



**New Partnership for
Africa's Development (NEPAD)
Comprehensive Africa Agriculture
Development Programme (CAADP)**



**Food and Agriculture Organization
of the United Nations
Investment Centre Division**

GOVERNMENT OF THE REPUBLIC OF ANGOLA

SUPPORT TO NEPAD–CAADP IMPLEMENTATION

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Volume III of VI

BANKABLE INVESTMENT PROJECT PROFILE

**Rehabilitation of Rural Marketing
and Agro–processing Infrastructures**

December 2005

ANGOLA: Support to NEPAD–CAADP Implementation

Volume I: National Medium–Term Investment Programme (NMTIP)

Bankable Investment Project Profiles (BIPPs)

Volume II: Irrigation Rehabilitation and Sustainable Water Resources Management

Volume III: Rehabilitation of Rural Marketing and Agro–Processing Infrastructures

Volume IV: Agricultural Research and Extension

Volume V: Revitalization of Angola Forestry Sector

Volume VI: Integrated Support Centres for Artisanal Fisheries

NEPAD–CAADP BANKABLE INVESTMENT PROJECT PROFILE

Country: Angola

Sector of Activities: Agricultural Marketing and Agro–processing

Proposed Project Name: **Rehabilitation of Rural Marketing and Agro–processing Infrastructures**

Project Area: Selected Regions of Angola

Duration of Project: 5 years

Estimated Cost: **US\$200 million**

Suggested Financing:

<i>Source</i>	<i>US\$ million</i>	<i>% of total</i>
<i>Government</i>	100	50
<i>Financing institution(s)</i>	50	25
<i>Private sector</i>	50	25
<i>Total</i>	<i>200</i>	<i>100</i>

ANGOLA:
NEPAD–CAADP Bankable Investment Project Profile
“Rehabilitation of Rural Marketing and Agro–Processing Infrastructures”

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Abbreviations

API	Angola Partnership Initiative
CAADP	Comprehensive Africa Agriculture Development Programme
CFB	<i>Caminhos de Ferro de Benguela</i> (Railway of Benguela)
CFL	<i>Caminhos de Ferro de Luanda</i> (Railway of Luanda)
CFN	<i>Caminhos de Ferro do Namibe</i> (Railway of Namibe)
CLUSA	Cooperative League of the United States of America
DNHER	National Directorate for Rural Hydraulics and Engineering
EMSRP	Emergency Multi-sector Rehabilitation Programme
EPUNGU	Maize Producers Association
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAS	<i>Fundo de Apoio Social</i> (Social Support Fund)
FDES	<i>Fundo de Desenvolvimento Económico e Social</i>
GoA	Government of Angola
INEA	Angola National Road Institute
MECANAGRO	National Enterprise for Agricultural Mechanisation
MINADER	Ministry of Agriculture and Rural Development
MINARS	Ministry of Social Assistance and Reinsertion
MOP	Ministry of Public Works
MININD	Ministry of Industry
mt	metric ton (1,000 kg)
NEPAD	New Partnership for Africa’s Development
NGO	Non-Governmental Organization
NMTIP	National Medium-Term Investment Programme
UNACA	Farmers Association Union
USAID	United States Agency for International Development
UNDP	United Nations Development Programme
WB	World Bank

I. PROJECT BACKGROUND

A. Project Origin

I.1. Basic rural infrastructure was badly damaged during the civil war, particularly in the most war-affected provinces in the central and northern plateaux, and in vast areas of the eastern region. Bridges and roads were severely damaged or destroyed, and in many parts of the country, landmines have to be removed to allow for road and bridge repairs, a task that will take quite some time. Moreover, despite the security conditions established throughout the country after the end of the conflict in April 2002, many rural roads which are only passable in the dry season becoming impassable during the rainy season. As a result, large areas of productive land and traditionally food producing areas remain inaccessible, and unable to export food for much of the year.

I.2. In addition to damaged infrastructure the general poor condition of many roads presents a serious challenge to agricultural and rural development by posing serious constraints on produce marketing. In particular the poor condition of the road network hinders the distribution of agricultural inputs and the export of produce by raising the cost of transport. The government efforts to date to remove landmines and rehabilitate roads and bridges with its own domestic resources and international support are considerable, but these seem insignificant when compared to the vast amount of work that needs to be done and resources available.

I.3. In addition to the road infrastructure, the conflict also wiped out the vast array of support and commercial services provided to the agriculture, livestock and rural development sector. This included rural and municipal warehouses, silos, and marketplaces. The physical infrastructure of parastatal warehouses and silos administered by the former “*Grémio do Milho*” and “*Instituto do Café*” were severely damaged during the armed conflict, and most of them have been abandoned and The existing storage capacity available is insufficient to cope with requirements. There is also a need to improve household or on-farm crop storage facilities.

I.4. The war and the collapse of the colonial rural commercial network created a vacuum in the trading system with the disappearance of the bush traders and municipal merchants. The former used to supply basic goods and pre-finance smallholder farmers while marketing their agricultural produce in the end of the agricultural campaign. The latter were pivotal in administering a large network of privately owned wholesale warehouses intended for both domestic and export markets. The place and roles of these rural agents remains unfilled today. A vibrant rural trading system has evolved, but it depends upon many micro and small-scale traders purchasing food crops and livestock products from the informal rural markets, and the volume of their purchases is limited and irregular due to the lack of credit and commercial banking services and limited freight capacity. Furthermore, the impromptu markets that have emerged around the rural and peri-urban areas, are usually uncovered, and lack the basic hygienic facilities such as permanent water supplies, waste disposal, and sanitation. A lack of conservation facilities, poor grading, inadequate packaging and quality standards further constrain local production.

I.5. The agro-industries and processing sector has also been badly affected as a result of the abandonment of existing plants and the looting of equipment and facilities during the war. In addition the sector is suffering from an acute shortage of skilled management and technical personnel to run the operations and maintain processing plants, as well as the failure of raw materials distribution channels, collapse of water and power supplies, and lack of working capital and investment finance. The main centres of agro-processing activity were Luanda-Caxito-Bom Jesus, Huambo-Caala, Lubango-Matala-Quipungo, Benguela-Catumbela-Ganda-Dombe Grande, Kuito-Kunje, Uige-Negage, Malange-Catepa, and Ndalatando-Dondo. The extensive number and diversity of agro-industries that

existed before independence is reduced today to a small number of breweries, water bottling and soft drinking plants, flourmills and micro and small-scale bakeries. Other sub-sectors such as sugar milling, textile processing and clothing, oilseed refining, dairy products, fruits juice, pasta, biscuits, paper milling and timber processing have either disappeared or their contribution to has become insignificant. With few exceptions, the majority of the plants still in operation operate at very low capacity, and need rehabilitation and modernization to become economically viable and compete against imports

I.6. New agro-processing plants that have become established recently are basically micro and small-scale processing units, with a focus on grain milling (maize, cassava and sorghum), production of roasted flour, bakeries, micro-distilleries, among others, and medium to large scale beverage and bottling plants. However, like the former plants, these nascent industries are uncompetitive due to problems in their support infrastructure, raw-material supply, processing, marketing and distribution chains. In addition, they have to make significant investments in their own water and power generation supply which requires increasing the start-up and fixed investment cost. The agro-processing sector also suffers from a shortage of raw materials, as a result of their small size and distribution costs. To counterbalance the effects of such an unfavourable business climate, the government accelerated its divestiture from the manufacturing sector, which had been initiated in initiated in 1992, and adopted a more conducive regulatory and facilitation framework for the private sector during 2002–03. Under the new regulations the approval of new commercial firms and private investment laws are accompanied by extended tax incentives to private investments in certain locations, so as to encourage diversification and de-concentration of investments. This is an attempt to correct current regional asymmetries that tend to exclude large areas of the country, as well as pave the way for the recovery of the agro-processing sector. However, major impediments to creating such an enabling private sector climate still result from an effective legal and court system and complicated commercial register system.

I.7. The revamping of the agricultural and livestock sector is expected to have a major impact by increasing the agricultural output that will flow through marketing and distribution channels to the major consumer centres, which are dominated by the high urban population concentration. However, this development process may be constrained by shortcomings in the feeder road network, the limited commercial infrastructure and, most importantly, by the low purchasing power of the mass of the Angolan population. The import of competing products may also continue to be significant, especially for some products in the urban centres, but this is not be expected to have a significant negative effect on agricultural output.

I.8. The proposed programme is intended to be part of an integrated response to the emergent needs of the rural sector. It proposes upstream interventions through the rehabilitation of tertiary and feeder roads intended to support the revival of the agricultural sector, and rural communities, and, downstream interventions through the rehabilitation of marketing and commercialisation systems and agro-processing facilities.

B. General Information

(i) Geography and Climate

I.9. Angola is located in the north-western part of Southern Africa between latitudes 4°22' and 18°02' South; it is the fifth largest country in terms of size, in Sub-Saharan Africa, with an area of 1 246 700 km², an Atlantic coastline measuring about 1,659 km, and a land border of 4,837 km in length. The territory is flanked by the Republic of Congo to the North, the Democratic Republic of

Congo and Zambia to the East, Namibia to the South and the Atlantic Ocean to the West, including the Cabinda enclave in the North between Congo and the Democratic Republic of Congo.

I.10. Angola consists mainly of a highland massif bounded by a tiny strip of lowlands with an altitude between 0 and 200 metres. The mountains and plateaux are above 200 m. The highland region occupies the largest area of the country. Moco Mountain in Huambo is the highest at approximately 2,620 m. The latitude of Angola results in general, in an arid or desert climate, and a mild and hot climate with almost wintry dry weather. The type of relief, dominated by plateaux and the effects of the Benguela Cold Seawater Stream as well as the continental factor results in major climate diversity. The 1,659 km maritime border and the average altitude determines the existence of two major climatic zones: the coastal zone, with tropical dry climate in the North, and desert in the South, covering a coastal strip influenced by the Benguela Cold Seawater Stream, with annual rainfall ranging between 50 mm in Namibe and 800 mm in Cabinda, a relative humidity of over 30 percent and a annual average temperature higher than 23°C; and, the hinterland that is subdivided into three zones:

- A humid tropical climate covering the inner zone and the North–East, with abundant rainfall and high temperatures;
- A tropical climate modified by the latitude and comprising the higher altitudes of the Central Highlands with average annual temperatures below 19°C;
- The mid–arid climate zone in the South, with average rainfall ranging between 500 mm and 800 mm per year and low temperatures in the evenings of the dry season.

I.11. Angola’s hydrography has a close configuration with the relief since the majority of the rivers originate from the highland and mountain zones, flowing down into the low relief and lowland regions. Their beds are mostly irregular with rapids and slopes and extend into the coastal zones. There are basically four slopes:

- The Atlantic slope, with rivers Chilungo, Zaire, Bengo, Kwanza, Queve, Catumbela and Kunene;
- The Zaire slope, in the northern Angola, with the rivers Cuango and Cassai, and tributaries Cuilo, Cambo, Lui, Tchicapa and Luachimo;
- The Zambezi slope, in the eastern Angola, with tributaries of Zambezi, and rivers Luena, Lunge–Bungo and Cuando;
- The Kalahari slope with many non–perennial rivers such as the Cubango and two of its tributaries, the Cuchi and Cuito, among others.

I.12. With a total surface area of 124 millions hectares, more than 40 percent of the land area of Angola is covered with some form of woody vegetation (about 50 million ha), but only 18.5 percent of that area (about 23 million ha) is classed as natural forest with valuable reserves of timber (such as African Mahogany) is available in the massifs of Dembos (Bengo) and Maiombe (Cabinda), whereas the bush of East Angola is home to timber species of lesser commercial value. Angola’s agricultural potential is estimated at 35 million ha of arable land of which about 30 million ha is virgin land and the remaining 5 to 8 million ha is disposable arable land of which an estimated 2.5 million ha are cultivated. More than 50 percent of the soils in Angola suffer constant or periodic weathering and erosion processes caused by rain and sunshine. The most productive soils lies along three major lines of fertility: a) a strip 80 to 300 km distant from the coastline on the seaside slope of the mountain chain from Maquela do Zombo (Uíge) to Ndalatando (Kwanza Norte), and from Gabela (Kwanza Sul)

to Ganda (Benguela), which are covered by permanent fog and moisture; b) along the shores of rivers’ estuaries where alluvia mostly rich in mineral elements and organic compounds are deposited (especially in rivers North of Luanda, between South of Kwanza river and Benguela, and the Namibe’s oasis), and makes irrigation viable and less costly; c) the Central Highlands divided in the Malange Plateau (Cassange Lowlands), the Central Plateau from Quibala to South of Huambo, and the Huíla Plateau. Soils in the Southern region with more desert climates that suffer from the combined effect of erosion by rains and sun shining are less fertile.

(ii) *Agro-Ecological Zones, Farming Systems and Major Food Crops*

I.13. *Agro-ecological zones.* There are three main agro-ecological zones in Angola. Cassava predominates in the north; maize is the main food staple in the central highlands, while millet and sorghum are the most important cereals in the drier southern regions. These crops are mainly grown by traditional peasant families and smallholder farmers to meet their own food requirements; small amount of surpluses are traded on rural markets especially for clothing and other manufactured items. They use shifting cultivation methods extensively and rudimentary, manual soil preparation practices. It is estimated that they are responsible for 80 percent of total food crop production, while medium-size farmers account for 18 percent, and the remaining 2 percent for large commercial farmers.

I.14. *Farming systems.* The three agro-ecological zones correspond to the five main farming systems in Angola: (i) cassava-based, (ii) coffee-based, (iii) maize-based, (iv) sorghum /millet farming; and, (v) intensive systems of leguminous, vegetables and fruits based on irrigated and lowland water conservation systems. The subsistence and smallholder farmers usually grow crops such as cassava/maize; cassava/maize/rice; maize/beans/cassava; groundnuts/beans/cassava; whereas, better-off commercial farmers tend to avoid association of crops, which makes mechanization difficult. In addition, commercial farmers make use of crop rotation and conservation practices such as planting on level ground, erosion control and use of green fertilizer more often in regions where rainfalls are more adequate to the farming campaign. The total cultivated area covers around 2.5 million ha and is distributed among the major crops as indicated below.

I.15. *Cereals. Maize* is cultivated throughout the country, on a total estimated area of 985,000 ha. The average crop grain yield varies between 25–700 kg/ha on subsistence farms and 1,500–2,500 kg/ha on commercial farms. Maize is predominantly farmed in the central provinces (69 percent) with remaining areas evenly distributed in the northern provinces (Uíge, Malange, Kwanza Norte, Luanda, Lunda Norte, Zaire, Lunda Sul, Bengo and Cabinda), and southern provinces (Huíla, Kuando Kubango, Namibe, and Kunene). 74 percent of total farmland is concentrated on five provinces: Huambo, Huíla, Kwanza Sul, Benguela and Bié. Average yields for maize (500 kg/ha) are very low, due to crop multi-cultivation practices, poor seed quality, low levels of soil fertility, inefficient fertilization, soil acidity, inappropriate sowing seasons and cultural practices. The traditional areas of maize are:

- *Lowland maize:* low tropics encompass the agro-ecological zones characterized by altitudes between 0 to 1,000 meters above sea-level, annual average rainfalls in the region of 0 to 500 mm, and average temperatures between 27 to 30°C; this corresponds to the coastal and southern regions;
- *Highland maize:* high tropics encompass agro-ecological zones characterized by altitudes between 1,000 to 1,500 meters above sea-level, annual average rainfalls in the region of 600 to 1,500 mm, and average temperatures between 17 to 24°C; this corresponds to the Central Plateau, and northern and eastern regions.

I.16. *Millet and sorghum* are mainly cultivated in the provinces of southern region (Kunene, Huíla and Kuando Kubango), and central region (Huambo, Benguela, Bié); however, they have been in rapid expansion to the provinces of Namibe, Moxico and Kwanza Sul. Total cultivated area is estimated at 339,000 ha. Four provinces account for 92 percent of total farmland: Huíla, Kunene, Huambo and Benguela. Average yields are of 350 kg/ha. Despite its natural disadvantage in relation to maize, the importance of millet/sorghum is growing, as they represent an important substitute in terms of food security.

I.17. The total cultivated area of *rice* is estimated at 5,700 ha covering the provinces of Bié, Moxico, Lunda Norte and Lunda Sul. Average yields are of 3,500 kg/ha. The Central Plateau as well as the southern and eastern regions of Angola has favoured conditions to grow wheat and rice; however, the provinces of Uíge, Malange and Benguela also deserve special consideration.

I.18. **Roots and tubers.** *Cassava* is a typical crop of the northern provinces of the country; though it is currently cultivated in all provinces (except Namibe and Kunene in the South), and covers a total estimated area of 644,000 ha. The Northern provinces account for 79 percent of total farmland area (Uíge, Malange, Kwanza Norte, Zaire, Lunda Norte, Lunda Sul, Bengo, Cabinda and Luanda). Central provinces of Huambo, Bié, Benguela, Kwanza Sul and Moxico account for 16 percent and the southern provinces 5 per cent only. 66 percent of total farmland is concentrated on five provinces: Uíge, Malange, Kwanza Norte, Zaire and Lunda Norte. The local varieties of cassava need 15–18 months to mature, although harvesting can be put off until 24 months. Yields from cassava are low, typically giving an average of 8–10 mt/ha. The main reasons for this low productivity are the poor quality of seedlings, low soil fertility, diseases, pests and inadequate measures against alien plants.

I.19. *Sweet Potatoes.* The total cultivated area is about 110,000 ha of which 52,000 ha in the Northern provinces, 45,000 ha in the central provinces and 12,000 ha in the southern provinces. Uíge, Huambo, Benguela, Malange and Huíla account for 56 percent of total cultivated area. Sweet potatoes are grown usually in association with cassava and beans. Yields for sweet potato vary between 2,500 and 4,000 kg/ha.

I.20. *Irish potatoes* total farming area covers 42,000 ha mainly distributed by the provinces of Huambo, Bié, Huíla, Uíge, Kwanza Sul, and Malange, which represent around 95 percent of total farmland.

I.21. **Legumes and vegetables.** The most common varieties are *butter and red beans* and *macunde beans*, and the total area cultivated is estimated at 240,000 ha. These are predominantly farmed in Central provinces of Huambo, Bié, Benguela, Kwanza Sul and Moxico (all account for 54 percent), and the Northern provinces of Uíge, Malange, Kwanza Norte, Zaire, Lunda Norte, Cabinda, Lunda Sul and Bengo (all account for 32 percent of farmland); the southern provinces account for the remaining 14 percent. 70 percent of total farmland is concentrated on six provinces: Huambo, Bié, Uíge, Huíla, Malange and Kwanza Sul. Latest crop yields of beans are of 220 kg/ha. Beans are important sources of protein in the diet.

I.22. *Groundnuts* are grown on an area of 86,000 ha of which 55,000 ha are in the Northern provinces, and 27,000 ha in the central provinces. Uíge, Malange, Kwanza Norte, Kwanza Sul, Bié and Benguela account for 67 percent of cropped area. Average yields of groundnuts, are 390 kg/ha. There are used as a source of cooking oil in some parts of the country.

I.23. *Horticulture* produce includes tomatoes, lady’s fingers (“*kiabo*”), pepper, aubergine, paprika, cabbage, onion and garlic, among others. Crops are usually grown by smallholders and medium to large commercial farmers throughout the country, where there is water, to supply the large

cities in the coastal provinces of Luanda, Benguela, Kwanza Sul, Bengo, Cabinda, Namibe, and Central Plateau provinces of Huambo, Bié, Malange and Huíla.

I.24. **Fruits.** A wide variety of tropical fruits are grown including mango, banana, citrus, pineapple, avocado, papaya, guava, passion fruit; as well as temperate fruits such as apples, pears and grapes. Tropical fruits grow throughout the country whereas moderate fruits are farmed in the highlands of Huíla, Huambo and Bié and grapes in the coastal provinces of Namibe and Benguela characterized by a climate tempered by the Benguela Cold Seawater Stream.

I.25. **Livestock.** According to the 1970 census, Angola had over 6 million head of livestock, comprised of 3,160,000 cattle, 1,667,000 goats, 227,000 sheep, and 1,108,000 pigs. Since then, there has been no livestock census, so there is no reliable data on numbers. Nowadays, most of the cattle herd is concentrated in the southern and southwest provinces of Huíla, Kunene, Namibe and Benguela, which also have more than 60 percent of the small ruminants. Based on 2002 estimates, the total livestock population is made up of 4,000,000 head of cattle, 1,667,000 goats, 227,000 sheep, and 1,500,000 pigs. The traditional extensive farming systems based on cattle transhumance in the southern region, coupled with traditional ownership patterns and the value attached to the cattle pose a major challenge to the transition of current livestock farming to commercial systems. This is aggravated by conflicts with commercial farmers over demarcation and tenure of land that cut across transhumant access to pastures and water ponds.

I.26. Overall agriculture output, by volume has been raising since the 2000/01 cropping season and showed a dramatic twofold increase during the 2002/03 crop with the total volume increasing to 18,283 mt from 8,066 mt. Cassava, a typical rainfed subsistence crop increased from 6,628 mt to 15,373 mt and Irish potatoes a typical smallholder irrigated crop increased from 179 mt to 472 mt. All other crops grew steadily during this period. In terms of overall numbers of livestock, despite of over 27 years of conflict and economic downturn in the agriculture and livestock sector, it is worth noting that there has been remarkably little deterioration (details on past year outputs are presented in Table 1 of Appendix 1).

(iii) *Transport Infrastructure*

I.27. **Road Transport System.** Since independence in 1975, the transport of people and goods by road has been severely limited due to the prolonged war, which devastated the country, and the consequent damages provoked in infrastructures — including the destruction of about 350 road and railway bridges. During the last 27 years, there has been almost no maintenance of roads in many parts of Angola that were affected by war. Even in the areas that remained under government control, the maintenance of roads was clearly insufficient and the network is, therefore, severely deteriorated. It is anticipated that 80 percent of the road network is in bad status of conservation and cut-off in many sections.

I.28. The principal road network in Angola consists of around 15,500 km of primary and secondary roads, of which 7,950 km are paved and in reasonable condition. The principal road network connects the capital, Luanda, with the capitals of the 18 provinces; and these capitals with their major municipal towns. The network falls under then the responsibility of the *Angola National Roads Institute* (INEA), an autonomous parastatal overseen by the *Ministry of Public Works* (MOP), and is regulated by the *National Road Plan* published in the national gazette (DR. n°20, Iª série of 22 May 1992). There are also some 50,000 km of tertiary roads and feeder roads (municipal and rural); however it is not known the extent to which they are passable. The tertiary road network connects the small towns of each municipality and provides the direct road link between municipalities of

neighbouring provinces. The institutional set-up of the tertiary road system is not clear; though the tertiary road network falls under the authority of the provincial governments, they lack an effective operational and funding mechanism to implement this responsibility. Moreover, there are no nation-wide approved operational guidelines and building standards applying to the rehabilitation and maintenance of tertiary and feeder roads. This compromises any meaningful effort to launch a longer-term tertiary road rehabilitation programme as there would not be any standardized technical and financial criteria to ensure their long-term sustainability.

I.29. INEA has regional delegations in all 18 provinces. These delegations are equipped with basic earthworks and road paving equipment, and supervise the works of 10 operational road brigades that are responsible for essential repairs in the principal road network (primary and secondary roads) including pothole works. The delegations are based in Cabinda, Luanda, Lunda Norte, Lunda Sul, Kwanza Sul, Benguela, Huambo, Bié, Huíla, and Kunene. The brigades for the provinces of Zaire, Uige, Bengo, Malange, Kwanza Norte, Moxico, Namibe and Kuando Kubango are yet to be fully established. To carry out major road rehabilitation works funded through the state budget or external lending programmes, INEA issues public tenders, on a needed basis, inviting local subcontractors to bid in accordance with the terms and conditions set on approved tender documentation.

I.30. MECANAGRO, a publicly limited liability company, that falls under the jurisdiction of the MINADER through the *National Directorate of Hydraulics and Rural Engineering* (DNHER), is formally in charge of providing agricultural mechanization and engineering services at the province level. As part of its overall mandate, MECANAGRO intervenes in the construction and rehabilitation of feeder roads. To do so, MECANAGRO has regional delegations equipped with the basic earthworks equipment in three locations: Malange, to cover the Northern provinces; Benguela to cover the central provinces; and Huíla for the southern provinces. MECANAGRO's has a , fixed-asset capital equipment inventory worth approximately US\$20m. However, MECANAGRO lacks the operational and financial management structure to make effective and efficient use of such a mechanization base. To address this problem, MECANAGRO leases its equipment to private road builders and commercial farmers. At present, MECANAGRO charges US\$25,000–30,000 per km for new earth roads and US\$15,000 per km for maintenance works.

I.31. However, to the full cost for rehabilitation and building new roads, must add the cost for de-mining. This includes tentative cost for mine surveying and clearance. Usually de-mining activities in Angola fall under three categories resulting from the density of mines per sq. meter: a) a heavily mined fields; b) moderately mined fields; and c) low mined fields. At this stage, it is only possible to provide Angola' standard costs for manual and mechanical de-mining. The average cost for manual de-mining is US\$4–5 per sq. meter and mechanical de-mining is US\$2–3 per sq. meter.¹ De-mining operational activities are usually undertaken by specialized NGOs with field presence in Angola, among them are MAG, Hello Trust, NPA, MgM, InterSOS, and Santa Barbara.

I.32. Given the public sector resources constraints and the need to safeguard transparent procurement procedures, most rural infrastructure rehabilitation and related construction work would have to be contracted out under competitive bidding arrangements to private sector operators. The government's role would be to ensure that work is carried out on a cost-effective and timely manner, and that it meets the required construction standards. In addition, serious issues need to be addressed regarding the role of the public sector in the operation and maintenance of road infrastructure. Whenever a number of beneficiaries are involved, the operation, maintenance and funding of the infrastructure should be managed by the users themselves. The government's role, preferentially with the involvement of the provinces, would be limited to providing technical guidance for the

¹ Source: UNDP Mine Action Evaluation & Quality Control Advisory Unit.

rehabilitation and maintenance and to promoting the formation of user groups – both a complex and delicate task, and mobilizing the neighbourhood communities. Modalities of food-for-work and inputs-for-work should be promoted by donors and NGOs, to help achieve rural community participation, support and long-term sustainability.

I.33. ***The Railway System, its Linkages with the Road System, and Spillover Effects.*** Angola’s railway system is comprised of three major rail-lines. In the North, the CFL, Luanda Railway connecting Luanda to Malange via Bengo and Kwanza Norte, two important agricultural and livestock producer regions located in the northern hinterland plateau. In the Centre, the CFB, Benguela Railway connecting Lobito to Luau in Moxico, on the border with the Democratic Republic of Congo (formerly Zaire), via Benguela, Huambo, and Bié In the South, the CFN, Namibe Railway connecting Namibe to Kuvango via Lubango and Matala in Huíla, an important agricultural and livestock producer region located in the southern hinterland plateau.

I.34. The CFB has played, from its inception, a vital role in the export of copper, cobalt, and iron ore, from Zambia and the former Zaire to the port of Lobito. It also performed a critical role by ensuring the low freight cost of cereals from the producing areas in the Central Plateau. The other two railways, the CFL in the northern region, and CFN in the southern region, performed similar roles; they hauled agriculture produce in bulk from the vast areas of the hinterland towards the coastal ports of Luanda and Namibe.

I.35. At present, the operation of the railway system is rather limited due to landmines, destruction of rail bridges, collapse of the rail-line in many sections, and deterioration and destruction of the rolling stock. No significant investment was made during the many years of internal conflict. Due to these circumstances rail freight for passengers and goods is limited to short-distance sections such as between Luanda and Dondo (CFL), Lobito-Benguela (CFL), and Namibe-Lubango (CFN). As a result, with the exception of CFN that has been maintained in operation and reaches the Huíla Plateau, both CFL and CFB are unable to reach the hinterland to the Malange and Huambo-Bié plateaux. The rehabilitation of railway system will require massive domestic and external funding, and the government is considering addressing these needs within the framework of international donor and private sector assistance. To this end US\$40m has become available recently from the Government of India to finance the rehabilitation of CFN.

I.36. ***The Impact of Availability of Road and Rail Freight on Agricultural Marketing and Agro-Processing.*** Despite the bad status of roads, freight and passenger services are being undertaken by fleets of vehicles (mainly 4x4 and 4x2 commercial trucks and pickups, passenger buses and commuter taxis), which are essentially privately owned with exception of very few heavy-haulage commercial fleets owned by public companies such as UNICARGAS and TRANSNORTE. Road freight tariffs are very high due to the bad status of roads. This has resulted in traders giving priority to high-value, low-volume goods, leaving the marketing of bulkier crops with significant gaps, thus contributing to market fragmentation. The possibilities of free movement of people and goods in rural areas of Angola have improved, but there are some continued problems of checkpoints and landmines in certain areas. Considerable efforts and investments are programmed during the next few years for the rehabilitation of railway and principal road networks in the country. This is important, but will take time, and the up-keep of the transport network will also need to be sustained in the long-run, and if resources do not become available, it may in some instances seriously affect the agricultural marketing in selected areas. Post-war experience elsewhere in rehabilitating transport networks, indicates that there is a strong need to continue to review the nature, extent, ownership and use of the freight transport fleet, as well as transportation costs. Measures stimulating competition-based rather than control-oriented actions need to be developed to ensure that such transport is contributing to the needs of agricultural marketing in different parts of the country.

I.37. ***Impact on Road Freight Tariffs.*** Due the current status of the principal road network, truckers take around 44 hours to go through 450 km distance from Luanda to Malanje, which gives an average 11 km per hour. The distance between Huambo and Luanda, of approximately 600 km is made in around 18 hours. The existence of police’ checkpoints along the main roads make things even worse as truckers pay illegal charges which add on the freight cost. In relation to the tertiary and feeder roads, the problem is equally acute. The municipal survey for the *Reconstruction Support Programme* (PAR) conducted by the European Union in the provinces of Bié, Huambo and Huíla provided some indications in that regard. For instance, in almost all communes surveyed it has been shown that roads offer the worst transport conditions. There are municipalities such as Kunhinga, in Bié, in which only 15 percent of the localities are connected by road; in Ekunha, in Huambo, only 22 percent of the localities are accessible by freight vehicle. The road situation in all levels worsens during the rainy season. This situation is reflected on the freight cost. Data surveyed by the NGO CLUSA, indicate that the freight cost for roads with sections in bad condition of conservation such as the 600 km between Lubango and Luanda was US\$0.23 per ton/km in February 2003. For roads in reasonable status such as the 532 km between Lubango and Santa Clara in Kunene, this cost is reduced to US\$0.11 per ton/km. The freight cost in Luanda metropolitan area was of about US\$0.70 per ton/km (only cargo). The cost structure of freight revealed that the lease of truck comes first followed by diesel and maintenance cost.

I.38. Although freight rates may only explain part of the problem, trading margin variations between the major producer and consumer markets such as Caxito, Huambo, Lubango and Luanda are enormous. For example, a mug (small measure) of locally milled maize flour costs Kz20 in Huambo, and Kz50 in Luanda’s retail market, and local beans are sold in Huambo’s main market for Kz50 per kg and for Kz106 per kg in Luanda’s retail market. The poor are the ones who suffer the consequences of the disruption of the road network and agricultural marketing infrastructure. This situation can be improved with sustained improvements on the commercialisation network. A recent survey conducted by the NGO CLUSA compares the price of agricultural produce imported and grown on around Luanda’s greenbelt and shows that’s local production should be cheaper than imports (see Table 2 of Appendix 1).

(iv) ***Storage Infrastructure and Agro-processing Facilities***

I.39. ***Post-harvesting, On-Farm Storage and Warehouse Infrastructure.*** Low volumes of subsistence food crops and high seasonal fluctuation in supply mainly due to disrupted effects of rainfall irregularities are, among other things, the main cause of the food insecurity in rural areas. The problem tends to be less severe in areas where cassava, maize and sorghum/millet are subsistence crops cultivated in association with beans and sweet potatoes. Smallholder farmers and rural communities use very rudimentary post-harvesting practices to store their produce on-house with a view to satisfying their consumption needs throughout the year. The small amount of surpluses are traded with and through local associations and rural traders and stored in municipal warehouses and silos. With exception of a few warehouses of small capacity owned by private municipal traders, the existing network of warehouses and silos is administered by local representations of nation-wide producer growers associations and cooperatives, the most important of which are EPUNGU and UNACA. The location and physical status of this storage infrastructure is indicated below:

Province	Location	Warehouses		Silos	
		Capacity (mt)	Status	Capacity (mt)	Status
Huambo	Caála	1,032	Reasonable	4,760	Bad
	Tchicala Tcholoango	1,000	Bad	1,700	Bad
	Longonjo	2,000	Bad	3,880	Bad
	Huambo–Santa Iria			3,280	Bad
	Ukuma	500	Reasonable		
	Cachiungo	500	Bad		
Bié:	Kamacupa	5,637	Bad	2,550	Bad
	Katabola	5,983	Bad		
	Kuito–Kunje	3,660	Bad		
	Kuito–Chipeta (*)	2,760	Reasonable		
	Kunhinga (*)	5,986	Reasonable		
	Chinguar–Capeio	2,500	Bad		
	Chinguar–Cutato	2,500	Bad		
	Chinguar–Sede	5,986	Bad		
	Kuemba	X	Bad		
Huíla	Matala	6,200	Reasonable		
		9,300	Unfinished		
		5,700	Bad		
	Quipungo	9,800	Unfinished		
		4,300	Bad		
		X	Reasonable		
Lubango	X	Reasonable			
Kwanza Sul	Gabela	1,500	Reasonable		
	Sumbe	6,000	Reasonable		
Benguela	Ganda	2,000	Reasonable		
	Lobito (*)	15,000	Reasonable	X	Good
Luanda	Ingombota (*)	6,000	Reasonable		
Total Storage Capacity (26)		103,594		16,170 (6)	

Source: EPUNGU
 (*) Warehouses possessing expurgation chambers.

I.40. The structure of the silos is made in concrete. Their storage capacity varies from 1,700 mt, minimum, to 4,760 mt, maximum, (Caála twin-silo) and total storage capacity is in excess of 16,000 mt. They have divisions to store grains and legumes, separately. With the exception of the silo in Lobito, all the other silos are out of order and need to be overhauled. The warehouses have been built on modular design with 2, 3 or 4 partitions, some of them possessing treatment chambers, with storage capacities varying from a minimum of 500 mt to a maximum of 9,800–15,000 mt, and total storage capacity in excess of 103,000 mt. In locations where they coexist with silos, the warehouses have been built close to the silos. In the case of the provinces of Huambo and Bié, and Huíla, the silos and warehouses are located alongside the CFB and CFN rail-line, respectively.

I.41. The physical status of the warehousing network is indicated in the above table; in general, detailed rehabilitation work in walls, columns support, grounds, roofing, and fencing will be required as well as the refitting of access gates. However, the rehabilitation of municipal storage facilities and silos in the context of the rural trade system raises the issue of ownership of these structures, and responsible for the maintenance by recovering costs from beneficiaries, users and membership of rural farmer associations and cooperatives, as well as other professional associations such as associations of rural traders, whenever these might exist. On another hand, installations still controlled by some

agricultural parastatals such as PROCAFE, UIGIMEX, CAFANGOLA which are located in Bengo, Uige, Kwanza Norte, and Kwanza Sul could be either auctioned off/leased or transferred/used in partnership under user fee arrangements by members of relevant producer and/or trader associations.

I.42. According to 2004 records the number of rural cooperatives and associations affiliated to UNACA was 4,231, of which 4,113 were associations and 118 were cooperatives. The total membership was 538,475 in all 18 provinces. The highest number is found in the provinces of Huambo, Kuando Kubango, Kwanza Sul, Huíla, Bengo, Bié, Malange, Kwanza Norte and Moxico, among others (Appendix 2 shows the distribution by province). These numbers may need to be taken with some caution however as local associations in general tend to represent common social interests of rural communities centred around the most pressing issues and food aid and humanitarian assistance have prevailed on top of these priorities for quite some time. If a distinction can be made, the cooperatives tend to carry out a commercial role, whereas rural associations provide more assistance to producers. EPUNGU, as an example of a cereals and legume producers association, affiliates a total of 1 255 members of which 540 are smallholder producers, 135 are producers/traders, and 580 are small traders. It is represented mostly in the provinces of Huambo, Bié, Huíla, Kwanza Sul, Benguela, Kwanza Norte and Kunene. There are also local producer associations such as the case of the Chamber of Producers and Cattle Growers of Huambo, (“*Câmara de Produtores e Criadores do Huambo*”), the OVIPAKO in Huambo (“*Associação de Agricultores do Huambo*”), the Cooperative of Cattle Growers of the Southern of Angola in Huíla, (“*Cooperativa de Criadores de Gado do Sul de Angola*”), the Farmer Associations of Huíla, Kwanza Sul, and Benguela, and CAPCAB, (“*Cooperativa Agro-Pecuária do Cavaco-Benguela*”), a provincial government-sponsored cooperative, among others.

I.43. The current crop conservation practices and storage facilities used by the traditional smallholders are inadequate, and vary in different areas of the country in accordance with the development stage of farming practices. There is certainly considerable scope for improving on-farm storage and crop conservation at the smallholder level that would contribute to improved local food security; and this would gradually permit small producers to take advantage of seasonal factors in the market. Therefore, depending on the concerned regions, efforts should first focus on crop conservation techniques before improved storage facilities, as these can often be cheaper than infrastructure investments.

I.44. To the extent that cereal production (maize, sorghum/millet and rice) accelerates and markets develop, the current methods of storage of grain will become unsustainable and will prevent producers to take advantage of changes in the market. Methods for the better accumulation of produce from dispersed farmers will be required to ensure that marketing systems of large-scale farmers can be linked with those of the traditional smallholder producers. This will allow for the introduction of small metal round silos with varying grain storage capacity to fit various specification requirements (200 to 800 kg). They can easily be made by artisans from 0.5 mm galvanized steel sheet. Building instructions and best practices have been developed over many years in Latin America and Africa, and the information is freely available on the web (e.g. COSUDE, 1998). In addition, they can be portable and moved to the extent that the harvest campaign advances.

I.45. Root and tubers crops contribute significantly to basic food requirements in urban and rural areas in Angola. There is now an increasing need to store and transport fresh produce but perishability is often a problem due to the high moisture content of tubers (60–80 percent when fresh). The keeping quality of tubers varies considerably from yams, which can be stored for about four months, to sweet potatoes, and cassava, which deteriorates rapidly (within 1–7 days) after harvesting. However, during the last decade a greater understanding of these crops, together with an appreciation of the important quality attributes, has resulted in the development of strategies to reduce post-harvest losses. Storage

methods vary but dry ventilated stores, leaving the crop in the ground and packing plastic bags combined with fungicides are all useful practices.²

I.46. On farm storage has the advantage of reducing seasonal falls in food stocks in rural areas, minimizing price variations resulting from fluctuations in supply. The poor in urban and peri-urban areas can benefit from this, and investment at other levels of selling and storage can be reduced. However, policies which encourage the rehabilitation of existing and expansion of new storage systems at the level of the farmer or community, would involve a combination of minimum price system defined by the government in close consultation with the producer associations, and technical consultations on preparation for storage, safe keeping of stocks, and soft-loans for storage investment and running costs.

I.47. The GoA and MINADER have decided that tertiary roads along with crop storage infrastructure, commercialisation networks, and agro-processing are of primary importance under the Angola’s NEPAD medium-term investment programme.

I.48. **Agro-Processing Facilities.** The situation is characterized by the limited number of micro and small-scale processing plants, which are mostly in large urban centres. However, the bulk of the primary processing activities take place manually, without the use of any mechanical equipment for the milling of maize, sorghum/millet, and rice, and cassava. Very rudimentary techniques are used which do not allow farmers to add value to their output before marketing and thereby increase household income. Small investments into adaptive and appropriate technologies, farmer proven in other countries, could make an important contribution to rural livelihoods in most regions of Angola. Such technologies include small manual roller/crusher mills, hammer mills, stone and plate mills for flour milling; hullers, pulpers for rice, coffee and pulses; decorticators, oil mills for groundnuts; crackers, oil screw presses, hand oil presses, separators for palm nuts; honey and fruit juice extractors; fruit pulpers and slicers, among many others. New medium to large-scale agro-processing plants that have emerged or have been rehabilitated/expanded recently include brewing, soft-drinks, wine and liquor plants; however, with the exception of the water-table bottling plants, they all use imported raw materials with no link whatsoever with the agricultural sector.

I.49. The majority of the medium to large-scale agro-industrial plants located in the main crop zones are either destroyed, operating on limited raw-material supplies (or on imported raw materials) and/or operating with old and outdated equipment, as well as lacking technical staff to run them properly. Limited supplies of energy, water and packaging material increase the difficulties faced by agro-processing operations. These affect all sub-sector of the agro-processing industries, particularly those based on cereals milling, pasta-processing and bakery chain, oilseeds refining, canning and preservation of fruits and vegetables, dairy products, cotton processing and textiles, and coffee processing. These operations were located in regions with advantages such as access to markets and labour, industrial support, training and management centres like Luanda-Viana and Benguela-Lobito, in the coastal line; and, Uíge, Malange, Ndalatando-Dondo, Huambo, Bié, and Huíla, in the hinterland. Some of these advantages still prevail but others will take time to re-develop.

I.50. The medium to large-scale maize flourmills were concentrated on the following locations³: Huambo (with 2 units; total capacity 32,500 mt/year), Huíla-Matala (with 3 units; total capacity 52,200 mt/year), Bié-Kunje (with 1 unit; total capacity 6,600 mt/year), Lobito-Benguela (with 3 units; total capacity 82,800 mt/year), Malange-Catepa (with 1 unit; total capacity 10,000 mt/year), and

² The source for information on potato and sweet potato is the International Potato Centre (CIP), Peru (<http://www.cipotato.org>).

³ Disposable capacities are indicated in brackets.

Quibala–Calulo (with 2 units; total capacity 10,300 mt/year). The wheat flourmills were concentrated on the following locations: Huambo (with 1 unit; total capacity 4,700 mt/year), Huíla–Matala (with 2 units; total capacity 13,100 mt/year), Bié–Kunje (with 1 unit; total capacity 22,000 mt/year), Luanda–Kicolo–Kwaba (with 2 units; total capacity 50,100 mt/year), Lobito–Benguela (with 1 unit; total capacity 20,500 mt/year), and Quibala–Calulo (with 2 units; total capacity 10,300 mt/year). At present, there are very few wheat and maize flourmills in Luanda (2), Benguela (1), and Huíla (1) producing at very low capacity. The remaining units are either no longer in condition to operate, without major rehabilitation work, or do not exist anymore. The old pasta (4) and biscuits (3) processing facilities located in Huíla (1,900 mt/year of pasta), Huambo (1,600 mt/year of pasta), and Luanda (7,300 mt/year of pasta and 13,900 mt/year of biscuits) ceased operations some time ago. In; in their place new small–scale processing units have emerged in Luanda, for pasta, and Benguela, for biscuits. The government’s investment for the rehabilitation of basic infrastructure is increasing at a slow pace but steadily. However, given the priority attached to increasing water and power supplies to urban centres, it will take time to increase the availability of water and power to the manufacturing activities. In addition, medium and long–term finance and soft–loans are not yet available in full, which prevents the private sector to invest much in the agro–processing sector at affordable rates.

I.51. There are very few formal and privately owned industrial slaughterhouses (in Luanda, and Cahama), and the bulk of this activity is conducted either in informal markets or by small authorized butchers. Canned meat processing was concentrated in Luanda (120 mt/year), Huambo (103 mt/year), Lubango (75 mt/year), and Ganda–Benguela (35 mt/year). Today the only plant operating is the one in Huíla. The rehabilitation of another meat processing plant in Buçaco (Ganda) in Benguela was initiated in mid 2004. However, medium–term finance for rehabilitation and expansion investments in these plants is still required. The rehabilitation of the Cela dairy products complex in Kwanza Sul based on intensive processing of milk, milk and beef derivative products started in 2004 with joint government and private funding. However, a few other dairy product complexes such as the Matala–Capelongo, are still operative, but are producing at very low capacity; and the plants at Sapú (Luanda) and Camabatela (Kwanza Norte), both still remain in status of abandonment and awaiting for investment.

I.52. There are no cold storage facilities for conservation and preservation of perishable fruit and horticulture products, and there are no processing plants dedicated to processing fruit and vegetables. The vegetable processing plants that once existed in Huambo, Lubango and Ganda (Benguela) with a combined capacity of 2,300 mt /year were destroyed or ceased to operate; the same occurred with the fruit–pulp and juice canning facilities located in Dondo (Kwanza Norte), Babaera–Caimbambo (Benguela), Huambo, and Uíge. The production of refined vegetable oil with a total disposable capacity of 14,800 kiloliters/year based on sunflower and maize oilseeds in Catumbela (Benguela) and Malange, have ceased due either to the destruction and looting of processing facilities, or have been reconverted to process imported raw materials,(the two plants in Luanda, one of which is still operating at a very low capacity). Downstream industries based on sugar, coffee, sisal, and cotton estate plantations collapsed entirely, and their rehabilitation will certainly take longer, if they are ever to become viable again.

I.53. In certain areas the re–establishment of larger processing plant should be viable, if raw materials supplies can be guaranteed. However small–scale agro–processing is likely to become more feasible in the short–run, as long as food and cash crop surpluses increase overtime and fuel the growth of the domestic market. A number of small–scale agro–processing facilities are operating; although very little is known at central level of the extent and functioning of such facilities. It is self evident however that such plants need support to develop n further. This would encourage the establishment of additional basic agro–industrial firms that will establish link mechanisms with rural traders and producer associations to enable regular raw material supplies to agro–industries. Some of

these industries may also organize marketing networks to purchase cash crops, and raw materials from dispersed traditional smallholders; however, they are only likely to do this if a number of other features are in place for the investment, namely that they can secure adequate raw material supplies in the longer-run, and that their operations will eventually be economically competitive and will be protected from imported products during a nascent period.

I.54. Identification of Government, Donor and Private Sector Supported Initiatives. The areas of concentration covered by the proposed agricultural marketing and agro-processing programme overlaps with other development initiatives. Government support is basically concentrated on rehabilitating the principal road network all around the country, and de-mining activities. The government is also co-funding the World Bank’s *Emergency Multi-sector Rehabilitation Programme* (EMSRP) with bilateral donor collateral assistance for a total programme cost US\$1.3 billion; one of the components of the programme deals with rehabilitation of rural roads in the provinces of Bié and Malange. Chevron-TEXACO is also contributing with US\$58m towards the rural development sector in association with USAID, and other development partners through its *Angola Partnership Initiative* (API). The programme that focus on food production increases, rehabilitation of basic infrastructure, rural credit; support to micro-enterprises, business development and vocational training; and rehabilitation of education sector covering the provinces of Huambo, Bié, Kwanza Sul and Benguela calls for implementation arrangements with different execution partners including UNDP, FAS, among others. The European Union is funding a *Reconstruction Support Programme* (PAR) for a total amount of US\$30m, which focuses on agriculture, livestock and rural development, and rehabilitation of rural roads; the areas of intervention of the programme cover the southern provinces of Huíla, Namibe and Kunene.

II. PROJECT AREA

II.1. The overall area of the programme should comprise the regions with the following criteria:

- Zones which make a significant contribution to the food security; as measured by the volume of their food crop and livestock output;
- Zones with significant weight in the national food balance; as measured by the proportion of food crops for self-consumption and reaching the consumer markets as tradable surpluses
- Zones bearing comparative advantages for the production of cash crops intended for the domestic agro-industries sector and the export market;
- Zones matching above criteria and link concerned rural communities to any of the three main railways and/or the principal roads system, or having access to them through the tertiary roads network.

A. Rehabilitation of Rural Roads

II.2. The following strategies are recommended in relation to the rehabilitation of tertiary and feeder roads:

- The rehabilitation of these roads should seek complementarities with ongoing or pipeline projects either fully or partially funded by the government and donors, or both – the rehabilitation work should take priority over the construction of new roads;

- The prioritisation should be made with participation of rural communities, and in consultation with producers and farmers associations and cooperatives;
- The rehabilitation of roads should be carried out taking into account both family smallholder and commercial farmers and community needs, in terms of providing them ease access to agricultural inputs, marketplaces, municipal storage infrastructures, and agro-processing facilities;
- The access to irrigation perimeters should be prioritised;
- The intended beneficiaries of the rehabilitation work either farmers, users or their associations, including rural communities, should bear part of the cost of the rehabilitation work; this can either take the form of in-kind or in-nature contributions, including the use of food-for-agricultural inputs and food-for-work modalities, whenever this will not affect farming incentive negatively.

II.3. According to the conventional criteria utilized in Angola, the tertiary roads’ main function is to provide access to villages, communities, agricultural areas and other places of local relevance. They should be constructed to support traffic volumes of up to 50 vehicles per day, of which a significant proportion is made up of non-motorized traffic including bicycles. Load charges approximate to 5.0 ton per truck axle and maximum speeds of 30 to 40 km per hour. Conventionally, the carriage has a single lane of unpaved surface with a maximum width of 3.0 to 5.0 meters capable of allowing two commercial vehicles to pass completely a total road width of 6 meters utilizing the shoulders, which have 1.0 to 1.5 meters width each. The construction requires that maximum gradients would need to follow the natural terrain gradients, a cross fall of 2.5 percent to 3 percent maximum, and pavement structure compacted with a 10 cm sub-base made of improved granular soils, whenever this might be required by the nature of soils. Labour-based construction methods would be used, where possible implying an optimal balance between labour and equipment. The primary objective of labour-based construction is to complete road construction efficiently and economically within a specified time; the secondary objectives include: employment generation, creation of local entrepreneurs, optimisation of the use of local resource and materials, creation of skills, improvement of labour productivity, mobilization of in-kind and in-nature cost-sharing contributions from users, local communities and beneficiaries up to a certain level.

II.4. On the basis of the above-mentioned criteria, the following road links have been tentatively selected to be supported by this programme; MINADER needs to define, in consultation with the programme partners and stakeholders, and before the donor pre-appraisal missions, the specific sections of the tertiary and feeder roads to be included. The extension of the roads to be rehabilitated in the provinces of Bié and Malange has been reduced to 400 km from planned 800 km, taking into account the approved World Bank assistance aiming at the rehabilitation of 748 km of feeder roads in both provinces⁴):

- ***Northern region***
 - Province of Bengo (800 km): network covering the municipalities of Icolo e Bengo, Zenza;

⁴ In Bié (375 km), the retained road links comprise: Kuito-Chicala-Kapulo, Chicala-Mutumbo, Kuito-Trumba-Chilonda, Kamacupa-Ringoma, Katabola-Chiucua, Andulo-Cassumbe, Andulo-Chivaulo, Katabola-Nharea; In Malange (373 km), these are: Kakamula-Kabumdi, Malange-Massango, Kalandula-Massango.

- Province of Kwanza Norte (800 km): network covering the municipalities of Lucala, Golungo Alto, Samba Caju, Ambaca;
 - Province of Malange (400 km): network covering municipalities to be indicated by MINADER;
 - Province of Uíge (800 km): network covering the municipalities of Quitexe, Negage, Alto Cauale.
- **Central region:**
 - Province of Benguela (800 km): network covering the municipalities of Ganda, Cubal, Chongorói, Bocoio, Balombo;
 - Province of Kwanza Sul (800 km): network covering municipalities of Cassongue, Waco Kungo, Quibala, Ebo, Gabela;
 - Province of Huambo (800 km): network covering the municipalities of Longonjo, Ukuma, Caála, Thicala Tcholoanga, Katchiungo;
 - Province of Bié (400 km): network covering the municipalities to be indicated by MINADER.
 - **Eastern region:**
 - Province of Moxico (800 km): network covering the municipalities of Luau, Luacano, Lumeje, Cameia, Camanongue, Luchazes;
 - Province of Lunda Sul (800 km): network covering the municipalities of Muconda, Dala, Cacolo;
 - Province of Kuando Kubango (800 km): network covering the municipalities of Cuchi, Menongue, Kuito Kuanavale.
 - **Southern region:**
 - Province of Huíla (800 km): network covering the municipalities of Quipungo, Matala, Jamba, Kuvango, Chipindo, Capelongo, Caconda, Chicomba, Caluquembe;
 - Province of Namibe (800 km): network covering the municipalities of Bibala, Virei, Camucuío;
 - Province of Kunene (800 km): network covering the municipalities of Cahama, Cuvelai, Cuanhama, Namacunde.

B. Marketing of Food and Cash Crops and Agro-Processing

II.5. The major crop producing areas that might benefit from improved access through the rehabilitation of tertiary and feeder roads can be grouped among high, medium and low-yielding regions as indicated below. These roads will re-connect rural communities to the main transport lines (primary and secondary roads and railways). This is vital to: (a) provide incentives to increase food and cash crops in the selected regions, (b) enhance food security in large consuming areas; (c) enhance the agriculture market and increase the volumes of crop surpluses reaching the consumer markets; and, in the medium-term, (d) increase exports of cash crops.

II.6. The volume of cereals produced over the last years increased from 537,000 mt in 1998/99 to 506,000 mt in 1999/00, 577,000 mt in 2000/01, 714,000 mt in 2001/02, and 1,350,000 mt in 2002/03 (see details of major food crops output in Table 1 of Appendix 1). The volume of roots and tubers increased from 3,331,000 mt in 1998/99 to 4,670,000 mt in 1999/00, 5,747,000 mt in 2000/01, 7,230,000 mt in 2001/02, and 16,627,000 mt in 2002/03; and, the volume of legumes increased from 79,000 mt in 1998/99, 88,000 mt in 1999/00, 122,000 mt in 2001/02, and 336,000 mt in 2002/03. Table below, show the level of yields per province.

Crop		High Yield	Medium Yield	Low Yield
Cereals	<i>Maize</i>	Kwanza Sul, Benguela, Huambo, Bié, Huíla,	Uíge, Malange, Moxico, Kuando Kubango	Cabinda, Zaire, Bengo, Luanda, Kwanza Norte, Lunda Norte, Lunda Sul, Namibe, Kunene,
	<i>Sorghum/millet</i>	Benguela, Huambo, Huíla, Kunene,	Bié, Kuando Kubango	Kwanza Sul, Moxico, Namibe,
	<i>Rice</i>	Lunda Norte, Lunda Sul, Moxico	Bié	Uíge, Malange, Benguela
Roots/Tubers	<i>Cassava</i>	Uíge, Malange,	Zaire, Bengo, Kwanza Norte, Lunda Norte, Lunda Sul, Kwanza Sul, Benguela, Huambo, Bié, Moxico, Huíla	Cabinda, Luanda, Kuando Kubango
	<i>Sweet Potatoes</i>	Uíge, Malange, Benguela, Huambo, Huíla	Zaire, Bengo, Kwanza Norte, Lunda Norte, Lunda Sul, Kwanza Sul, Bié, Moxico, Kuando Kubango	Cabinda, Luanda, Namibe, Kunene
	<i>Irish Potatoes</i>	Huambo, Bié, Huíla	Uíge, Malange, Kwanza Sul,	Bengo, Kwanza Norte, Namibe
Legumes	<i>Beans</i>	Uíge, Malange, Kwanza Sul, Benguela, Huambo, Bié, Huíla	Zaire, Kwanza Norte, Lunda Norte,	Cabinda, Bengo, Luanda, Lunda Sul, Moxico, Namibe, Kunene, Kuando Kubango
	<i>Groundnuts</i>	Uíge, Kwanza Norte, Malange, Kwanza Sul, Benguela, Bié,	Cabinda, Zaire, Bengo, Lunda Norte, Lunda Sul, Bié, Moxico, Huíla	Luanda, Kuando Kubango

II.7. The food crop market is dominated by a rather large number of small, under-capitalized producers, who, in general, practice subsistence agriculture and tend to produce small amounts of marketable surpluses in diverse locations. This characteristic presents a few regional differences, basically reflecting the patterns of cultivation and farming practices that prevail in the country, and the vicinity to the major consumer markets. In the province of Huambo, considered to be Angola’s main breadbasket, specialist’s estimate only 15 percent of the production reaches the markets, however this value fluctuates markedly along with variations in climate and the availability of inputs during the agricultural campaign. In Huíla, the market profile is more typical of a semi-commercial agriculture, with an approximate 40 percent of total subsistence farmers. In the so called Luanda greenbelt, that includes the provinces of Luanda and Bengo, there is an intense commercial activity of horticultural and fruit products, and all disposable produce is tradable; while in the country’s northern region, the prevalence of cassava and sweet potatoes plantations allow the producers in Uíge and Malange to maintain a closer relationship with the markets. In these areas it is estimated that 60 percent of total production (green cassava, roasted flour and other derivatives) is traded. In the rest of the country’s regions, especially those exposed to a certain geographical isolation, the general picture does not differ much, with subsistence farming prevailing and extremely low levels of surpluses being made available to the market.

II.8. The local food crop market is fully liberalized. However, EPUNGU, and other associations that have control over grain surpluses from their members stored in municipal warehouses intervene in the market by selling inventories to existing medium to large-scale flourmills under commercial contracts; the balance of which is made up by small amounts of gains sold to WFP for their local humanitarian delivery programmes and MINARS, the *Ministry of Social Assistance and Reinsertion*, for direct supply to the refugee and displaced camps. The amount of food crops marketed for final and intermediate consumer markets cannot be established at this stage due to the lack of consistency and reliability of data.

II.9. Therefore, agricultural marketing and agro-processing strategies should endeavour to differentiate areas into at least four categories: a) those areas with close proximity to potentially large consumer markets – currently, such areas are to be found in parts of Luanda, Cabinda, Zaire, Bengo and Benguela (because of oil industry), and Lunda Norte/Lunda Sul, (because of diamond industry); b) those areas in which access to these markets will be driven by potentially high concentration of population forming major consumer markets in the medium-term – currently, such areas are to be found in parts of Uíge, Malange, Kwanza Norte, Kwanza Sul, Huambo, Bié and Huíla; and c) those areas where marginal economic activities and low population concentration occurs and this will not be expected to change dramatically in the near future — currently, such areas are to be found in parts of Moxico, Namibe, Kunene, and Kuando Kubango; and d) those areas where significant economical activities occur boosted by the existence of a firmly established private sector and the emergence of a vibrant micro-entrepreneurial sector – currently, such areas are to be found in parts of Luanda, Huíla, Benguela, Uíge, Malange, Kwanza Sul and Huambo.

II.10. The restoration of agricultural storage infrastructure and agro-processing facilities, would be undertaken taking into consideration the following criteria: a) The improved crop conservation and on-farm storage infrastructures would focus on the most productive zones above indicated for the 3 major type of crops (cereals, roots and tubers, and legumes). This will take into account the degree of differentiation and natural specialization in the farming systems; and, move on from there to the medium and low productive zones during the period of programme implementation (2004–2008); b) The restoration of the on-farm storage and warehousing infrastructure would begin with the supply of metal round silos and bins for groups of producers organized in associations/cooperatives; in concurrence with that, the rehabilitation of municipal warehouses and silos indicated in paragraph I.39 will be pursued on a needed basis e.g. the availability of marketable surpluses, and take into account how they are accessible by tertiary and feeder roads and their positioning in relation to the main transport systems (road and railway) and consumer centres; c) The support to the agro-processing sector would focus on: i) micro and small-scale processing activities organized by rural industrialists at community level using adapted and low-cost technologies; and ii) helping owners and investors to rehabilitate existing medium to large scale agro-industries destroyed during the war-time, as long as the rehabilitations are found to be viable and sustainable.

III. PROJECT RATIONALE

III.1. Agricultural and livestock marketing infrastructure and agro-processing facilities are expected to play a fundamental role in the process of rehabilitation and reconstruction of Angola in the post-war era. During the war Angola has failed to develop and modernise its agriculture and livestock sectors, which are dependent on regular rainfall, and the existence of established commercial networks and market infrastructure — including rural roads and storage facilities. The huge agriculture and livestock potential today lies largely unexploited due to the lack of investments in agricultural marketing and agro-processing infrastructure. The end of the conflict in April 2002 laid the

foundations for the local re-settlement of displaced communities so as to enable them re-starts a normal productive life. Therefore, the revival of rural development is of paramount importance to the normalization of economic and social livelihoods of rural communities.

III.2. The rural marketing and agro-processing infrastructures rehabilitation programme fits within CAADP pillar 2 – *Improvement of rural infrastructure and trade-related capacities for improved market access*. The rehabilitation of rural roads, on-farm storage, municipal warehousing infrastructure, and agro-processing facilities comes at the top of the government’s priorities given their importance to smallholder farmers, commercial farmers, rural and municipal traders and private sector agro-industrialists. These activities are expected to have a significant impact on reviving local economies and the expansion of the domestic market. The government is increasing funding of MINADER with its own budgetary resources. However, given the pressing needs arising from the social sectors, such as health and education services, the government has no recourse but to mobilize external funding to supplement their own funding to try and match the needs of the infrastructure programme. This is considered of vital importance to combat poverty, generate employment, reduce the level of food insecurity and thereby improve livelihoods of rural and urban population.

III.3. This programme is intended to be part of an integrated response to the re-establishment of the rural development sector; it intervenes upstream, through the rehabilitation of physical tertiary and feeder roads infrastructure, downstream, through the rehabilitation of storage and warehousing infrastructure and agro-processing facilities intended to support the integration of the agricultural sector with agro-processing. The programme is structured in *three components* as follows:

- ***Rehabilitation of Tertiary and Feeder Roads Infrastructures.*** This is intended to improve access to farming areas through the de-mining and rehabilitation of tertiary and feeder roads and re-connecting rural communities to main transport lines (primary and secondary roads and railways). This is a key issue to provide incentives to increase food and cash crops in the productive regions; improve food security in large consuming areas; enhance the agriculture market and increase the volumes of crop surpluses reaching the consumer markets; and, in the medium-term, increase exports of cash crops. The effort should be complemented by the reviewing of the nature, extent, ownership and use of the freight transport fleet, as well as transportation costs. The up-keep of the transport network will also need to be sustained to have positive effects on the agricultural marketing in different parts of the country.
- ***Improvements on Food Crops Post-Harvesting, Storage Infrastructure and Rural Markets Networks.*** This will comprise improvements in agriculture (cereals, roots/tubers, legumes, vegetables and fruits, among others) post-harvesting, on-farm and municipal storage and warehousing with a view to minimizing post-harvesting losses through the use of adequate cleaning, drying, conservation and sanitation practices. It would involve the introduction of simple but specialized grain/tubers/pulses shellers, hullers, decorticators and small metal round silos and bins, as well as the rehabilitation of municipal stores and silos. The effort is intended to encourage rural communities and smallholder farmers to store a greater proportion of their crops on farm, and rural traders and producer associations to keep crop inventories in safe municipal warehouses and silos; and render them able to opportunities to take advantage of seasonal price rises, which can only be achieved if the stored crops can be held with no deterioration in quality.
- ***Improvements on Micro, Small and Medium to Large Scale Agro-Processing Facilities.*** This would comprise support to micro and small-scale processing activities

through the use of simple, adapted and low-cost technologies of specialist equipment (e.g. feed and flour milling mixers, hoppers; roller/crusher mills, plate, stone, and hammer mills, dry extruders, flour sifters; pulpers, roasters; extractors, presses, crackers, and separators, among others), organized at community level by rural industrialists in associations and cooperatives. It would also involve the rehabilitation of existing medium to large scale agro-industries destroyed during the war-time, by private entrepreneurs and investors, as long as these are found to be viable and sustainable. The effort is being intended to support the establishment of marketing networks and link mechanisms with rural traders and producer associations to enable the concentration of regular raw material supplies from dispersed traditional smallholders.

IV. PROJECT OBJECTIVES

IV.1. The programme’s immediate objective is to achieve an overall increase in agricultural food, cash crop and livestock production in several parts of the country from traditional peasants and smallholding farmers. It would be driven by the physical integration of rural-urban markets, thus contributing to major improvements in the national food balance and eradication of endemic poverty. The ultimate objective is to promote the integration of agricultural and rural development with agro-processing industries aimed at achieving a better participation of these two sectors on the development of the country. These would be attained through sustained increases of rural employment and food security, and would be expected to have a combined effect on the formation, growth and efficient functioning of the local domestic market as a whole, a driving force for the sustainable development of the country.

IV.2. The *operational objectives* of the programme are related to:

- The improvements on tertiary and feeder roads; allowing the safe and free circulation and access of agriculture inputs and surpluses towards the farming areas, rural communities and commercialization systems on a timely, efficient and cost-effectively basis. The benchmarks to assess the achievement of this objective would be established by the extension of roads rehabilitated and de-mined, amount of rural bridges, culverts, low-levelled passages restored, among others;
- The improvements introduced with regard to the replacement of rudimentary, low-yielding, wasteful post-harvesting processes by modern, adapted and cost-effective technologies through the use of shellers, decorticators/hullers; crop conservation techniques, pest control practices; on-farm storage facilities and municipal warehouses and silos infrastructure; allowing farmers to reduce post-harvest and storage losses, hold stored crops with the risk of cross-contamination and deterioration in quality minimized, reduce seasonal shortages in the supply of marketable surpluses due to unpredictable events, take advantage of seasonal price rises, and maximize income from the production of durable food crops. The benchmarks to assess the achievement of this objective would be determined on the basis of the amount of specialist training sessions conducted, farmers and workers trained; portable round metal silos and bins, hullers/decorticators and shellers sold to smallholder and commercial farmers, manufactured locally, and in effective use;
- The improvements introduced with the replacement of rudimentary, low-yielding, wasteful agro-processing methods by modern, adapted, and cost-effective technologies through the use of feed and flour milling mixers, hoppers; roller/crusher mills; plate,

stone, and hammer mills: dry extruders, flour sifters; pulpers, roasters; extractors, presses, crackers, and separators, among others; allowing existing and new emergent micro and small entrepreneurs to modernize and attain high processing yields, obtain products with superior grading and uniform quality, more suitable to beat competing products of inferior quality and high price. The benchmarks to assess the achievement of this objective would be established by the amount of specialist processing equipment sold to private entrepreneurs and investors, manufactured locally, and in effective use. The amount of medium to large scale agro-industries rehabilitated and entered into production will also be taken into consideration;

- The establishment and strengthening of farmer and producer associations and cooperatives through the development of appropriate management, technological, environmental and productive skills to enable them to adopt participatory initiatives leading to the sustainable management of tertiary and feeder road networks; and, to the dissemination and expansion of the use of low-cost, specialist post-harvesting technologies and equipment;
- The establishment and strengthening of micro and small entrepreneurial and industrialist associations through the dissemination of low-costing, specialist agro-processing equipment, the participation of some of their members in study-tours to acquire experience on the manufacturing and processing of this equipment, to enable them organize the local production of such equipment in several parts of Angola, whenever this might be possible;
- The establishment of a consultation mechanism composed of relevant government authorities, including the MINADER, and business associations from the relevant agricultural, manufacturing, and transport sectors aimed at technically reviewing, discussing and recommending measures related to the adoption of a minimum price policy for basic agricultural food products; and to periodically review the nature, extent, ownership and use of the freight transport fleets as well as the regional and nation-wide transportation costs to ensure that such transport matches the needs of agricultural marketing.

V. PROJECT DESCRIPTION

V.1. The programme is based on an integrated approach to the central issue of the overall agricultural marketing, rural commercialisation and agro-processing infrastructure rehabilitation. It fits within the CAADP pillar 2. The fundamental concept of the programme is based on the rehabilitation of agricultural marketing, and agro-processing infrastructure and marketing networks. It aims at providing resettled communities with the opportunities, the ways and means to re-start a normal productive life and revive rural community activities. This is considered to be a pre-condition to put the country back on track to achieving sustained increases of food and cash crops, reduce famine and poverty, become food secure and develop its agro-industries.

V.2. The programme would be implemented in a decentralized and participatory manner by the relevant execution institutions, beneficiaries, and users. Individual projects would be identified, designed and managed at the province, with all stakeholders involved, project preparation, execution, and appropriation. The role of MINADER as the main, facilitating and central monitoring government agency would be to assist and monitor provincial governments, donors and stakeholders with a view to enhancing coherence, synergies and cross-fertilization among different initiatives, so as to avoid

duplication and overlapping, and replication. There would be individual projects and sub-projects for each programme component. The structure of the programme integrates three operational components as detailed here below:

Component 1: Rehabilitation of Tertiary and Feeder Roads Infrastructures

V.3. The strategies and priorities for the rehabilitation of rural roads have been set in the relevant section of the programme (paragraphs II.2., II.3 and II.4.). The identification of specific road links calls for the direct involvement of MINADER, funding/implementing agents, users and beneficiaries to enable the selection of priority road-links. This component call for landmine surveying and clearance, and the execution of full-fledged or one-off pothole rehabilitation works in critical sections or points of the selected rural roads, and the implementation of an effective rural roads operational regulatory framework capable of managing the implementation of this programme component.

V.4. The-mining and rehabilitation work should go hand-in-hand, with de-mining be carried out first. Basically, there are two zones of very high concentration of landmines: one, in the Centre, covering most regions of the provinces of Huambo, Bié, Kwanza Sul, and Benguela; and, another in the North, covering most regions of the provinces of Bengo, Kwanza Norte and Malange. In addition, there are contaminated areas spread all over the country, affecting particularly the following municipalities: Menongue, Kuito Kuanavale (all in Kuando Kubango), Alto Zambeze, Léua, Camanongue (all in Moxico), Soyo (in Zaire), and Cabinda. In the rest of the country landmines are widely dispersed (Source: UNDP, Map of Angola, undated). Therefore, it would not be feasible to start any rehabilitation work if the identified and selected roads are still or may be are mined. However, the presence of land mines should not constitute an impediment for the selection of these roads, unless de-mining may not be practical or would become unsustainable when compared to the construction of a new rural road. The programme reflects the cost of de-mining activities and these are computed at US\$16,000–24,000 per km for mechanical de-mining (this has been preferred to the significantly higher US\$32,000–40,000 per km for manual de-mining), and assumes a total road bandwidth of 8 meters, including shoulders and verges.

V.5. However, there would be a need to undertake joint field assessments covering the pre-selected roads with the participation of representatives from the local communities, to map out sections cut by ravines and waterways, covered by bush-trees, and contaminated with landmines. An estimated 800 km of rural road links per province has been allowed for in the provinces of Bié and Malange; this extension was reduced to 400 km by the reasons explained in the relevant section of the programme (paragraph II.4.). Therefore, the total extension of roads to be rehabilitated under this component is tentatively set at 13,600 km.

V.6. The final consideration for the execution of full-fledged or one-off pothole rehabilitation works in critical sections or points of the selected rural roads would stem from the joint field assessments. The works to be performed would be intended to restore the road condition to a normal situation. This would include cleaning and re-leveling the road surface, rebuilding sections and shoulders, filling holes with appropriate materials mix and, whenever required, re-compacting the pavement structure with improved granular soils (laterallites, gravels). The work would require the appropriate mix of labour, heavy earthwork and handwork equipment. The rebuilding work is intended to allow rural roads to support traffic volumes up to 50 vehicles per day, load charges approximate to 5.0 ton per truck axle, and maximum speeds of 30 to 40 km per hour. The single lane carriage of unpaved surface would have a maximum width of 3.0 to 5.0 meters to allow two commercial vehicles pass completely within the total width of 6 meters utilizing both shoulders (1.0 to 1.5 meters width

each). Participatory and labour-based construction methods are preferred to ensure the mobilization of in-kind and in-nature cost-sharing contributions from users, local communities and beneficiaries.

V.7. The creation of an effective rural roads operational and regulatory framework at province level, for the implementation of this component, plays a central role in the rehabilitation and implementation of a multi-year rolling cycle for road maintenance. Currently, the provincial governments lack an effective operational mechanism to mobilize the much needed technical, human and financial resources to be able to secure the longer-term rehabilitation and construction of new tertiary and feeder roads. Activities are implemented on ad-hoc basis and uncoordinated manner, as the central and provincial governments do not have the means and ways to undertake by themselves such a nation-wide task. This component would assist in the establishment of essential institutional, technical and services delivery capabilities at provincial level. It would help provincial governments to create the institutional set-up and regulatory framework for stakeholder mobilization, funding and cost recovery of road maintenance programmes. The implementation of the component through the individual projects would help in the formation of municipal road builders that will develop the skills and technical and management expertise that would be made available for the continuation of this activity in future. Modalities of operational leasing of road construction equipment held by INEA and MECANAGRO by these municipal road builders would be explored. In addition, this provincial capability would support the government to review the nature, extent, ownership and use of freight transport fleets, as well as transportation costs with a view to determining how such freight transport is contributing to the needs of agricultural marketing in different parts of the country and to make these recommendations effective.

Component 2: Improvements in Post-Harvest Storage Infrastructure and Marketing Networks

V.8. The strategies and priorities for improving food crop conservation, in house/on farm and municipal storage facilities have been set in the relevant section of the programme (paragraphs III.2. and III.3.). The identification of specific projects calls for the direct involvement of MINADER, funding/implementing agents, users and beneficiaries. In addition, this component calls for the introduction of more appropriate post-harvesting and crop conservation practices, techniques and technologies, together with the rehabilitation of on-farm and municipal storage infrastructure and marketing networks.

V.9. ***Cereals On-Farm and Municipal Storage.*** The current method of hulling customarily used by smallholder farmers and rural communities, consists on beating sacks containing maize cobs with a stick, is not sustainable. The method not only breaks and damages the grain that increases post-harvesting losses and facilitates insect attacks, but it is also a sluggish and tiresome operation for the women involved. In fact, it takes one full day for 2–3 people to hull/shell 500 kg of maize, when a manual huller operated by the same people can hull 2,000 kg of maize (4 times as much). The introduction and dissemination of manual hullers and shellers among organized groups of farmers (cooperatives, producer associations) is justified in terms of cost-efficiency and alleviation of women and children’s workloads.

V.10. In addition the practice of sun-drying grain can be improved, whenever possible, by the use of concrete-built threshing-floors (typical size of a 10 x 10 m platform allows for drying up to 3 tons of grains). Typically at present grains are stored in PVC sacks in the house to guarantee the household consumption, after harvest. Stored in this way grain can last 5 to 6 months maximum in some parts of the country. The Storage in fixed or portable metal silos is not used at present. Small round metal silos made of galvanized steel sheet with 0.5 mm minimum thickness and storage capacity varying between

160 kg and 1,800 kg can be effectively used. The selling price of a 500 kg metal silo costs around US\$60 and the same lasts for more than ten years.

V.11. On-farm storage has the advantage of allowing farmers to sell their produce at times of shortage, and reduces periods of short supply. With increased crop output, farmers could face considerable storage problems as result of moulds, insects and rodent pest. Among the most common insect plagues are the *Sitophilus* spp. and *Rhizopertha dominica*, and in particular the big bug, *Prostephanus truncatus*, a fearsome curse for stored maize (and dry cassava) that has already arrived in Malawi, Mozambique and neighbouring Zambia. The existence of this insect in Angola is still to be confirmed but one of the safe means of protection against this curse are metal silos as this allows for effective fumigation and decontamination.

V.12. **Roots/Tubers On-Farm and Municipal Storage.** Root and tubers crops contribute significantly to the basic dietary in urban and rural areas in Angola. There had been an increasing need to store and transport fresh produce but perishability is often a problem due to the high moisture content of tubers (60–80 percent when fresh). The traditional practice of drying milled cassava in the sun can be improved by the use of threshing-floors built in concrete; however once stored, cassava flour must be kept dry. Cassava is marketed and consumed in varied forms, fresh or dried, milled and roasted⁵. The major constraint in cassava processing is the availability of adequate equipments, particularly decorticators and flourmills, and adequate packaging. The specialist processing equipment kit would be in principle, composed of drum-scrapers, slice-cutter (IITA standard), pressers with water-collector, and roasters.

V.13. **Legumes, Vegetables and Fruits On-Farm and Municipal Storage.** Beans and groundnuts play an important role in the daily diet of local populations due to their nutritional content. The most common varieties of pulses include butter, macunde, and red beans. One of the post-harvest constraints of beans and groundnut crops is husking which is done by hand. The process has the advantage that it reduces the risk of microbial attack and the production of aflatoxins, but it is very laborious. The use of a small husker, 35 kg per hour capacity, and or a pulse splitter machine would raise post-harvest income and stimulate further production increases. The use of metal storage bins based on experiences learned in Southern Africa (for instance, Zimbabwe or Mozambique) has the potential to minimize post-harvest losses and improve beans storage. Groundnuts should be stored in cool, dry conditions in airtight containers away from the light to deter rancidity. Pulses are one of the most common victims of moulds that develop on the surface and inside of stored crops that have not been dried properly or become wet during storage. Common insect storage pests include *Callosobruchus* spp. Grain and pulses can be sun-dried on the ground or on platforms under which fires may be lit to increase rate of drying. However, the introduction of high-yielding grain and pulses variety may result in increased storage losses, as these varieties are usually more susceptible to insect damages than the local improved seeds that might be rescued.

V.14. The approach recommended would consist of distributing kits of small manual post-harvesting equipment to selected individual smallholder farmers. This is a task that would involve traditional authorities and producer associations. Depending on the food and cash crops farmed, the kits would be composed of portable round metal silos and bins, hullers/decorticators and shellers, and would be supplied using a combination of grants/micro-loans packages; if the loan amount required are large, these would be structured on the basis of trade credit guarantees, with collateral linked to the crop campaign. However this is based on the assumption that micro-loans would soon become

⁵ Among the main forms of eating cassava are: rough roasted flour (“*farinha torrada*”), fine and sour roasted (“*farinha musseque*”), dried and milled flour (“*fuba bombó*”), dried, watered and pressed (“*fuba macrueira*”). In some parts of the country, there are other forms like the “*kibeba*”, “*kibaba*”, and “*tolola*”.

available in most parts of the country. The kits would be introduced on a pilot and staged basis with intention to learn about their acceptance by farmers and how to adapt these to their specific needs. Initially, the number of the kits needed is put at 1,000 for high-yield provinces, 500 for medium-yield provinces and 250 for low-yield provinces (see table in paragraph II.6.). However, the programme foresees that these numbers may be increased after the trial period to 5,000, 1,000, and 500 kits per province, respectively.

V.15. Taking into account the past and present rural trade experience in Angola, the role of local authorities (“*sobas*”) and producers associations and cooperatives in the re-establishment of marketing networks is likely to consist of identifying the most productive and organized farmers, who maintain, or are capable of developing, a marketing relationship with food crop rural traders. The *sobas* and producer associations would exert their influence over the farmers to make them honour any repayments in the event of default.

V.16. To the extent that cereal production and surpluses would increase, requiring larger and more complex warehousing infrastructure than on-farm storage, the programme would also contain provision for the rehabilitation of municipal warehouses and silos. This would start in the regions where the concentration of rural commercialisation activities would occur first, and would, favour the emergence of two or more major food crop wholesalers in each province, setting conditions for a sound and durable food crop market competition. For indicative budgeting purpose, the programme assumes a cost of US\$120–160 per sq. meter for the warehouses and silos to be rehabilitated irrespective of their location. EPUNGU would work with local producer associations and municipal wholesalers and NGOs with a view to establishing the rules of utilization for these capabilities by different users and the introduction of affordable user fees intended to recoup the costs of maintaining these infrastructures in good order.

Component 3: Improvement to Micro and Small, and Medium to Large Scale Agro-processing Facilities

V.17. The identification of specific projects calls for the direct involvement of MINADER in close consultation with MININD, funding/implementing agents, users and beneficiaries. The component calls for the support to micro and small-scale processing activities through the use of simple, adapted and low-cost technologies of specialist processing equipment; and for the rehabilitation of existing medium to large scale agro-industries destroyed during the war-time, by private entrepreneurs and investors.

V.18. The approach to be followed would consist of distributing kits of small manual processing equipment to existing and new emergent micro and small entrepreneurs. This would involve local industrialists associations and wholesalers. Depending on the type of processing activities involved, the kits would consist of specialist feed and flour milling mixers, and hoppers; roller/crusher mills; plate, stone, and hammer mills (disk and hammer mills of 7 to 10 tons per hour are popular among urban flourmills but their use in rural areas is very limited); dry extruders, flour sifters; pulpers, roasters; extractors, presses, crackers and separators. The project would supply these kits using a combination of grants/micro-loans, which assumes that the latter would become available in most parts of the country soon. The loans would be structured on the basis of trade credit guarantees involving guarantors with recognized integrity and reputation. The kits would be introduced on a pilot and staged basis with intention to learn about their acceptance by the emergent entrepreneurs and industrialists and how to adapt these to their specific needs. Initially, the number of the kits to be supplied would be tentatively set at 500 for high-yield provinces, 250 for medium-yield provinces and 100 for low-yield provinces (See table in paragraph II.6.). However, the programme foresees that

these numbers would be increased after the trial period to 2 500, 500, and 250 kits per province, respectively.

V.19. Wholesalers play an important role in the concentration of marketing activities for unprocessed and processed crops, and they are in a unique position to link small scale producers with commercial banks and micro-finance institutions. Therefore, municipal wholesalers would be called on to play the fundamental role of guarantors for the purchase of these kits by candidate borrowers. The terms offered by the wholesalers to the industrialists would be matched by the projects that would pass them through to the wholesalers. The local industrialist associations would exert their influence on borrowers to make them honour repayments in the event of default. When such wholesalers are not present and cannot be identified, specialized NGOs with experience in agricultural development would be eligible to play such a role. (At present, CLUSA is already developing similar roles in some parts of Angola like Huíla and Bengo under micro-credit programmes funded by Banco Sol.)

V.20. The programme is based on the assumption that the rehabilitation of medium to large scale agro-industries, destroyed during the war would be undertaken by their owners and investors on the basis of investment projects prepared by the interested parties. A summary of the former processing units to be considered for rehabilitation is indicated in paragraph I.50. These mostly refer to agro-processing industries based on cereals milling, pasta processing and bakery chain, oilseeds refining, meat processing and canning, dairy products, canning and preservation of fruits and vegetables. They are located in regions with natural factor advantages such as access to markets and labour, and more developed industrial support, training and management centres like Luanda-Viana and Benguela-Lobito, in the coastal line; and, Uíge-Negage, Ndalatando-Dondo, Malange, Cela-Quibala (Kwanza Sul), Huambo, Bié, Huíla-Matala, in the hinterland. The overall cost of programme Phase I (2006–2010) is anticipated at US\$200m. Costs by each component will be identified during the formulation process.

VI. PROPOSED SOURCES OF FINANCING

VI.1. This is a high-profile investment programme that requires government’s full operational commitment and funding support. The government is expected to provide funding along the lines of the NEPAD commitment, i.e. 10 percent of its budgetary resources to be spent on the agricultural and rural development sectors by the end of this decennium (2004–2013); the finance gap would be matched by interested donors, and other stakeholders to whom the Angolan Government will present this proposal to obtain financial support within the framework of the NEPAD resource mobilization effort. The presentation of the Angola NMTIP to the *National Validation Workshop* in Luanda is the first of a series of meetings intended to review the technical and funding support to the Angola NEPAD initiative.

VI.2. The operational structure of the programme is composed of three basic components: the first deals with the rehabilitation and de-mining of rural roads (objective one); the second encompasses the improvements on crop conservation and on farm/municipal storage infrastructures and rural commercialisation (objective two); and, the third focus on the improvements on agro-processing divided in two types — micro and small-scale, on one hand (objective three), and medium to large scale, on another hand (objective four). The government and donor funding to support the project objectives one, two and three would be in the form of grants; the funding of objective four would be matched by soft-loans or concessionary loan packages. From the government side, the appropriate vehicle to channel soft-loan packages and make the funds available to the candidate beneficiaries would be the FDES (*Fundo de Desenvolvimento Económico e Social*). The Fund currently provides

soft-loans starting from US\$250,000 through a combination of concessionary terms including, grace periods up to 2 years, tenures up to 10 years and low interest rates. The Fund is not directly involved in the loan management; this is directly conducted by the branches of the Angolan commercial banks (BPC, BCI, BAI, and BCA) through the line of credit established by the FDES for the agricultural sector, “*Linha Verde*” (green line of credit). The commercial banks have the responsibility to review the project proposals presented by promoters and recommend the approval of the loan; then FDES and the funding bank share the loan risk on a 70/30 percent basis.

VI.3. The programme proposes that external soft-loans to be channelled towards this programme to support activity number four would be placed both with the newly created NOVO BANCO, a micro-finance institution supported by the IFC/WB, Chevron-Texaco, and Banco Sol, an Angolan micro-finance institution experienced in funding micro-loans towards the agriculture sector in collaboration with CLUSA, the Cooperatives League of the USA. This modality would require the sponsor donor and the micro-finance institution to agree on the terms and conditions of a funding agreement. Large-scale projects falling under the category of investment assistance would require separate finance mechanisms involving respective promoters, investors and commercial banks, which go beyond the scope of this programme.

VI.4. The GoA would further contribute with some INEA and MECANAGRO workers who would be seconded to the road rehabilitation projects, as well as military personnel involved on the de-mining activities. Whenever possible members of EPUNGU and UNACA provincial associations would be seconded to the programme as well.

VI.5. The beneficiaries who are the local communities at large, including smallholder and commercial farmers, rural traders and municipal wholesalers would provide in kind contribution in the form of labour on some civil works as well as materials.

VII. PROJECT BENEFITS

VII.1. In the short term, the main benefits would be accrued directly and indirectly by the individual project beneficiaries. Family and commercial farmers would directly benefit from the introduction of , improved on-farm storage systems, and post-harvesting processing equipment that will enable them to reduce post-harvesting and storage losses. Trained farmers would also have their knowledge on crop conservation and storage practices and techniques, expanded and would be able to use these on their farming activities. Rural traders and wholesalers would also benefit directly from improvements to municipal warehousing infrastructure that will allow them to store larger quantities of food crops, hold stored products with less risk of cross-contamination and deterioration in quality, and enable them to take advantage of seasonal price rises to maximize their income. Entrepreneurs and industrialists would benefit by the introduction of specialist equipment for grain, roots and tubers, legumes, fruits processing that will allow them to modernize and obtain high processing yields, processed products with superior grading and uniform quality, and face competition from products of inferior quality and high price. The range of direct benefits would also include the quality and safety of rural roads that would be improved as result of the de-mining and rehabilitation work.

VII.2. The indirect benefits of the programme to farmers, producers associations, and cooperatives would derive from the strengthening of these associations and cooperatives. Traders, freight transport and industrialist associations would also benefit from the programme implementation as more volumes of food and cash crops going to the market will increase their turnover. All would also benefit from improved conditions of the tertiary and feeder roads that would impact positively on the cost structure

of their operations. The rural communities would benefit from the improved agricultural marketing conditions created by the rehabilitation of rural roads, storage infrastructures and agro-processing facilities: they would also be able to find temporary and permanent jobs, increase household income, find food more easily in the marketplaces.

VII.3. Ultimately, long-term benefits would include, among others, the following:

- Smallholder and commercial farmers would have an opportunity to participate in strategic marketing of cereal crops such as maize, rice, millet/sorghum, wheat, beans, and fruits through warehouse receipt systems.
- The dissemination of post-harvesting equipment would accord the smallholder farmers and commercial farmers, who have well developed marketing strategies, a joint bargaining strength in the marketplace.
- There would be a built-in capacity for the smallholder farmers to operate small post-harvesting processing equipment in an efficient manner.
- An increase in income of smallholder and commercial farmers adopting improved crop conservation and storage practices and systems.
- There would be rural employment creation resulting from the extension of farming activities induced by an expansion of food crops demand in the domestic market and processing/packaging activities in the marketing chain.
- A drop in the rate of unemployment and absolute poverty among rural population would contribute to a reduction in thefts of agriculture produce and stored crops thus improving the safety conditions in rural communities.
- There would be an improvement in the lifestyle of the rural community through having more food staples available, better nutrition and health than before.
- The creation of an institutional set-up and regulatory framework at province level, to implement multi-year rural road maintenance programmes based on stakeholder mobilization and cost recovery participation; this would also help the formation of local road builders with the appropriate skills, and technical and management expertise.
- A reduction in road freight cost induced by improvements in the rural road condition and the opportunity that this would create for new operators to enter in the road freight business.
- There would be the creation of opportunities for the private sector to manufacture in some parts of the country the specialist post-harvesting and processing equipment introduced by the programme.

VIII. IMPLEMENTATION ARRANGEMENTS

VIII.1. ***Programme Implementation and Management Structure.*** The programme would be implemented on a decentralized basis and in a participatory manner by the relevant execution institutions, beneficiaries, and users. Individual projects would be identified, designed and managed at the province level to enable the participation of the different partners involved. The role of MINADER as the central monitoring government agency would be to assist and monitor local governments, donors and stakeholders with a view to enhancing coherence, synergies and cross-fertilization among different initiatives, avoiding duplication and overlapping, and replicating the most successful project formulae. There would be separate projects for each one of the three (3) operational programme components. To support this effort, a financial provision for the establishment of an implementation mechanism at nation and provincial level has been included in the programme total cost for Phase I. The continuation of this approach during Phase II will depend on the results achieved and lessons learned.

VIII.2. The monitoring of the programme at the central level would fall under the responsibility of a technical unit located within the *National Directorate of Agriculture, Livestock and Fisheries* (DNAPF). This unit would be responsible for technical monitoring and evaluation of the programme and, at the same time, of technical support to the provincial programme support units. To this end the technical unit would be comprised by one , coordinator, a specialist in rural development issues (including participatory planning, promotion of rural associations and cooperatives, operational and financial management); one basic infrastructures engineer, specialist in rural roads; and, one agricultural marketing specialist with focus on agro-industrial product chains (cereals/roots/tubers, fruit and vegetables, small ruminants and poultry). The project teams in the provinces, in consultation with the provincial support units, would be responsible for the preparation of the project implementation plans and for the decision-making process covering all aspects related to the projects implementation and execution.

VIII.3. At the local level programme coordination and implementation would fall under the responsibility of the *Provincial Directorate of Agriculture, Livestock and Fisheries*, a line unit within the Provincial Government, within which a programme support unit would be located. This programme support unit would be in charge of promoting the identification of individual projects in coordination with the provincial government departments, specialized NGOs, producer and farmer associations, cooperatives, entrepreneurs and industrialist associations, and other stakeholders. These units would report to the MINADER technical unit on the progress related to the project identification, and operational and financial implementation; the problems, constraints and opportunities. These units would also assist the project personnel on all actions required for the project implementation and execution, including the preparation of bids for the rehabilitation works to be performed, mobilization of rural communities, holding of sensitisation meetings about this agricultural marketing Programme. This will enable the communities in association with existing associations and cooperatives participate in the planning and implementation stages of the various components of the programme in different project locations.

VIII.4. ***Participatory Approach.*** The long-term sustainability of the programme would depend on the rural communities and smallholder farmers’ participation so as to enable them to feel a sense of ownership of the project from the initial inception stage to the final outcomes. Some of the provincial technical support roles in guaranteeing local communities participation might include one or more of the following:

- Consulting and keeping the community informed of activities;

- Disseminating technical messages and resolving any problem that might arise concerning the communities participation in the rehabilitation of rural roads, landmine clearance, introduction of new crop conservation practices and post-harvesting equipments;
- Taking appropriate action for work not being done or not being done properly;
- Ensuring the community has enough resources to carry out activities;
- Protecting the community’s interests;
- Ensuring proper use of all resources;
- Work towards achieving community’s vision;
- Proposing activities to the community for approval and receiving proposals from the community for implementation;
- Undertaking fund-raising activities for the community/cooperative or association;
- Making community/group action plans;
- Monitor/evaluate group activities.

VIII.5. ***Procurement, Audits and Evaluation.*** All contracted services such as mine surveying and clearance, infrastructure rehabilitation including tertiary and rural roads; warehouse and silo rehabilitation would be procured at the province level. Particular consideration would be given to procurement arrangements to ensure that projects are executed in accordance with the works specified in the bid documentation in a transparent, efficient and timely manner. Consultant services, works and equipment to be financed by individual implementing projects will be procured according to international procurement standards in use by international agencies to ensure transparency. Audits of procurement and disbursement of funds of the government and donors will be undertaken at regular intervals by external auditors. This will be complemented by the in-depth evaluation of project operations jointly undertaken by government, executing agencies and other stakeholders to assess progress in implementing the agreed activities, and examine major problems and constraints during the implementation stage. The contributing donors would participate in such reviews.

IX. TECHNICAL ASSISTANCE REQUIREMENTS

IX.1. Although this might be reviewed at a later stage, short-term technical assistance would be required in the following areas:

IX.2. ***Rural Roads Specialist.*** This long-term international/national expert will assist in preparing a rural roads policy and regulatory framework for the government to be able to implement multi-year rolling cycles for road maintenance with a view to mobilizing the much needed technical, human and financial resources and securing the longer-term rehabilitation and construction of new tertiary and feeder roads. The specialist will review and draft the basic technical and financial norms applicable to the roads rehabilitation programmes and projects to be adopted by the government.

IX.3. ***Training Specialist.*** This short-term international specialist would be responsible for preparing the training plans in country and abroad. The areas of training will include: cooperative and association leadership; labour-based road rehabilitation methods; crop conservation and storage

quality control, storage pests prevention and control; post-harvesting and specialist processing equipment; packaging/storage quality requirement; and, agricultural marketing. Possible reassignments.

IX.4. ***Post-harvest and Storage Specialist.*** This short-term international expert in crop storage, pest control, marketing, packaging/processing and quality control would be necessary to assess the local conditions for the introduction of more adapted techniques and technologies, sources, costs, and specify in consultation with local farmer associations, smallholder and commercial farmers the post-harvesting and specialized processing equipment. The expert should have qualifications in post-harvest technology and marketing. Possible reassignments.

IX.5. ***Monitoring and Evaluation Specialist.*** To keep track of programme objectives and intended goals and benefits (outputs), a monitoring and evaluation specialist would be required. The specialist would keep track of all progress of the various projects in preparation and going on and help guide its success by recommending timely remedial measures. This would be a national specialist position.

X. ISSUES AND PROPOSED ACTIONS

X.1. The success of the national programme would depend on a proper and systematic approach towards planning, design and implementation stages. The following issues need to be addressed to ensure maximum success:

X.2. ***Implementation of Financial Commitments by the Ministry of Finance.*** Agriculture currently represents only 0.73 percent of the national budget. This is major limitation for rehabilitation of the sector, and rural development as a whole. A serious commitment from the Ministry of Finance to accomplish the NEPAD targets is critical. It is clear that the government is prioritising investments in social sectors (education and health) and basic infrastructures related to safe water and electricity as well as the support to the re-settlement of displaced and former combatants and their families; however, if agricultural investments remain so low, the actions proposed in this programme will fail because the country would not be able to feed itself and the rural population will remain trapped in severe poverty.

X.3. ***Donor Coordination and Harmonization.*** The programme is based on the principle that donors would cooperate and make funding contributions towards the implementation of the proposed objectives and actions. However, it is important that there is good coordination between the different interventions, and that in particular a) the same technical standards and construction techniques are used for all the road rehabilitation projects; b) the kits of processing equipment should all be similar and based on comparable technologies and systems; c) the strengthening of local associations and cooperatives as part of the objective of local capacity building by providing them with the training, transfer of skills, and the responsibility to be part of the overall management of the projects.

X.4. ***Mobilization of Users, Beneficiaries and Local Community Contribution.*** The programme endeavours to mobilize contributions from users of rural roads in order to ensure the proper maintenance of these roads in future and to minimise government funding requirements. This calls for the establishment of a local funding mechanism based on voluntary contributions made by the different users of tertiary roads, including producers, freight truckers, and traders. The contributions should be agreed on in participatory manner to avoid having some paying more than they should, and putting the burden on the shoulders of the ones with less bargaining power. The formulae developed in one place should not be blind copied to another place, as stakeholders are not the same and their position in the market varies.

XI. POSSIBLE RISKS

XI.1. There are some risks that may affect the projects and the programme implementation, and these are foreseen in the following areas:

XI.2. **Implementation delays.** Fund disbursement, if tied to the government system is likely to cause unnecessary delays and possibly diversion of funds, as it has happened before on some projects. Whilst some of the delays may still be attributed to the unstable economic situation, many are due to unnecessary bureaucracy. The programme proposes a more autonomous and decentralized decision-making and management structure that should help to reduce such risks.

XI.3. **Farmer interest in crop conservation and post-harvesting processing and involvement.** Farmers may be reluctant to give up traditional farming and storage techniques and practices. Experiences drawn from other countries show that this may be difficult to change. However, the introduction of the new techniques and systems would ease the tasks of women and their children, as they would be the ones most benefiting by the changes. The refugees returning to their local communities that have become acquainted with these methods while in the neighbouring countries may also help the projects in the hard task of breaching possible cultural barriers. Finally, the projects should also seek help from local leaders of cooperatives, farmers associations and NGOs who are open to changes in agriculture, and can show with concrete examples how farmers can be better-off if they accept the new ideas.

XI.4. **Rural marketing.** The failure to implement rural marketing networks amongst wholesaler and traders could jeopardize the programmes objectives. The establishment of these networks would largely depend on farmers’ ability to produce and market their crop surpluses in order to maximizing their income. However, the critical point in agricultural marketing programme puts more emphasis on commercialisation rather than on the physical rehabilitation of market structures. Wholesalers play an important role in the concentration of marketing activities based on food and cash crops which are usually dispersed among many and micro rural trader and industrialist entrepreneurs. When these wholesalers are not present, the projects should be able to identify NGOs who can help and play temporarily this role.

XI.5. **Participatory approach.** Top-down approaches to the community might result in poor community participation in the implementation of activities. To counter this problem, the community groups and traditional authorities would be involved in the entire cycle of the project from planning to implementation and evaluation stages.

XI.6. **Rural credit.** The absence of accessible credit mechanisms in the rural areas is a critical factor that could put the whole programme objectives at risk. To cope with that, the programme has foreseen the constitution of a micro-loan fund that would be managed by specialized finance institutions; however, these institutions are not yet present in the most remote areas of the country, which makes their action to be limited to urban centres only.

Appendix 1: Key Agricultural Production and Retail Price Information

	1998/99	1999/00	2000/01	2001/02	2002/03
I. Food Crop ('000 mt)					
Cassava	3,130	4,433	5,394	6,628	15,373
Maize	428	395	429	557	1,032
Millet & sorghum	102	105	148	152	248
Sweet potatoes	182	224	353	423	782
Beans	68	75	–	91	249
Irish potatoes	19	13	–	179	87
Groundnuts	11	13	–	31	70
Rice	7	6	–	5	472
II. Livestock (kg)					
Cattle	4,155,564	1,663,170	–	1,700,967	–
Pigs	394,568	195,531	–	241,295	–
Sheep	92,771	20,127	–	56,903	–
Goats	327,148	118,410	–	663,878	–
Poultry	338,000	338,000	–	215,268	–

Source: Ministry of Agriculture and Rural Development; Ministry of Commerce; Ministry of Fisheries

Items	Jumbo			Sodispal			Shoprite		
	Feb.	Mar.	Apr.	Feb.	Mar.	Apr.	Feb.	Mar.	Apr.
Imported garlic	310,5	310,5	184,6	243,5	259,9	259,0	395,0	221,0	221,0
Local garlic	–	–	–	–	–	–	221,0	–	–
Imported potatoes	99,5	144,0	134,5	–	–	–	110,0	120,0	120,0
Local potatoes	–	–	–	90,2	93,5	93,5	73,3	–	–
Imported onions	199,1	165,0	195,6	95,9	–	–	139,0	199,0	199,0
Local onions	–	–	–	–	95,9	95,9	–	–	–
Imported carrots	260,0	284,0	260,0	483,8	259,9	259,9	279,0	279,0	279,0
Local carrots	205,8	–	–	45,7	51,7	51,7	–	115,0	115,0
Imported pepper	579,5	579,5	–	–	–	–	990,0	990,0	990,0
Local pepper	288,0	288,8	288,0	287,8	298,5	51,7	299,0	399,0	399,0
Imported cabbage	–	–	–	–	–	–	–	–	–
Local cabbage	245,0	265,0	270,0	27,9	77,1	34,5	69,0	220,0	220,0
Imported tomato	–	–	595,0	–	–	–	459,0	499,0	499,0
Local tomato	–	–	250,0	–	351,8	51,7	75,0?	250,0	250,0
Imported lemon	359,1	359,1	275,0	143,5	278,0	149,2	–	–	–
Local lemon	406,0	406,0	406,0	–	245,2	36,1	339,0	155,0	155,0
Imported orange	245,0	245,0	–	173,8	–	–	229,0	305,0	305,0
Local orange	–	–	330,0	–	–	–	–	–	–
Imported cucumber	–	–	154,7	–	–	–	249,0	–	–
Local cucumber	–	154,0	–	33,6	33,6	–	155,0	–	–

Source: CLUSA, Bulletin Issue nr. 11 (February), 12 (March), 13 (April).
Rate: US\$1= Kz88

Appendix 2: Distribution of Rural Associations and Cooperatives by Province

Province	Associations	Cooperatives	Membership
Cabinda	87	8	9,044
Zaire	90	0	6,474
Uíge	80	8	8,884
Bengo	380	10	44,956
Luanda	57	3	15,184
Kwanza Norte	178	–	23,265
Malange	400	–	35,928
Lunda Norte	194	3	9,677
Lunda Sul	103	–	7,518
Kwanza Sul	365	19	57,612
Benguela	238	2	17,783
Huambo	558	7	150,749
Bié	350	–	36,907
Moxico	211	–	21,199
Huíla	634	37	56,470
Namibe	50	–	3,247
Kunene	76	–	4,837
Kuando Kubango	122	10	62,357
Total	4,113	118	538,475
Source: FAO TCP/ANG/2907 ARDOR, April 2004			