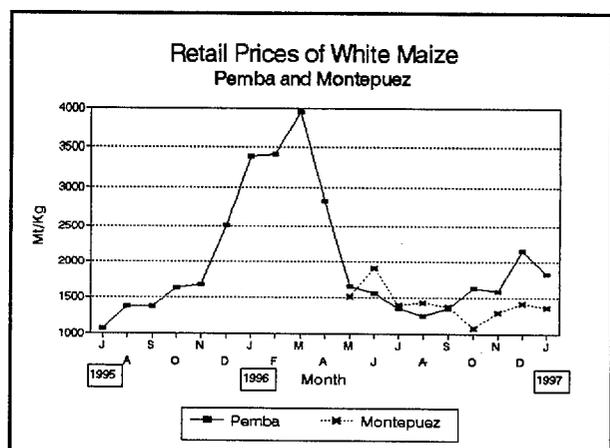


Figure E5. Pemba - Montepuez

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The spreads observed in the Nampula Market were more variable ranging from 1,000 Mt/Kg to 100 Mt/Kg. In Pemba, the markets did not show a clear margin until the last three months of the season when prices in Pemba were about 500 Mt/Kg greater than Montepuez. There was a price inversion during the first five months of the marketing season (May-September) when prices in Montepuez were equal to or greater than Pemba prices. Again, the lack of a defined marketing margin in the early part of the season may reflect the large presence by ICM in the early markets and could reflect a concomitant lack of market discipline by ICM, i.e. a willingness to pay higher than market clearing prices.

Of the above examples, the lowest interior prices were observed early in the season in Mocuba in Zambezia Province (700 Mt/Kg). Prices in Mocuba, however, trended sharply higher at the end of the season (1,400 Mt/Kg). Again, this may be an example of the shifting dividing line between the influences of the deficit Maputo market and the Nampula export market.

#### **1.4 Summary and Implications**

The markets for the 1996 marketing season appear to be working well and efficiently, though some aberrations are noted. Price discovery within and between markets and in terms of defining marketing margins between geographical areas and stages of marketing appear consistent and logical. This is especially true in the south and center of the country. In the north there is more variability. Within this variability, Nampula markets appear to be functioning reasonable efficiently.

In Cabo Delgado province, however, we note apparent seasonal price inversions and a significantly higher price level than expected. This occurs at all levels of the Province marketing chain. This is not an ideal environment within which to make farm or market level decisions. Choices of on-farm enterprises or marketing strategies can easily be compromised if markets are unduly influenced by non-market forces.

The reasons for these apparent market contradictions in Cabo Delgado are unclear but could include the distabilizing effect of a dominate ICM presence in the market. For example, ICM,s official mandate, its perception of this mandate, and the perception by actors in the market of ICM,s role are not necessarily consistent with free market price discovery, and certainly not with market price setting. Rather, these mandates and perceptions are more aligned with a secondary or supportive role.

With this one exception, it appears that the markets are operating efficiently given the present state of infrastructure (roads, warehouses, transport vehicles, etc.), government tax and licensing procedures, finance availability and cost, and other marketing conditions. We note, however that the overall poor state of these marketing conditions creates significantly high marketing margins. This in turn limits the income potential in agriculture, raises food costs to consumers, limits the areas of the country that can supply the Maputo market, and constrains the country's ability to compete in the export market.

As noted earlier, we did not observe a significant problem of small farmer access to markets. We suggest, therefore, that the primary focus of policy should be to create market conditions that will lead to substantial reductions in the marketing margins.

Table E1. Retail Prices for White Maize in Selected Cities

Month	Maputo Ribau	Beira Pemba	Manica Montepuez	Quelimane	Mocuba	Nampula				
1995										
Jul	2,020	1,457	1,280	NA	737	857	758	1,064	NA	
Aug	2,256	1,655	1,522	NA	833	967	829	1,371	NA	
Sep	2,485	2,118	1,829	NA	1,053	886	855	1,371	NA	
Oct	2,751	2,243	2,429	NA	1,500	979	929	1,629	NA	
Nov	3,191	2,767	3,071	NA	1,600	1,600	1,326	1,676	NA	
Dec	3,467	2,830	3,429	NA	2,000	2,686	1,537	2,503	NA	
1996										
Jan	3,828	4,114	4,214	NA	2,564	2,548	1,812	3,397	NA	
Feb	3,866	5,200	4,643	NA	3,063	2,690	2,408	3,429	NA	
Mar	3,675	3,643	2,457	2,476	2,438	2,648	2,571	3,943	NA	
Apr	2,913	1,740	1,286	1,433	857	1,778	1,057	2,834	NA	
May	2,848	1,524	1,143	971	764	1,381	862	1,657	1,517	
Jun	2,744	1,398	983	971	651	1,143	855	1,562	1,905	
Jul	2,540	1,505	1,029	1,067	705	1,143	810	1,352	1,396	
Aug	2,570	1,505	1,120	1,110	790	1,143	857	1,234	1,429	
Sep	2,555	1,538	1,143	1,143	817	1,143	857	1,343	1,361	
Oct	2,555	1,462	1,181	1,248	957	1,143	1,062	1,629	1,078	
Nov	2,553	1,470	1,223	1,644	1,253	1,135	1,080	1,585	1,286	
Dec	2,498	1,724	1,143	1,643	1,419	1,143	1,105	2,152	1,414	
1997										
Jan	2,850	1,867	1,143	1,721	1,457	1,143	1,086	1,824	1,357	

Source: SIMA, Ministry of Agriculture and Fisheries

## ANNEX F: STATUS OF ICM

### Warehouses

This inventory of ICM warehouses and their status was obtained from ICM. In those areas that it visited, this data was verified or corrected by the assessment team.

### Cabo Delgado Province

Location	Capacity <sup>1</sup>	Type <sup>2</sup>	Owner <sup>3</sup>	Condition	Comments
Pemba	5,000	A	ICM	Good	Needs repairs
Pemba	1,000	B	ICM	Poor	Needs roof
Montepuez	2,500	A	ICM	Good	
Moc. da Praia	2,500	A	ICM	Good	
Mon. da Praia	1,500	A	ICM	Good	
Ancuabe	220	A	ICM	Good	
Macomia	220	A	ICM	Good	
Palma	210	A	ICM	Good	
Nagate/N'toli	150	A	ICM	Good	
Chiure	210	A	ICM	Good	
Namuno	210	A	ICM	Good	
Balama	100	A	ICM	Good	
Mueda	3,500	A	ICM	Good	
Mueda	1,600	B	ICM	Good	
Mueda	1,800	B	ICM	Good	
Muidumbe	300	A	ICM	Good	
Nangade	300	A	ICM	Good	
<b>Total Cabo Delgado:</b>					
17 Warehouses	21,320	MT			

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1. Capacity in metric tons

2. A= Maconary construction B= Prefabricated construction

3. While all the warehouses belong to the state a number of them have never been transferred to ICM from their former organizations. Thus, AGRICOM and APIE are the owners of some warehouses.

### Niassa Province

Location	Capacity	Type	Owner	Condition	Comments
Lichinga-Cidade	4,000	A	AGRICO	Excellent	
Lichinga-Cidade	200	A	APIE	Good	
Lichinga-Sede	1,227	A	ICM	Good	Rented
Macaloge-Sanga	300	A	ICM	Good	
Chimbonila-Liching	180	A	AGRICO	Good	
Lago-Sede	150	A	APIE	Good	
Mitambe-Mandimb	3,620	A	ICM	Excellent	
Mandima-Sede	350	A	AGRICO	Good	
Cuamba-Sede	2,500	A	ICM	Good	
Marrupa-Sede	1,000	B	AGRICO	Good	
Mecanhelas-Sede	1,000	B	AGRICO	Good	
Maua-Sede	750	A	ICM	Good	
Maua-Sede	250	A	IM	Good	
Total Niassa: 13 Warehouses	15,527	MT			

### Nampula Province

Location	Capacity	Type	Owner	Condition	Comments
Melema-Mutuali	315	A	ICM	Good	
Malema-Nioce	300	A	ICM	Good	
Ribaue-Lapala	342	A	ICM	Bad	Demolished
Ribaue-Lapala	5,000	A	DINECA	Bad	Demolished
Mecurubi-Sede	343	A	ICM	Bad	Demolished
Mecurubi-Sede	436	A	ICM	Bad	Demolished
Murupula-Sede	600	A	ICM	Bad	Demolished
Murupula-Sede	472	A	ICM	Bad	Demolished
Nampula-Cidade	2,000	A	AGRITR	Good	
Nampula-Cidade	6,700	A	APIE	Good	
Muecate	367	A	ICM	Poor	Needs repairs
Monapo-Sede	420	A	ICM	Bad	Demolished
Monapo-Sede	840	B	CEE	Good	
Erate-Nacarora	325	A	ICM	Good	
Namapa-Alua	480	A	IAM	Good	
Meconta-Namialo	840	B	CEE	Bad	Demolished
Nacala-Porto	6,000	A	ICM	Bad	Needs repairs
Mosuril-Sede	350	A	ICM	Bad	Abandoned
Meconta-Corrane	350	A	ICM	Bad	Demolished
Mogovolas-Sede	210	A	ICM	Good	



Mongicuala-Liupo	400	A	ICM	Bad	Abandoned
Angoche-Sede	5,600	A	ICM	Good	Needs repairs
Angoche-Sede	?	A	ICM	Bad	Demolished
Angoche-Sede	?	A	ICM	Bad	Semi-demolished
Namaponda	353	A	ICM	Bad	Abandoned
Moma-Sede	400	A	ICM	Good	
Moma-Nambui	365	A	ICM	Bad	Abandoned
Total Nampula: 29 Warehouses	34,353	MT			

#### Tete Province

Location	Capacity	Type	Owner	Condition	Comments
Vila Moatize Tete	4,000	?	AGRICOM	Unknown	
Zobue-Moatize	500	?	AGRICOM	Unknown	
Ulongue-Angonia	4,000	?	AGRICOM	Unknown	
Ulongue-Angonia	4,000	?	AGRICOM	Unknown	
Ulongue-Angonia	200	?	AGRICOM	Unknown	
Ulongue-Angonia	5,000	?	AGRICOM	Unknown	
Domue-Angonia	1,000	?	AGRICOM	Unknown	
Chitima-C. Bassa	100	?	AGRICOM	Unknown	
Chitima-C. Bassa	700	?	AGRICOM	Unknown	
Mucumburra-Mago	100	?	AGRICOM	Unknown	
Cambulatsitse-Moa	4,000	?	AGRICOM	Unknown	
Cambulatsitse-Moa	2,000	?	AGRICOM	Unknown	
Tsangano-Sede	100	?	AGRICOM	Unknown	
Total Tete: 13 Warehouses	25,700	MT			

#### Zambezia Province

Location	Capacity	Type	Owner	Condition	Comments
Quelimane	5,000	?	?	Good	
Quelimane	5,000	?	?	Good	
Quelimane	1,850	?	?	Good	
Quelimane	500	?	?	Good	
Quelimane	650	?	?	Good	
Quelimane	150	?	?	Good	
Nicoadala	850	?	?	Good	

Nicoadala	850	?	?	Good	
Namacurra	300	?	?	Poor	Needs repairs
Mocuba-Sede	4,000	?	?	Good	
Mugeba-Mocuba	300	?	?	Poor	Needs repairs
Munhamade-Lugel	300	?	?	Poor	Needs repairs
Mulevala-Lle	300	?	?	Poor	Needs repairs
Lioma-Gurue	5,000	?	?	Good	
Lioma-Gurue	300	?	?	Good	
Pebane	300	?	?	Good	
Mopeia	300	?	?	Good	
Morrumbala	300	?	?	Good	
Milange	4,000	?	?	Poor	Needs repairs
Namarroi	300	?	?	Poor	Needs repairs
Gile	300	?	?	Poor	Needs repairs

Total Zembezia Province:  
21 Warehouses 30,850 MT

#### Manica Province

Location	Capacity	Type	Owner	Condition	Comments
Chimoio	5,000	?	?	Good	
Chimoio	5,000	?	?	Poor	Needs repairs
Gondola	1,000	?	?	Good	
Manica	500	?	?	Good	
Manica	600	?	?	Good	
Barue	600	?	?	Good	
Mungare	200	?	?	Poor	Needs repairs
Rotanda	400	?	?	Poor	Needs repairs
Nhassacara	400	?	?	Poor	Needs repairs

Total Manica Province:  
9 Warehouses 13,700 MT

#### Sofala Province

Location	Capacity	Type	Owner	Condition	Comments
Gorongosa	300	?	?	Poor	Needs repairs
Nhamatanda	300	?	?	Good	
Nhamatanda	5,000	?	?	Good	
Dondo	500	?	?	Good	

Dondo	300	?	?	Poor	Needs repairs
Beira	2,500	?	?	Good	
Beira	2,500	?	?	Good	

Total Sofala Province:

5 Warehouses 11,400 MT

**Inhambane Province**

Location	Capacity	Type	Owner	Condition	Comments
Zavala	250	?	ICM	Good	
Maxixe	700	?	APIE	Good	
Maxixe	7,000	?	?	Poor	Needs repairs
Morrumbene	1,200	?	APIE	Good	
Massinga	1,500	?	APIE	Good	
Mapinhane	250	?	ICM	Poor	Half destroyed
Funhalouro	250	?	ICM	Good	Given to DPA
Inhambane	7,000	?	ICM	Good	Given to COG

Total Inhambane Province:

6 Warehouses 18,150 MT

**Gaza Province**

Location	Capacity	Type	Owner	Condition	Comments
Xai-Xai	840	?	CEE	Good	Rented
Xai-Xai	840	?	CEE	Good	Rented
Xai-Xai	1,500	?	ICM	Good	
Xai-Xai	1,200	?	ICM	Good	
Xai-Xai	200	?	ICM	Good	
Chokwe	1,500	?	ICM	Good	Rented
Chokwe	1,500	?	ICM	Good	Rented
Chokwe	1,500	?	ICM	Good	Rented
Chibuto	1,500	?	ICM	Good	Rented

Total Gaza Province:

9 Warehouses 10,580 MT

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### Maputo Province/City

Location	Capacity	Type	Owner	Condition	Comments
Maputo-B. 25 Jun	203	?	?	Good	
Maputo-D.G. Aprov	?	?	?	Good	
Maputo-Aeroporto	31,921	?	?	Good	Given to EAC
Maputo	?	?	?	Good	
Matola Auto-Estrad	1,200	?	?	Good	
Maputo-Monap	?	?	?	Good	
Manhica	100	?	?	Good	
Boane	?	?	?	Good	

Total Maputo Province/City:  
 10 Warehouses      33,424      MT

### SUMMARY

Province	No. of Warehouses		Capacity (Metric Ton)		
	Total	Useable	Total	Usable	Percent
Cabo Delgado	17	16	21,320	20,320	95%
Niassa	13	13	15,527	15,527	100%
Nampula	29	12	34,353	17,715	52%
Tete	13	13	25,700	25,700	100%
Zambezia	21	14	30,850	5,800	19%
Manica	9	5	13,700	7,700	56%
Sofala	7	5	11,400	10,800	95%
Inhambane	8	6	18,150	10,900	60%
Gaza	9	9	10,580	10,580	100%
Maputo	10	10	33,424	33,424	100%
<b>Total</b>	<b>136</b>	<b>103</b>	<b>215,004</b>	<b>158,466</b>	<b>74%</b>

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## ANNEX G: PROGAM COST ESTIMATES

### Cost to Implement a Program of Guarantee Purchase of Agricultural Surplus and a Strategic Reserve

The analysis of the mandates contained in the 1994 decree creating ICM shows that two of the nine distinct mandates are activities that ICM could potentially undertake if government funding was available. The two mandates are to guarantee the purchase of agricultural surplus and to manage a physical strategic maize reserve. This annex describes how the cost to implement these two programs can be calculated.

#### 1. Guarantee Purchase of Agricultural Surplus

The first of these mandates is to "guarantee the purchase of agricultural surplus, acting as a reserve market." This activity, commonly called a buyer of last resort, can be interpreted in a number of ways. It could, for example, be interpreted as being a classic buffer stock, buying from farmers to support a floor price to producers and selling on the market to support a price ceiling for consumers. It could also be interpreted as just being a floor price to protect farmers from falling prices in surplus situations. To gain some idea of the magnitude of the cost of these effort under different assumptions, a spreadsheet was developed to model the maize marketing done by ICM in the country (see Box 1). This model has some 28 variables (see Table G1) that can be manipulated to test various configurations of purchases, sales, exports, and price levels.

The model assumes the cost of this activity would include the purchase cost of maize (under various assumptions), plus storage cost, and transportation cost either to Nacala for export or to Maputo for retail sale. Revenue generated by the activity would include export sales in Nacala and wholesale sales in Maputo. The actual operation of ICM and the market are more complicated than seen in the model, but the model at least gives some indication of the scale of the possible cost or gains of this operation.

A series of "runs" were made with the model to pattern various possible implementation of the buyer of last resort idea. Basic assumptions of some of these runs are shown below and in Table G2.

##### 1.1 The Classic Buffer Stock Model

In principle, a buyer of last resort should be willing and able to purchase all grain offered to it for sale at a fixed minimum price and sell to consumers at a fixed maximum price. This action would, in effect, establish a floor price that other traders in the market would have to exceed in order to purchase maize from the producers. The amount purchased under a buyer of last resort scheme would vary depending on the size of the crop and the surplus generated. In a bumper crop as seen in the 1996/97 season, this amount could easily exceed 100,000 MT. In addition, buyer of last resort schemes are often looked at as buffer stocks that place both a minimum floor price under purchases of grains to encourage production and a maximum ceiling price to help keep consumer prices down.

Finally, supporters of these type of schemes also advocate that the country should, to the maximum extent possible, be self-sufficient in grain production and not allow exports until all domestic demand is met. If all of these conditions were met, calculations using the model indicate that it would cost the government more than 27 million dollars a year to implement such a program. This level of operation assumes that the minimum prices reflects market prices. If, as was the case this year, the minimum price was set so high (1,500 Mt/Kg) that the free market price never reached it, the buffer stock would have to buy almost all of the marketed crop in the country. To do this would cost over 84 million dollars. These direct costs do not take into account the enormous indirect cost of disruption, or possible elimination, of the private marketing of grains in the country, including the inability of the private sector to export.

There are few people in government who would advocate that this sort of classic buffer stock scheme be put into place at the price levels the government has used in the past. For the purpose of this paper, a more realistic implementation of the buyer of last resort program is used. The assumptions of this more realistic basic model are given below.

### **1.1.2 The Basic Model**

The buyer of last resort model seen in Box 1 is based on an assumption that ICM, without a fleet of trucks, cannot purchase directly from farmers. Instead, ICM makes its purchases from large and small traders who have either sent trucks into the countryside to purchase maize or have purchased maize from informal traders. The goal of the buyer of last resort scheme is to assure that even the most remote farmer's maize will have a chance to be purchased. To do so, ICM would have to offer these intermediary traders a high enough price to encourage them to undertake the extra effort, risk and cost of going into more remote areas to purchase maize.

It is also assumed that ICM's program of purchase of agriculture surplus is aimed at supporting prices to farmers and not to maintaining a price ceiling for consumers. In fact, the model assumes that ICM does not operate at all in the southern market that provides maize to Maputo. This southern market is already well served by existing traders and demonstrates little market distortion. ICM, as conceived in the basic model, focuses its attention instead to the purchase of surplus agricultural produce in the north and central regions for export to international markets via Nacala. Export is the preferred option because of the inability to economically move maize from the north, where most of the surplus is produced, to Maputo where most of the maize is consumed. At 1,500 Mt/MT/Km and an average distance of 2,400 Km it would cost 3,600 Mt/Kg just to transport maize from the north to Maputo.

The model's 28 variables can be changed to reflect various configurations of prices and activity. The source of data and assumptions behind these variables is seen in Table G1. The model calculates cost by looking at cost of purchase of maize according to percentage purchased by region at a given purchase price. Storage costs are added to this, reflecting both fixed and variable costs as well as interest both on money tied up in stocks and money to finance the storage operation. The final cost element is transportation from the purchase

## Box 1: Calculations of Cost: Buyer of Last Resorts

### COST:

#### A. PURCHASE OF MAIZE TO INFLUENCE PRICE

Total Maize Production (million MT)	<b>0.9472</b>
Percent of Crop Marketed	<b>34%</b> = 322,000 MT
Percent Estimated to Influence Market	<b>19%</b> = 60,000 MT

#### Percent Purchased by Region:

		Tonnage '000 MT	Value Million Mt
North	<b>60%</b> @(Mt/Kg) <b>1,200</b>	36	43,129
Central	<b>40%</b> @(Mt/Kg) <b>1,200</b>	24	28,752
South	<b>0%</b> @(Mt/Kg) <b>0</b>	0	0

Total Maize Purchased      59,901 MT      71,881

Exchange Rate Metrical (Mt/\$US)      **12,000**      Million Mt      \$ '000

Cost of Maize Purchase      71,881      5,990

#### B. STORAGE COSTS

Average Time in Storage in Months (Mn)      **6**

Fixed Cost/Administration		<b>4,500</b>	375
Rent/Opportunity cost (Mt/Mn/MT)	<b>3,000</b>	1,078	90
Labor/Fumigation/Sacks (Mt/Mn/MT)	<b>35,000</b>	21,579	1,048
Loss/Shrinkage (Percent)	<b>5%</b>	Cost of Storage Loss	3,594
			300
Interest Rate on Purchase Funds	<b>30%</b>	Interest Costs (Purchase)	10,782
			899
Interest Rate on Operating Funds	<b>30%</b>	Interest Cost (Operations)	3,237
			270

Total Storage Costs      35,771      2,981

#### C. TRANSPORTATION COST NACALA (EXPORT)

Tonnage to Export (MT)      **59,901**

Region	Purchased	Percent	Tonnage	Distance (Km)		
North	35,941 MT	<b>100%</b>	35,941	500	29,955	2,246
Central	23,960 MT	<b>100%</b>	23,960	800	28,752	2,396
South	0	<b>0%</b>	0	2,000	0	0

Cost to Transport (Mt/MT/Km)      **1,500**      Total Transportation Cost      55,708      4,642

Port & Loading Cost (\$US/MT)      **15**      Loading and Port Cost      10,782      899

Total Transportation and Port Costs      66,490      5,541

**= TOTAL COSTS**      174,142      14,512

### INCOME

#### D. SALE

Export Revenue FOB Nacala (\$US/MT)      **115**      Mt/Kg      1,380      82,663      6,889

**GAIN OR (LOSS)**      (91,479)      (7,623)

area where it has been purchased and stored to Nacala for export. Average distances are used for each region to the port. In addition to transportation cost, fees for port and loading cost are also added to arrive at the total cost to reach FOB Nacala.

Revenue for the operation is based on the amount of tonnage handled by the system and the sale price, FOB Nacala, at a given exchange rate. The difference between the revenue and the cost give the gain or loss on the overall operation.

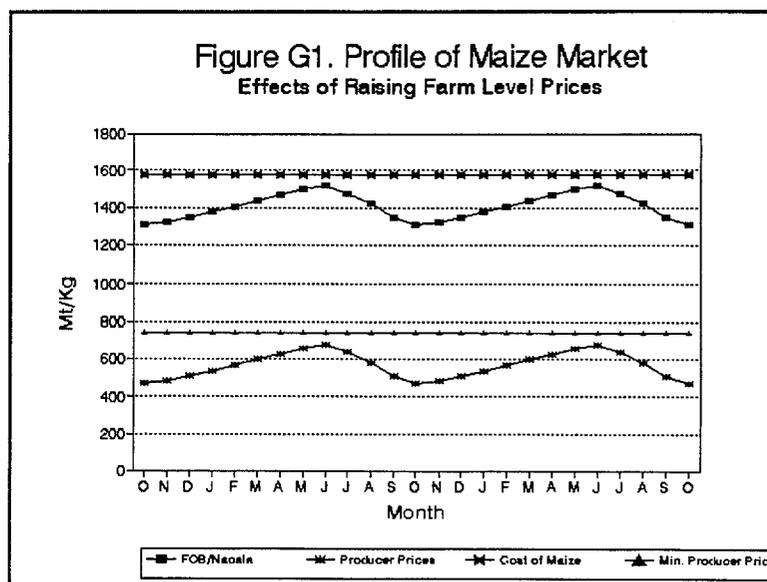
The base or average model run uses a purchase price of 1,200 Mt/Kg for maize delivered to ICM warehouses. This is a price deemed high enough to induce traders to seek out maize in the more remote areas. Sixty percent of the purchases are in the north region and 40 percent in the central regions. This reflect estimated surplus in both regions. As previously noted, no maize is estimated to be purchased in the south region. Interest used in these calculations is estimated at 30 percent reflecting the expected downward trend on interest rates in the near future. A low estimate of five percent is made on storage losses and it is anticipated that maize would spend on average six months in the warehouses.

Transportation costs are made on the basis of 1,500 Mt/MT/Km which is an average for non-backhaul transportation in the north and central region on generally good roads. Finally, it is estimated that the maize would be exported at \$115 /MT which is lower than that received this last year in Nacala but is the long run average international price for maize. The result of these calculations is that a 60,000 MT intervention to purchase surplus production would cost the government about \$7.6 million a year to cover ICM's losses for this operation.

Table G3 gives some of the variation in the amount of losses that would occur under various levels of costs of transportation, purchase price, export price, interest cost, storage loss, and so on. As can be seen, transportation and length of time in storage are the two most important cost factors followed by purchase price. Total losses are also affected by the price at which the maize can be exported.

While we can put a figure on these direct costs, it is the indirect costs that cannot be easily calculated and which are even a greater barrier to the implementation of these programs. A program to purchase surplus production in order to maintain a higher price for maize than would normally be supported by the market, has enormous negative consequences and costs. In the export orientated scheme noted in the basic model for example, increasing the price to the farmer over a market rate will translate into raising the level of the FOB Nacala export cost. The reason for this is that the marketing margin connecting the farm level price to the FOB Nacala price will remain unchanged (see Figure G1). An increase of the farm price by 100 Mt/kg directly relates to an increase of the FOB Nacala cost by 100 Mt/Kg equivalent. Since Mozambique is at the higher level in terms of cost of product for sale on the world market, even a slight artificial rise in the farm level price may quickly put the cost of Mozambican maize over the world price. If this higher cost occurred, the government would have to provide an export subsidy to adjust down the FOB Nacala cost in order to export into the world market.

An additional problem is the cost in the disturbance and hinderance of the private sector market for grain. By playing both an active role in the market and paying prices higher than the going market rate, ICM will dampen or even stop private sector involvement in maize marketing. This in turn, will mean ICM will have to be more involved in the market to take up the slack in demand as the private sector traders pull away from the market. Finally, by raising market prices, this activity will also raise consumer costs.



The real cost, though, is the waste of funds and resources diverted to the wrong actions to help raise the price received by farmers. As Figure G1 shows, with the export market at least, farmers prices are linked by a given marketing margin to the fixed world market price. Neither the government nor the farmer can effect a change in the world market price. This price is fixed by the action of the international market for maize. The only element government can have an effect on is the marketing margin that links the farmer to this world market price. A 100 Mt/Kg reduction in size of this margin should lead in a competitive market to a similar increase in the price the farmer receives for his production. The most effective way to increase farmer's revenue is to reduce the marketing margin. To spend funds on activities that in the long run hinder that process is wrong and wasteful.

## 2. Management of a Strategic Reserve

The second mandate that ICM could potentially implement would be the management of a physical strategic reserve in the country. There are several possibilities on how such a reserve could be established. Sometimes, a strategic reserve is part of a buffer stock scheme as described earlier in Section 1.1. In this format, the store of maize for strategic reserve also would serve as a stock to intervene in the market to support floor and ceiling prices. The cost of this activity would approximate that noted previously. A modification of this approach would be to use the strategic reserve as part of a program to help purchase agricultural surpluses. We will look at the cost of this option later.

The basic model (see box 2) used in our calculations is based on several assumptions. The first the assumption is that the strategic reserve is established to provide short-term supplies of food for humanitarian purposes until such time as imports and donor food aid can be delivered into the country during a natural disaster or production shortfall. In our model, the strategic reserve will not be part of a price manipulation scheme. We relax this assumption later to look at the cost of using the strategic reserve to support farmer prices.

## Box 2: Calculations of Cost: Strategic Reserve

<b>COST:</b>							
<b>A. PURCHASE OF MAIZE TO FILL STRATEGIC RESERVE</b>							
Total Maize in Strategic Reserve ('000 MT)				<b>43</b>			
Percent Purchased by Region:							
				Tonnage '000 MT	Value Million Mt		
North	0%	@(Mt/Kg)	0	0	0		
Central	100%	@(Mt/Kg)	1,000	43	43,000		
South	0%	@(Mt/Kg)	0	0	0		
Exchange Rate Metrical (Mt/\$US)		<b>12,000</b>				Million Mt	\$ '000
Cost of Maize Purchase						43,000	3,583
ANNUALIZED PURCHASE COST WITH ROLLOVER						57,333	4,778
<b>B. STORAGE COSTS</b>							
Rollover of Stock Every		<b>9</b>		Months			
Fixed Cost/Administration						<b>500</b>	45
Rent/Opportunity cost (Mt/Mn/MT)		<b>3,000</b>				1,548	129
Labor/Fumigation/Sacks (Mt/Mn/MT)		<b>35,000</b>				18,060	1,505
Loss/Shrinkage (Percent)		<b>5%</b>	Cost of Storage Loss				179
Interest Rate on Purchase Funds		<b>30%</b>	Interest Costs (Purchase)				1,075
Interest Rate on Operating Funds		<b>30%</b>	Interest Cost (Operations)				351
Total Storage Costs						39,372	3,281
<b>C. TRANSPORTATION COST MAPUTO</b>							
Tonnage to Maputo (MT)		<b>43,000</b>					
Region	Purchased	Percent	Tonnage	Distance (Km)			
North	0 MT	0%	0	2,400	0	0	
Central	43,000 MT	100%	43,000	1,500	64,500	5,375	
South	0	0%	0	400	0	0	
Cost to Transport (Mt/MT/Km)		<b>1,500</b>		Total Transportation Cost		64,500	5,375
ANNUALIZED TRANSPORTATION COSTS WITH ROLLOVER						86,000	7,167
<b>= TOTAL COSTS</b>						182,705	15,225
<b>INCOME</b>							
<b>D. SALE</b>							
Selling price in Maputo (Mt/Kg)		<b>2,100</b>		Revenue	w/Rollover		
				90,300 Million Mt	120,400	10,033	
<b>GAIN OR (LOSS)</b>						(63,305)	(5,192)

The second assumption is that the maize held in the reserve is purchased in the country and is not imported. As we shall see, using imported maize could be considerably less expensive depending on market conditions. Thirdly, we assume that maize in the reserve is purchased in the central region and trucked to Maputo where it is stored. The basic model assumes that this stock is rotated every 9 months to keep it in acceptable condition. The maize is purchased at the market clearing price,

assumed to be 1,000 Mt/Kg in the model. Transportation is assumed to cost 1,000 Mt/MT/Km — a figure less than used in the purchase of agricultural surplus model — because the road network in the central - south corridor is in better condition and there is availability of lower cost backhaul freight rates to move the maize. The basic model assumes that after nine months the maize is sold in Maputo at an average price of 2,100 Mt/Kg, our assumption of the long-run market rate. Finally, using FAO figures of 516,000 MT maize utilization per year in the south region, we assume that a one month reserve stock would be 43,000 MT. Using these assumptions, we calculate that a reserve for one month consumption in the south would cost the government \$ 5 million a year (if only 25,000 MT were needed this would reduce the costs to approximaely \$ 3 million).

Various runs were made with the model to look at alternate scenarios. For a three month reserve of 130,000 MT, for example, it is assumed that purchases would have to be made in both the surplus central and north regions. Assuming eighty percent was purchased in the central region and twenty percent in the north, the cost of a three month reserve would be \$ 17.5 million a year. These higher costs reflect the additional transportation cost of moving maize from the north region to Maputo.

If the government wanted to use the strategic reserve to help purchase surplus agricultural products (at above market rates) then the costs are even higher. Our basic model assumes a market clearing price of 1,000 Mt/Kg for purchases. To also undertake a buyer of last resort scheme would require prices to go above the market rate. We assumed a purchase price of 1,200 Mt/Kg in the model in Section 1.1. Using this higher price for purchase of maize for the strategic reserve would raise the cost of a one month reserve from \$ 5 million to \$ 6.4 million a year.

The cost of a strategic reserve could be reduced if maize to fill and stock the reserve was imported rather than obtained through local purchase. In our model it cost approximately \$ 208/MT to deliver maize from the central region to Maputo. If world market prices of maize were in the \$ 115/MT range, maize could be delivered to Maputo from the world market at \$ 30/MT less than the cost of local purchase. This would be a significant saving. The problem with this approach is that the sale of imported maize on the Maputo market as part of the normal stock rotation procedure will displace effective demand for local production. This, in turn, would dampen incentive for local markets in maize and discourage production and marketing within the country.

More significantly, the maintaining of a physical reserve stock is, most likely, an unnecessary expense for government. With the reconstruction of Mozambique's ports and rail linkages, it is easy to arrange delivery of imported grain into the country within a short period of time. By shifting from a physical stock to a humanitarian reserve based on foreign exchange reserves and private sector imports, the same objective can be obtained at virtually no cost to government. In addition, this use of the market to provide food security enhances the overall market operation and efficiency unlike a physical reserve stock that can be a potential market hinderance. With the present technology for predicting future crops, it is possible to have a very good idea of the food situation in the country in the critical January - Feburary period as early as a year in advance. Private traders could be encouraged at this early date to forward contract for deliver of maize in the November - December period to respond to projected shortfalls in production. The only cost to government of this type of approach is to support an effective early warning system coupled with good market information in the

country about local and international markets. In addition, the government would need to assure that the banking and port facilities are effectively and efficiently operating. The cost of this would be a tiny fraction of the cost to manage a physical reserve stock.

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**Table G1. Sources of Variable Data**

<b>Variable</b>	<b>Source</b>
Exchange Rate	Parallel rate in Maputo January 1997
Total Production	FAO 1995/96 Food Production Forecast (May 1996)
Percent Marketed	FAO Maize Balance Sheet 1996/97 (May 1996)
Purchases Needed	ICM records/author's estimate
Percent Purchased / Region	ICM records, production by region - FAO 1995/96 Food Production Forecast (May 1996)
Prices by Region	ICM interviews, SIMA data, Calculated export parity prices based on \$115/MT
Average Storage Time	Observations at ICM warehouses - Average varied from 6 to 9 months
Fixed Cost	1997 Budget Proposal for ICM: Labor               6.852 bil Mt Office Expen.       6.530 bil Mt Total    13.382 bil Mt  240 people x \$200/mn = \$48,000 x Exchange rate of 12,000 = 576 mil Mt x 12 Months = 6.9 bil Mt. per year  ICM indicates it cost on average 1.04 bil Mt a month for fulltime employees or 12.48 bill Mt a year
Rent/Opportunity cost	Based on rental in Xai Xai  840 MT warehouse @ 4.5 Mil Mt/Mn = 5,357 Mt/MT/Mn 1,500 MT warehouse @ 3.0 mil Mt/Mn = 2,000 Mt/MT/Mn 1,500 MT warehouse @ 4.0 mil Mt/Mn = 2,600 Mt/MT/Mn 1,500 MT warehouse @ 2.0 mil MT/Mn = 1,333 Mt/MT/Mn
Storage Loss	Authors guess, most likely low
Labor/Fumigation etc	U.S. estimate of storage cost of \$0.35/bu/month at 12,000 Mt/\$ gives 16 Mt/Kg/Mn or 16,000 Mt/MT/Mn

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JFS estimate of storage cost is 50 Mt/Kg/Mn or 50,000 Mt/MT/MN

Interest Rate	Reported by ICM and other traders. World Bank estimates that the long run interest rate may fall to as low as 25 percent.
Tonnage Exported	ICM figures and estimates
Transportation Cost	Nampula - Nacala (257 Km) = 1490 Mt/Km/Mt [WV Sep 96] Naearou - Nacala (197 Km) = 1492 Mt/Km/MT "" Muecate - Nacala (162 Km) = 1487 Mt/Km/MT "" Quelimane - Beira (485 Km) = 435 Mt/Km/MT [Caml Aug 96] Montepues - Pemba (325 Km) = 615 Mt/Km/MT "" Beira - Maputo (1,200 Km) = 607 Mt/Km/MT [Miller 1996] Sofala - Maputo (1,200 Km) = 527 Mt/Km/MT [FHI 1996]
Port Cost	Estimated at \$15 to \$20/MT by V&M
Selling price, Maputo	SIMA data, Interviews with dealers
FOB price Nacala	ICM, V&M interview, calculation on international price series

**Table G2. Purchaser of Agricultural Surplus  
Variables Used in "Runs" of Model**

Variable	Base Value		
Months Stored	3	6	9
Quantity Purchased ('000 MT)		60	100
Purchase Price (Mt/Kg)	1,000	1,200	1,500
Transportation Distance (Km)			
North		500	
Central		800	
Transportation Cost (Mt/MT/Km)	1,000	1,500	2,000
Export Price (\$US/MT)	100	115	130
Interest Rates (Percent per Annum)	25	30	40
Percent Purchased Per Region			
North		60	
Central		40	
Storage Loss (Percent)		5	10, 20

**Table G3. Cost of Surplus Purchase Program  
(\$ US million)**

Variables	Transport Cost (Mt/MT/Km)		
	1000	1500	2000
Purchase Price (Mt/Kg)			
1000	4.9	6.4	7.4
1500	7.9	9.4	11.0
1200 (Base Case)*	6.1	<u>7.6</u>	9.2
Quantity Purchased (60,000 MT)*			
100,000 MT	9.8	12.4	15.0
Export Price (\$115/MT)*			
\$100/MT	7.0	8.5	10.1
\$130/MT	5.2	6.7	8.3
Storage Loss (5%)*			
10%	6.4	7.9	9.5
20%	7.0	8.5	10.1
Interest Rate (30%)*			
25%	5.9	7.4	9.0
40%	6.5	8.0	9.6
Storage Time (6 months)*			
3 months	4.9	6.5	8.0
9 months	7.3	8.8	10.4

\* Base Case

## **ANNEX H: MEETING WITH NATIONAL AND PROVINCIAL DIRECTORS OF MICTUR FEBRUARY 18, 1997**

On February 18, 1997 the assessment team presented their preliminary findings to an annual meeting of national and provincial Directors of the Ministry of Industry, Commerce and Tourism (MICTUR) in Maputo. Following the presentation, a general discussion was held to solicit suggestions and observations concerning the assessment team's recommendations. The suggestions are summarized below.

1. Consider construction of bulk storage (silos) in strategic marketing locations as a means to lower marketing margins. Many millers now prefer to import maize.
2. Need to reflect in the document the alternatives to the market in areas where the market is not working well (no rural stores and poor access roads), and the fact that surplus production must be purchased in the north to supply the south.
3. Need to reflect in the document how, and in what manner, ICM can (must) operate without commercial credit and transport facilities. How to create conditions (financial and transport) that will allow ICM to function well.
4. Analyze the consequences of reducing and/or privatizing ICM's activities particularly on rural development which will be seriously affected.
5. Study more indepth what ICM has done in relation to what it has not done - what are the reasons.
6. Considering that most countries subsidize agriculture (including the US), why didn't the team suggest subsidies for Mozambique.
7. The private sector has to survive, even if there are inefficiencies in the market.
8. It is important to include suggestions on how to reduce the large marketing margin.
9. The study suggested eliminating (privatizing) ICM in four years without taking into consideration the need to improve access roads and to improve the functioning of the private sector to undertake the activities of ICM.
10. The study needs to reflect how to resolve the marketing problem while market conditions do not permit entry of the private sector ,e.g., the private sector is not ready to do the job.
11. With the given high transport and financing costs, ICM maize exports must be subsidized.
12. Traders consider ICM as a necessary part of the market to buy their products when they have no other place to sell them.

13. What to do with the personnel employed in ICM.

14. Given that the country is in a transition phase to a market economy, we need to take into account the experiences of other countries that have already passed through this phase in order that Mozambique doesn't leave out a necessary step.

15. There is a need to provide more information on what specific steps to take in the phase out period of four years.

16. It is suggested that the document be sent to the province level, as well as the national level, for additional comments, given that there are only 10 days before the definitive draft is to be prepared.