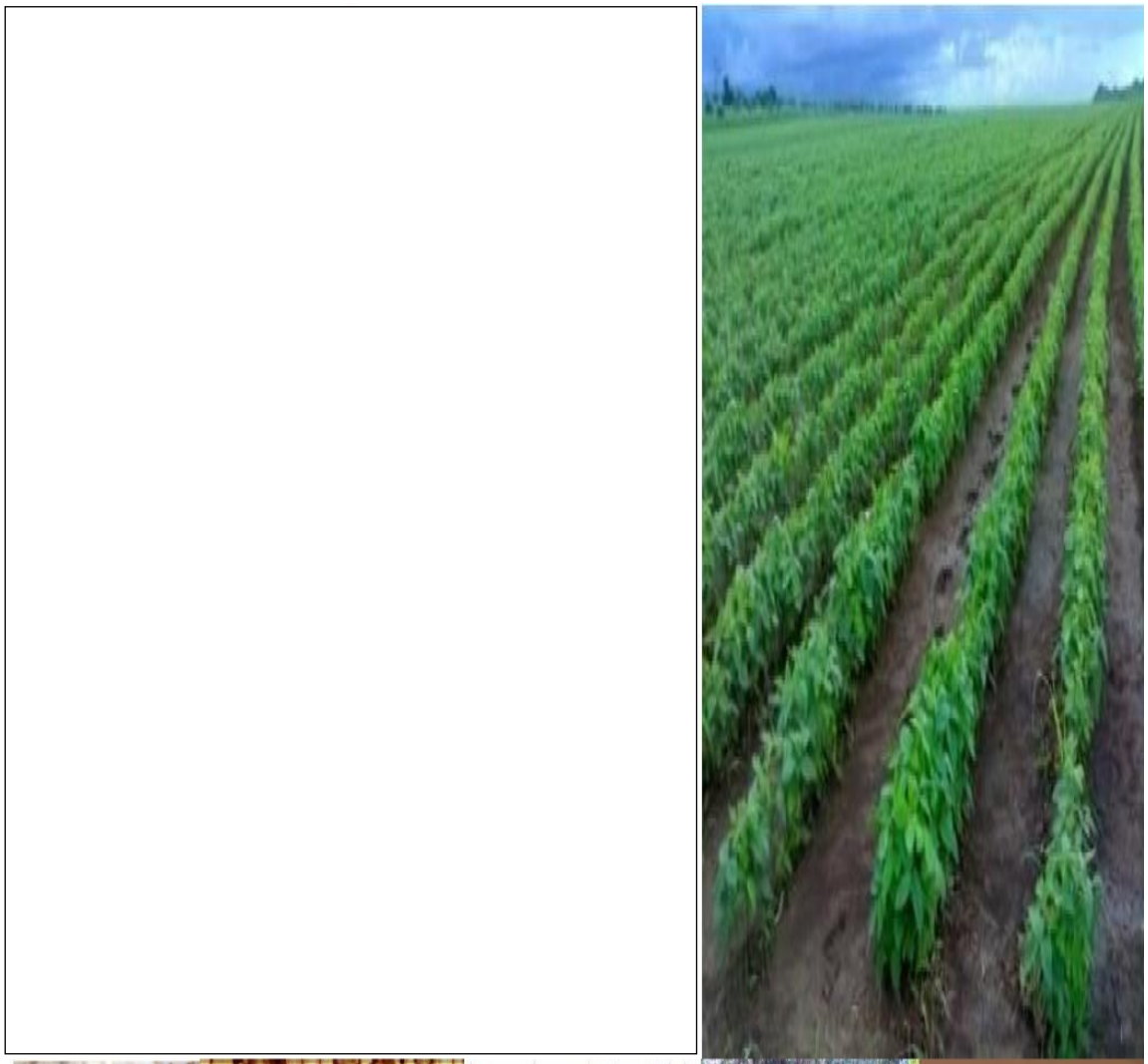

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Figure 1:Map of Mozambique

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Abbreviations and acronyms

Acronyms	Description
AICAJU	Industrial and Commercial Cashew Association
AAA	German Agrarian Action
ANE	National Road Agency
BAD	African Development Bank
BM	World Bank
CAP	Agro-Livestock Census
CAADP	Comprehensive African Programme for Agricultural Development
CENACARTA	National Cartography Centre
CCSA	Agricultural Sector Coordination Committee
CEPAGRI	Centre for the Promotion of Commercial Agriculture
CLUSA	Cooperative League of the United States of America
CFMP	Medium Term Fiscal Scenario
CTA	Confederation of Economic Associations
CZN	Zonal Centre North
CZC	Zonal Centre Centre
CZS	Zonal Centre South
CZIAs	Zonal Centres for Agricultural Research
DARN	Agronomy and Natural Resources Directorate
DFDIT	Training, Documentation and Technology Transfer Directorate
DCA	Animal Sciences Directorate
DE	Economy Directorate
DHAA	Agricultural Hydraulics Directorate
DUAT	Right to Use and Enjoy Land
DPAs	Provincial Directorates of Agriculture
DNEAP	National Directorate of Policy Studies and Analysis
ESAN	Food and Nutritional Security Strategy
ECF	East Coast Fever
EDR	Rural Development Strategy
ERV	Green Revolution Strategy
EMC	Peasant Field School
ET	Technical Team
FAO-TCIA	FAO Investment Centre
HIV/SIDA	Human Immunodeficiency Virus
IIAM	Agrarian Research Institute of Mozambique
IAM	Cotton Institute of Mozambique
INA	National sugar Institute
INIR	National Irrigation Institute
IFAD	International Agricultural Development Fund
INE	National Statistics Institute
InSAN	Food and Nutrirional Insecurity
GPS	Global Positioning System
GIS	Geographical Information System
GdM	Government of Mozambique
GTs	Working Groups

Acronyms	Description
M&A	Monitoring and Evaluation
MAE	Ministry of State Administrationl
MCC	Millenium Challenge Corporation
MDG	Millennium Development Goals
MINAG	Ministry of Agriculture
MP	Ministry of Fishery
MICOA	Ministry of the Coordination of Environmental Action
MISAU	Ministry of Health
MF	Ministry of Finance
MSU	Michigan State University
MPD	Ministry of Planning and Development
MOPH	Ministry of Public Works and Housing
OA	Annual Operative [??]
OGE	State Budget
ODM	Millennium Development Objectives
ONGs	Non-Governmental Organizations
OSC	Civil Society Organization
PAEI	Agricultural Policy and Implementation Strategies
PAAO	Year Plan for Activities and Budgets
PCAADP	CAAADP Pact
PARP	Action Plan for the Reduction of Poverty
PDP	Fishery Master Plan
PDD	District Development Plan
PEDSA	Strategic Development Plan for the Agricultural Sector
PES	Social and Economic Plan
PESPA	Strategic Plan for the Fishery Sector
PEMA	Strategic Plan for Agricultural Mechanization
PFNM	Promotion of Non-Wood Forest Products
PIB	Gross Domestic Product
PNIR	National Irrigation Plan
PITTA	Technologia Transfer Programme
POA	Products of Aimal Origin
PQG	Government Five-Year Programme
PMEs	Small and Medium Enterprises
PPEI	Fishery Policy and Implementation Strategies
PNISA	National Investment Plan for the Agricultural Sector
PNUD	United Nations Development Programme
PNIB	National Potato Investment Plan
ProAgri	Agricultural Programme
PRONEA	National Agricultural Extension Programme
PT	Technologicla Package
REPETEs	Periodic Technology Review
SAN	Food and Nutritional Security
SETSAN	Technical Secretariat for Food and Nutritional Security
SDEAs	District Services for Economic Activities
SDI	Infrastructure District Services
SDISA	Agricultural Documentation and Information System
SDMAS	District Services for Women and Social Action
SDEJT	District Services for Youth and Sports
SISLOF	Information System for Forest and Wildlife Management
UE	European Union
UEM	Eduardo Mondlane University
UNESCO	United Nations Agency for Science and Education

Acronyms	Description
USD	American Dollar
USAID	United States Agency for International Development

Chapter 1: Introduction

1. World-wide evidence suggests that agrarian-based economies such as Mozambique require major productivity growth in agriculture in order to achieve integrated goals of poverty reduction, national food security and broad-based economic growth. This in turn requires a well developed, coordinated and focused investment plan that facilitates public, private sector, farmer organizations and individual farmer participation. The National Investment Plan for the Agrarian Sector (PNISA) undertaken through the Comprehensive Africa Agriculture Development Programme (CAADP) seeks to identify and prioritize key investment and policy interventions that are critical to enhancing the desired agricultural productivity growth in Mozambique. To this end, the CAADP framework is used to facilitate the achievement of an annual agricultural growth rate of at least 6% in Mozambique triggered by an annual national budgetary allocation of at least 10%.

2. The PNISA was developed on the basis of a participatory methodology with strong stakeholder consultation and taking into consideration the following milestones: (i) in January 2012 a 20-member national Technical Team composed of Government, civil society and provate sector representatives and independent experts was created that guided the process using priorities established by the Strategic Plan for the Development of the Agricultural Sector (PEDSA); (ii) technical support from Lead Pillar instituitions and NEPAD Agency and FAO facilitation, technical and methodological assistance, (iii) national consultants supported the globalization and the elaboration of the PNISA master document (iv) working groups formulated proposals for the sub-sectoral investment plans, while involving the key stakeholders; (v) plenary sessions were held for the presentation and validation of the proposals. Expert Team conducted a public consultation session attended by government institutions, the private sector, international agencies and non-governmental organizations and civil society. The contributions gathered in the public sessions were subsequently analyzed by Expert Team before being incorporated into the final document.

Chapter 2: The Context of the Country and of the Agricultural Sector

A. The General and Economic Context of Mozambique

1. Mozambique is located on the east coast of Southern Africa, covering an area of 801.590 km^2, 13.000 km^2 of which are inland waters. A number of international rivers flow through the country, including the Zambezi River in the central part and the Limpopo River in the country's south. These two rivers provide water resources estimated at an annual volume of 216 km^3, 46% of which are generated internally. The demographic profile shows an estimated population in 2012 of 23,7 million people, 69% of whom will be living in rural areas. The estimated average population density is 19 inhabitants/km^2. The population growth rate is estimated at 2,8% per year, the same as in 2011. Life expectancy is 52,8 years for a median age of about 17 years. The infant mortality rate is estimated at 84,5 deaths per 1000 live births.[1] In 2011 the proportion of adults living with HIV/AIDS was 11,5%.[2]

2. As far as economic development is concerned, the real GDP growth rate was 7,2% in 2011 and is estimated to be 7,5% in 2012. This growth will continue for some time, largely based on capital-intensive projects, particularly in the extractive industry.[3] The current unemployment rate is 27% in the formal economy concentrated in the urban areas, which accounts for 32% of total employment. The efforts of the Central Bank to maintain a restrictive monetary policy supported by a Fiscal Policy have led to a reduction in the inflation rate. Annual inflation in 2011 was 9,5% and this is estimated to diminish to 7,2% in 2012. Meanwhile the country still depends heavily on foreign aid. Official development assistance in Mozambique accounted for 42,3% of the state budget (OE) and 14.9% of GDP in 2011. It is expected that foreign aid flows will continuously diminish from 51.4% in 2010 to 39,6% of the state budget in 2012. The 5 biggest donors of Mozambique in 2010 were the United States (USD 267 million), the European Union (USD 199 million), the World Bank (USD 192 million), Germany (USD 100 million), Portugal (USD 93 million) and Sweden (USD 92 million). In 2012 the list of partners including the World Bank (WB), the African Development Bank (AfDB), the European Union (EU), the United Nations Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), the World Food Programme (WFP), the United Nations Development Program (UNDP), the Millennium Challenge Corporation (MCC), the U.S. Agency for International Development (USAID), in addition to Austria, Belgium, Canada, Denmark, the United States of America, Spain, France, the Netherlands, Italy, Ireland, Japan, Portugal, Sweden, Switzerland and the United Kingdom.

B. Poverty, Food and Nutritional Security

3. The country is experiencing high expectations with respect to economic growth due to the recent news about discoveries of natural gas resources in the country's northern part. Despite the natural connections between future revenues from the extraction of hydrocarbons, and the picture of poverty and food and nutritional security, the country at

[1] National Institute of Statistics (2010) Annual Projections of Total, Urban and Rural Population 2007-2040.
[2] National Institute of Health, INE, MISAU (2009) *Inquérito Nacional de Prevalência, Riscos Comportamentais e Informação sobre o HIV e SIDA em Moçambique* (INSIDA). Maputo, Mozambique.
[3] Other sectors that have contributed to growth are the financial services sector, transport and communications and the construction sector.

present is still considered one of the world's poorest. The challenges posed by poverty in Mozambique are well reflected in the new Poverty Reduction Plan (PARP, 2011-2014) approved by the Government in 2010. The PARP concentrates on increasing agricultural production, promoting the development of small and medium enterprises (SMEs) and on investment in human and social development. However, statistics indicate that the average annual rate of poverty reduction in Mozambique between 1996 and 2009 was 1.17%. It is expected that by 2014, this rate will reach the ambitious level of 2.6%, i.e. more than twice the reduction achieved in the past 15 years. This ambitious goal will only be achieved by putting in place an efficient and systematic planning process during the operationalization of the PNISA. An analysis public spending indicate that budget allocation to priority sectors in 2012 was 66,7% of the total budget while in 2011 government tax revenue as a percentage of GDP increased slightly to 42,8%. The budget deficit was reduced to 14,9% of GDP while expenditure remained constant at 16% of GDP.[4]

4. With respect to human development, the literacy rate among adults increased from 45% in 2001 to 56,1% in 2010, with the highest among men (70,8%) against 42,8% among women. The enrolment rate of girls in both primary (109%) and secondary education (23%) remains lower than that of boys (121% and 28% respectively). However, the HIV/AIDS prevalence rate among adults was 11,5% in 2011, and this continues to be a disease that poses major challenges to the country. The infant mortality rate decreased from 125 ‰ in 2001 to 86.2 ‰ in 2011, while life expectancy for the year 2012 is estimated at 52,8 years.[5]

5. Agriculture has the potential to benefit from the current dynamics of the hydrocarbon sector through increased production of food crops and a growing income. These two subsectors together with those of fishery and livestock breeding make up the bulk of the programmes of the Investment Plan for the Agricultural Sector (PNISA). This comes down to a tacit acknowledgment of the fact that the current poor performance of the agricultural sector constitutes one of the reasons for the slow progress made by efforts to reduce poverty and strengthen food and nutritional security in Mozambique.[6]

6. National statistics show food insecurity rates of 35% of the population while stunting (height for age <-2 SD) affects 43% of children (DHS, 2011). According to the WHO the high levels (> 40%) of chronic malnutrition represent a serious public health problem for the development of human capital. As a result of malnutrition 50% of the children under-5 years in Mozambique cannot achieve the full potential in terms of physical, metal and cognitive development.It is worthy noting that 75% of children and 48% of mothers suffer from anemia or low iron in the blood. Anaemic children show slow growth, apathetic, anorexic and without energy. Anaemia during pregnancy and especially the first 1000 days of pregnancy is associated with irreversible cognitive damage. Vitamin A deficiency affects 69% and 11% of under-5 children and mothers in Mozambique respectively. Vitamin A defieciencies is associated with weakened immunity against infections and poor eye sight leading to blindness.

7. It should be noted that there are regional disparities of chronic malnutrition in the country, with the northern provinces of Cabo Delgado and Nampula having the highest

[4] Ministry of Finance (2011) *Relatório de Execução Fiscal do Orçamento do Estado – January-December 2011.* Government of Mozambique.
[5] UNESCO (2011). *Education Profile of Mozambique.* United Nations Educational, Scientific and Cultural Organization.
[6] Arndt et al., 2010; Cunguara & Hanlon, 2010; and MPD/DNEAP, 2010.

rates (> 50%) followed by the central provinces of Zambézia, Niassa, Tete and Manica with slightly lower rates (> 45%); and the southern provinces of Inhambane, Gaza, Maputo Province and Maputo City with lower rates (<40%) that are still considered high.

C. The Framework of Government Strategies and Policies

8. For the Government of Mozambique two policy and strategy documents are key: the Government Five-Year Programme (PQG, 2011-2014), and the Action Plan for the Reduction of Poverty (2011-2014). The primary objective of the **PQG** is the fight against poverty by improving the living conditions of Mozambicans in peace, harmony and tranquillity. To achieve this objective the government seeks to promote rapid, inclusive and sustainable socio-economic growth. Critical for the development of the agricultural sector is the government focus on the development of basic infrastructure, the creation of employment opportunities and the promotion of a business environment that enables private investment and private sector development.[7] In addition to the PQG, the government has the Action Plan for the Reduction of Poverty (PARP) 2011-2014, adopted on May 3 2011, which is the medium-term strategy to fight poverty in the country. This strategy operationalizes the recommendations of the PQG concerning actions against poverty. The general objective of the PARP is to fight poverty and promote a work ethics with a view to achieving inclusive growth that will lead to a reduction of the incidence of poverty from 54,7% in 2009 to 42% in 2014. Being of particular interest for the development of the agricultural sector, the poverty reduction strategy focuses on three key objectives: (i) an increase in production and productivity of agriculture and fishery; (ii) the promotion of employment; and (iii) human and social development.[8] Adding to these objectives are the support pillars on (a) good governance, and (b) macroeconomics. The PARP is a key link in the National Planning System (SNP) and is aligned with other important documents, such as Agenda 2025, with which it contribute to achieving the Millennium Development Goals (MDG). The financial allocations for the PARP are reflected in the Medium Term Fiscal Framework 2010-2014 (CFMP) and operationalized through the Economic and Social Plan (PES) and the State Budget (OE).

9. The planning and coordination instruments of the government for agricultural sector issues are based on a political-legislative framework with a series of policies and strategies, standing out among which are the Agricultural Policy and Implementation Strategy (PAEI), the Strategic Plan for the Development of the Agricultural Sector 2011-2015 (PEDSA), the Fishery Policy and Implementation Strategy (PPEI), the Fishery Master Plan 2010-2019 (PDP), the Development Plan for Small Scale Aquaculture 2009-2013 (PDAPQ), the Rural Development Strategy (EDR), the Food and Nutritional Security Strategy II (ESAN II, 2008-2015), the Multisectoral Action Plan for the Reduction of Chronic Malnutrition in Mozambique (PAMRDC) 2011-2020, the National Programme for the Strengthening of Commodities (2011-2016), and the Green Revolution Strategy (ERV).

10. The vision established for the agricultural sector in the medium / long run is the development of *"a prosperous, competitive, equitable and sustainable agricultural sector"* whose main objective is *"... to contribute to food security, income and profitability of agricultural producers and to a rapid, competitive and sustainable increase in market-*

[7] Five-year Plan of the Government (2011-2014). *República de Moçambique.* April 2010. Maputo, Mozambique
[8] Government of Mozambique (2011) *Plano de Acção de Redução da Pobreza, 2011-2014.* Maputo, Mozambique. May.

oriented agricultural production" based on 3 priorities, namely food and nutritional security, competitiveness of domestic production and higher income levels of producers, and the sustainable use of natural resources and environmental conservation. The vision is based on 4 strategic pillars, namely: (i) Agricultural Productivity and nutrition - referring to the increase in productivity, production and competitiveness in agriculture in particular in nutritious food value chains in order for it to contribute to a proper diet; (ii) Market Access – through improving services and infrastructure for better market access and making the guiding framework of the agricultural sector conducive to agricultural investment; (iii) Natural Resources, referring to sustainable use and the integral exploitation of land, water, forest and wildlife resources; and (iv) Institutions - by strengthening agricultural organizations and institutions.

11. The target groups of the plan are small, medium and large producers with the potential to produce for the market, and small and medium-sized enterprises (SMEs) that market agricultural inputs and/or technologies. Five specific strategic objectives have been established to this end: (i) increasing food production (including decreasing post-harvest losses) and the nutritional quality of foods; (ii) increasing market-oriented production with particular attention to the marketing of nutritious foods; (iii) improving the competitiveness of agricultural and fish producers; (iv) sustainable use of soils, water and forests; and (v) development of the institutional capacity of the agricultural and fishing sector. The implementation approach is based on the concept of value chain, so it is important to take into account actions related to: (a) the generation and transfer of technology and the provision of agricultural inputs; (b) agricultural and fishing production; (c) processing and marketing activities that add value to agricultural, livestock, fishery, forestry and wildlife products; and (d) the sustainable management of natural resources. Thus, the National Investment Plan for the Agricultural Sector (PNISA) adopts the very approach that has been established around the 4 links of the value chain.

Chapter 3: The Justification of the Investment Plan

A. The Main Constraints of the Agricultural and Fisheries Sector in Mozambique

12. In Mozambique, most of the constraints facing the agricultural and fishing sector are of a structural nature and they are fundamental in overcoming the challenges of poverty and growth. These constraints concern the lack of basic services that allow the producer/fisherman to make the best use of the relative abundance of the country's natural resource base. This causes the following dilemmas:

Low Agricultural Productivity and low nutritional value of crops

13. Despite the fact that low productivity and production are characteristic of the agricultural sector as a whole, the biggest concern is raising productivity and production and distribution of food and other agricultural products. The main challenges are the difficulties in increasing the use of inputs and modern technology, the limited availability of technical advice and support services in the sector and producers being spread out over wide areas separated by poor communication and transport networks. Despite efforts by the government and donors who support the sector to diversify crop production and promote the use of modern inputs in order to increase yields and farmer income, there is still long way to go. According to the CAP 2010 only 4% of the producers used fertilizers and only 7% use any pesticides. As a result the current average yield of, for example, maize is 0,9 ton/ha, sorghum yields 0,6 ton/ha, and rice about 1,0 ton/ha, which are about half the standard yields in the region in low management and medium level input systems. In addition to cereals cassava is a tuber that plays a significant role in the family diet and suffers as well??. The other product group important for the income of producers are the cash crops for exports, standing out among which are cashew, cotton, sugar cane, tobacco, soy, sesame and tea, which together make up about 25% of the total cultivated area.

14. The poor coverage and quality of the public extension and agricultural research network are considered other constraints for increasing agricultural production. Although public extension services cover all the country's 128 districts and 13 cities, employing a total of 872 extension agents and technicians, they serve a mere 11% of all farming families.[9] These services are responsible for disseminating information on technology, particularly in the household sector, which accounts for the bulk of food production. However, the extension services can only be effective in their mission if the current research system is able to meet the demand for innovation and adaptation required to achieve the objectives of increasing production and productivity. The public agricultural research system in Mozambique employs a total of 1087 people, only 16.7% of whom are researchers, and only 10.4% of these have a PhD. Most researchers work at the Directorates of Agriculture and Natural Resources (DARN); Animal Sciences (DCA), Training, Documentation and Technology Transfer (DFDTT) and in the Zonal Centers Center (CZC), South (CZS) and Northeast (CZN).

[9] It is estimated that the current coverage ratio is about 1 extension agent per 230 producers.

15. Even if productivity and production are increased, malnutrition and stunting will remain serious, wide-spread problems if a more diverse portfolio of crops is not cultivated in all regions and if more diverse diets are not promoted and adopted at large scale. According to the Food and Agriculture Organization (FAO), the food supply in Mozambique has "dramatically low" levels of micronutrient rich food. Despite strong government commitment to increasing national nutritional standards, the Global Food Safety Index rates Mozambique 5.8 on a scale of 100 for the availability of iron and vitamin A in the food supply with the world average of 53.7[10]. This situation can be attributed to production practices leading to a standard diet that is overwhelmingly dependent on high-starch, low micro-nutrient staple foods – maize, cassava and rice – and which is lacking in protein and nutritious fruits (except in season) and vegetables. This issue is closely related to both production (smallholders must be supported to cultivate a wide variety of nutritious foods) and to research: biofortified varieties of staple foods must be introduced and widely disseminated. For example, cassava varieties with higher levels of beta-carotene, which the body converts to vitamin A, as well as iron and protein, have been developed in Nigeria and Kenya.

Poor Market Access

16. The factors contributing to the poor use of improved inputs are its availability and high acquisition and transaction costs. Access to the market, both of inputs as well as of products is particularly constrained by the poor quality and sometimes by the absence of: (i) rural financial services; (ii) rural roads connecting consumer markets to production centers; (iii) agricultural information systems. What is needed is coordination of ongoing efforts to improve transport infrastructure, to foster market linkages, to control inflation and exchange rates, to liberalize prices and to reduce import tariffs of inputs, without which any intervention aimed at increasing productivity and encouraging the adoption of technology and return on investments will be difficult. The financing of the agricultural sector in Mozambique is heavily dependent on foreign aid to the state budget through the Ministry of Finance; on support funds such as ProAgri; or on off-budget funds in the form of direct project support. Total expenditure on agriculture and rural development, excluding debt interest, has been low.

17. The role of the state in responding to affected populations or vulnerable groups in areas of low potential will be recognized once the public sector ensures the transparent functioning of rural markets through the provision of information on opportunities and quality standards; establishes policies that encourage the development of markets for products with a high commercial value; and strengthens the functioning of markets for tradable inputs. Hence the private sector will respond with the necessary investments in storage and processing infrastructure necessary to add value to products, in particular of products from small producers organized in groups.

High Food Insecurity and Chronic Malnutrition

18. Part of the food insecurity in Mozambique results from sporadic food shortages caused by natural disasters. The latest and largest natural disaster with dramatic effects on the food security situation occurred in 2000. Torrential rains and cyclones systematically

[10] (Source: FAO. "Nutrition Country Profile: Republic of Mozambique." ftp://ftp.fao.org/ag/agn/nutrition/ncp/moz.pdf)

cause severe flooding in the provinces of Maputo, Gaza, Inhambane, Sofala and Manica, causing devastation. Apart from the displaced people and extensive material damage caused to public infrastructure such as schools, hospitals, water supply and electricity systems, road networks, railways and telecommunications, damages include the loss of crops, particularly perishable nutrient-dense food crops and livestock/livestock products. The period of flooding was then followed by two years of drought that affected a significant part of crops, thus leaving many families facing severe food shortages.

19. However, to address the impact of natural disasters on food security, it is extremely important to ensure that the investments and changes to be made in food production do not compromise food and nutritional security of vulnerable groups and the progressive realization of the human right to adequate nutrition (DHAA).

20. The effects of food insecurity are even more severe when many families in the country are weakened by diseases such as HIV/AIDS and malaria. These families lack manpower at crucial moments of agricultural activity, such as sowing, weeding and harvesting, and this has an adverse impact on cultivated acreage and yields. These families also suffer from malnutrition. Their nutritional state is poor and the lack of production that can be sold means there is no money available for health care. The low agricultural yields associated with little of modern inputs such as fertilizers and improved seeds, and the lack of proper water management also contribute to chronic food insecurity. In addition the poor quality of rural roads means that it becomes difficult for traders from other areas to effectively address food shortages.

21. Malnutrition, however, is not limited to the food-insecure, the sick, or those affected by natural disasters, though these factors contribute to its extremely high prevalence. Chronic malnutrition affects half of all children and almost half of all adults, and has not shifted in recent years despite improvements in poverty levels. Three-fourths of children and half of mothers suffer from anemia or low iron in their blood, and 43% of Mozambican children are stunted. The main cause is a non-diverse diet lacking protein and micronutrients, which is exacerbated by intake, high levels of infection and premature pregnancies. Malaria and gastrointestinal parasites affect half of the population. Half of the women who are attended in antenatal clinics have sexually transmitted diseases while half of those pregnant are still children. Only 40 percent of children under six months of age are exclusively breastfed. The underlying causes of malnutrition are due to limited access to and use of nutritious foods, poverty and inadequate practices in the care of adolescent girls, mothers and children, as well as insufficient access to health, water and sanitation services. Further exacerbating factors are the low level ofgeneral and nutritional education and gender inequality (the latter being responsible for premature marriages and pregnancies).

Access to Land, Water and other Natural Resources

22. Its natural resources are the country's greatest potential. Mozambique has enough land and water for agricultural development. Forests cover about 39 million hectares; the total area of arable land and pasture is estimated at 36 million ha, only 3,9 million ha of which are actually cultivated. The 10 agro-ecological zones of the country are diverse in terms of soil and climate. Annual rainfall varies from 327 mm in the southwest area of

Pafuri to 2.611 mm per year in the highlands of the Gurue district in the province of Zambézia (CAP 2000). The country has about 3,7 million farms, the vast majority of which (about 98%) are small. It is estimated that 96,9% of the area occupied by these farms is not covered by a DUAT (legal title for the use and enjoyment of land). Production is largely rain-dependent, given that only 115.000 farms have access to irrigation systems, in other words, 4% of all farms exploit 3% of the total irrigated area. Moreover, the country has 46,4 million ha of forests, 43,1% of which are productive forests and about 19% are actually national parks and wildlife reserves. The potential for timber exploration is enormous, it is estimated that there is 22 million m^3 of timber standing, with a potential to support an annual timber production of about 500 000 m^3. But all this potential can only be realized if problems exogenous to the agricultural sector are solved. Solutions include the improvement of rural communication, the marketing network, transport, infrastructure and essential support services for agricultural production.

Complex Institutional Coordination Environment

23. The institutions responsible for the framework of the agricultural sector are basically public sector organizations. The main coordination functions rest with the Ministry of Agriculture (MINAG) and include: analysis, formulation and monitoring of public policies (concerning land and agriculture); internal and external regulatory and audit mechanisms; service provision (extension and research). However, there are three semi-autonomous institutes in MINAG that are crucial for the agricultural sector and for rural development, namely the Mozambique Cotton Institute (IAM), the Mozambique Sugar Institute (INA) and the *Cashew Promotion Institute* (INCAJU). These institutions deal with issues of legislation, implementation and monitoring of policies specifically for these cash crops. In order to coordinate the involvement of the private sector the MINAG created the Centre for the Promotion of Commercial Agriculture (CEPAGRI) as a subordinate institute for private sector issues. The counterpart of CEPAGRI has been the Confederation of Economic Associations of Mozambique (CTA).

24. In addition to the MINAG, the following institutions are relevant: The Ministry of Public Works and Housing (MOPH) is responsible for water policy and management. The Ministry for Coordination of Environmental Affairs (MICOA) is responsible for coordinating all matters concerning the sustainable use of natural resources and the protection of ecology and ecosystems in the country. The Ministry of Industry and Commerce (MIC) is responsible for trade policy, including agricultural marketing. The Ministry of Planning and Development (MPD) has overall responsibility for national planning while resource mobilization rests with the Ministry of Finance (MF). The Ministry of State Administration (MAE) is responsible for rural development aspects. The Technical Secretariat for Food Security and Nutrition (SETSAN) is responsible for cross-sectoral coordination of nutrition-related activities, and the Ministry of Health (MOH) department of nutrition is responsible for nutrition-education and health-sector nutrition interventions.

25. In the dialogue with the private sector the Confederation of Economic Associations of Mozambique (CTA) has been the interlocutor of CEPAGRI. However, there are interest groups around specific sub-sectors - such as the Association of Cashew Manufacturers (AICAJU) in the cashew sub-sector; the Cotton Association of Mozambique (AAM) in the

Cotton subsector; the Industrial Association of Mozambique (AIMO) which includes the sugar subsector; and the Commercial and Industrial Association of Nampula (ACIANA) of Nampula province - who communicate inform their views to the government through CEPAGRI. Also active in the agricultural sector are Non-Governmental Organizations who run programmes supporting the production of certain crops, income diversification and agricultural marketing and the organization of small producers; as well as agricultural producer associations such as FrutiSul and FrutiCentro. These organizations play a vital role in the provision of services in rural areas.

B. The Investment Plan: Vision, Objectives and Structure

26. The PNISA reaffirms **the vision of the agricultural, livestock and fisheries sector** established in the PEDSA of developing "a prosperous, competitive, equitable and sustainable agricultural sector" whose objectives are "... to contribute to food security and nutrition, increase income and profitability of agricultural producers and the rapid, competitive and sustainable increase in market-oriented agricultural production". Specific objectives are: (a) accelerate the production of staple and nutritious food products; (b) guarantee income for producers; (c) ensure access and secure tenure of the necessary natural resources; (d) provide specialized services geared towards the development of the value chain; and (e) boost the development of the areas of greatest agricultural and commercial potential. The PNISA gives priority to the production of food and cash crops. Priority food crops are maize, rice, wheat, beans, cassava, tomato (and horticulture more broadly), potatoand orange freshed sweet potato; priority cash crops are cashew, cotton, soy, sesame and tobacco and priority livestock products are dairy products and eggs. The main goals established for the PNISA are (i) achieve an average growth of at least 7% per year over the next 10 years; (ii) the reduction of chronic malnutrition in children under 5 years of age, of 44% in 2008 to 30% in 2015 and 20% in 2020; (iii) the reduction by half of the proportion of people who suffer from hunger by 2015.

27. In order to materialize the vision and scope of the PEDSA objectives strategic actions have been defined that focus on food production based on the development of the sub-sectors producing cereals, pulses, vegetables and fruit, roots and tubers, livestock, poultry and animal sourced products (dairy, eggs), fish production and aquaculture. This approach provides for the establishment of public-private partnerships and the provision of subsidies to technological packages, mechanization and electricity supply related to the production of nutritious food products, as part of the incentives for private sector involvement. It is expected that priority public investments shall be directed towards geographic areas with a high agricultural potential and food insecurity, in particular the development corridors with easy access to production centers and consumption markets. In the remaining areas the state will support local initiatives in order to enable alternative income sources, including non-agricultural activities that contribute to food and nutritional security.

28. The PNISA is structured so that the programmes are understood and implemented from a complementary perspective. That is, except in cases where certain crops are the responsibility of specialist institutions and overseen by MINAG, the programmes should

be linked. Thus, support programmes for the improvement of productivity must be closely linked with other programmes such as for instance Agricultural Extension, Agricultural Research, Post Harvest Management, Marketing, and Institutional Strengthening. This view avoids duplications within the PNISA. Thus the PNISA is structured in 5 Components, 21 Programmes and 61 Subprogrammes. The Components are: (i) Improvement of Production and Productivity; (ii) Market Access; (iii) Food and Nutritional Security; (iv) Natural Resources; and (v) Reform and Institutional Strengthening. The PNISA structure of Components, Programmes and Subprogrammes is to be found in Table 2 of this document.

Table 1: Overview of the PNISA Structure

Component	Thematic area	Component/Sub-component
#1	Agricultural Production and Productivity	(i) Food Crops (Programme 1); (ii) Cash Crops (Programme 2); (iii) Fishery (Programme 3); (iv) Livestock (Programme 4), (v) Agricultural Research (Programme 5), Agricultural Extension (Programme vi); Hydro-agriculture (Programme 7) and Agricultural Mechanization (Programme (vii)
# 2	Access to Markets	(i) Post-harvest Management and Marketing (Programme 9); (ii) Financial Services (Programme 10); (iii) Agro-Business Development (Programme 11); (iv) Rural Roads (Programme 12); (v) Information Systems and Agricultural Statistics (Programme 13)
# 3	Food and Nutritional Security	(i) Improving Access to and Use of High Nutrititional Value Food (Programme 14); (ii) Multisectoral Monitoring and Coordination (Programme 15).
# 4	Natural Resources management	(i) Land for Agricultural Purposes (Programme 16); and (ii) Forestry and Wildlife (Programme 17); (iii) Institutional Development of the DNTF (Programme 18); and (iv) Mapping and Remote Sensing (Programme 19)
#5	Institutional Reform and Strengthening	(i) Institutional Reform (Programme 20); and (ii) Institutional Strengthening (Programme 21)
Cross-cutting issues	(i) Gender; (ii) Environment; (iii) Other sector policies & on-going plans; (iv) decentralization;	These are not stand-alone hence have no budgets of their own. They are fully integrated into the % components and corresponding 21 programmes and Services

29. The PNISA also includes a section on implementation mechanisms, monitoring and evaluation, and financing.

Chapter 4: The Key Components of the Investment Plan

COMPONENT 1: Production and Productivity

30. The main objective of Component 1 is to accelerate production through interventions in production, focusing on facilitating physical and financial access of producers to inputs and technology packages, in particular the production of foundation seed, the multiplication of improved seeds and access to agro-chemicals, in complentarity with the extension programme for cash and nutritious food crops.

31. The sustainance of production systems would require an efficient utilization of natural resources. This implies "an integrated production system having a site-specific application that will last over the long term" in terms of satisfying human food and fiber needs, enhancing environmental quality and the natural resource base, making the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls, sustaining the economic viability of farm operations and generally enhance the quality of life for farmers and society as a whole. There is need to develop sustainable production systems capable of doubling output; this requires attacks on all fronts, ecology, soils, agronomy, breeding, farm management, pest management, etc.: all in a systematic way which increases the productivity of complex farming systems. Productivity improvements in cereals, root and tubers, livestock, and high-value export crops may have significant effects on poverty reduction and economic growth. However, increasing productivity is better achieved through investments in agricultural research, roads, farm credit, and irrigation than through input and output subsidies.

32. Small land-holding among small-scale farmers is frequently attributed to labor and capital constraints; because Mozambique is often considered a land abundant country, land access is rarely considered a binding constraint for small-scale farmers. However, while labor and capital constraints certainly limit the size of farmers' fields, increasing evidence suggests that land constraints are a real problem in many customary land areas. However, increasing productivity is better achieved through investments in agricultural research, roads, farm credit, and irrigation than through input and output subsidies only.

Food Crop Programme

33. The Food Crops Programme focuses on facilitating access of producers to inputs in oder to increase productivity in food crop production. However, as facilitating access to inputs is not, in itself, sufficient to increase productivity in food crops, this programme should be closely linked with the Agricultural Extension, Agricultural Research, Post Harvest Management, Marketing and Institutional Strengthening programmes.

34. According to the CAP 2009/10 the cultivated area in Mozambique has increased by 45% between 1999/2000 and 2009/2010, to a total of 5,6 million hectares. This area constitutes about 15,7% of the estimated 36 million hectares of arable land in the country. More than 97% of the cultivated area is worked by the family sector. This sector is characterized by

the low use of improved technologies. Currently there are about 3,8 million farms. Only 2,51% of these used pesticides in 1999/2010, a decrease of 2,03% compared to 1999/2000. Access to credit also diminished from 3.99% to 1.69% of farms in 1999/2000. However, the number of farms that used fertilizer and irrigation increased relatively to 1999/2000 with 1% and 2.5%, respectively (CAP 2009/2010).[11] Most agricultural production in Mozambique originates in the family sector, which occupies more than 97% of the 5,2 million hectares currently planted with food crops, and whose production focuses on high-starch, low micro-nutrient staple foods. The family farm sector produces very limited quantities of horticultural produce, both because of a lack of suitable inputs (seeds, fertilizer, irrigation) and poor access to markets. Despite these challenges the country has recorded a significant growth in staple food production, resulting in particular in maize and cassava surpluses, based on the increase of cultivated areas rather than on an increase in productivity. Currently it is estimated that the average national maize yield is 1,2 ton/ha approximately half that of neighboring Zambia, while that of rice is 1,1 ton/ha and that of beans 0,5 ton/ha. The low productivity of food crops and poor transportation networks in the country leads to a present shortfall of staple foods such as rice of 316 thousand tons, wheat of 357 thousand tons, potatoes of 191 thousand tons and tomatoes of 92 thousand tons. This implies that a major effort has to be made to import food. The general objective of the Food Crop Programme is to increase food availability through an increase in productivity and production. In order to achieve this objective the following specific objectives have been established: (a) provision of certified seeds, including horticultural seeds and biofortified staple seeds; (b) provision of fertilizers; e (c) promote the use of improved technologies including low-cost irrigation and nutrient-rich biofortified seeds, roots and tubers. To this end, the food crops programme should have close links with the actions proposed in other programmes, including outreach programs, agricultural research, post harvest management and marketing, and institutional strengthening and reform.

35. The main constraints faced by the food crop programme are (i) poor use of inputs (improved seeds, fertilizers, pesticides) by producers, especially those of small farms; (ii) prohibitive prices of agricultural inputs, especially fertilizers; (iii) lack of production of normal and sowing seeds of crops such as rice, potato, cowpea, horticulture and biofortified crops and, consequently, a low availability of certified seeds; (iv) poor utilization of the main water resources and irrigated areas; (vi) lack of intersectoral coordination to fully respond to the production supply chain; (vii) lack of harmonization and alignment of efforts of the various stakeholders in the supply chain; (viii) poor conservation and processing capacity (including lack of cold chain) to reduce post-harvest losses of nutritious perishable foods; e (ix) degradation of access routes linking areas with a high production potential to consumption centers. The Food Crop Programme comprises actions by the following sub-programmes:

- The central objective of the **Sub-Programme to Support the Production of Maize** is the intensification of rainfed production systems in the areas with agro-ecological potential of the Centre and North, taking recourse to technological packages focused on the use of improved seeds (PT1) and fertilizers (PT2). Despite the surplus production of maize in these regions, the increasing demand for raw material for the production of animal feed in the region, and the need to respond to the current deficit of 295 thousand metric tonnes for human consumption in the country's south, justify a

[11] The CAP estimated that 3,75% and 5,27% of the farms use fertilizers and irrigation respectively.

response of the dimension of this subprogramme. Not undermining the role of farm mechanization, the average productivity expected by using Technology Package 1 (use of improved seeds) is 1,8 ton/ha, and that by using Technology Package 2 (improved seeds and fertilizers) is 2,5 ton/ha. On the basis of these productivity levels the total additional production at the end of the 5th year is expected to be 1,9 million tons, 1,7 million tons of which is based on package PT1, and 197 000 tons on package PT2. The specific actions of this sub-programme to increase the productivity and production of maize are: (a) infrastructure and policy inteventions for market development in rural areas for timely provision of affordable certified seeds, fertilizer and machinery ; (b) capacity development and information support for improved and expanded use of improved technologies (seed, fertilizer and machinery); (c) support for widespread access to technologies including appropriate practices and chemicals for control of maize pests and diseases; and (d) improvement of the storage facilities of produce at machamba level. The total costs of Government support to increase maize production, using both packages, amount to 38,2 million Meticais. It is expected that this will leverage additional private sector financing and implementation capacity.

- The central objective of the **Subprogramme to Support the Production of Rice** is the intensification of production in the low-lying areas of the provinces of Zambézia and Sofala, where at present about 90% of all rice growing areas are located; in the provinces of Nampula and Cabo Delgado where another 7% of the rice growing areas are to be found; and the remaining 3% in the South, particularly in the district of Chókwè in Gaza province and the District of Matutuine in the province of Maputo. Despite its growth, agricultural production still does not meet the consumption needs of the population, which is why the country imports rice in order to cover the deficit, which is estimated at about 316 thousand tons of clean rice. Rice production will take recourse to 3 technology packages, namely (a) Technological Package 1 (PT1), based on the use of improved seeds; (b) Technology Package 2 (PT2) based on the use of improved seeds, fertilizers and herbicides; and (c) Technology Package 3 (PT3), which consists of using PT2 under irrigation conditions.

- The actions planned for this subprogramme are: (i) provision of certified seeds; (ii) contract-programmes with specialized seed companies to ensure the production of certified seed varieties that are most productive and adapted to the production areas (e.g. ITA 312, Limpopo and Chupa, among others): (iii) support to small rice producers in selecting, processing and storing seed for future campaigns; (iv) support to associations of seed producers in multiplying and improving seeds (supply of sowing seed, inspection and technical assistance, and support in acquiring small units for seed improvement); (v) make producers aware of the importance of early sowing (October) in order to minimize the impact of sparrows, especially in the southern region (Chókwè irrigation scheme); (vi) provision of fertilizers at subsidized prices; (vii) promotion of the use of organic fertilizers (e.g. guano); (viii) strengthening of control and inspection of fields producing certified seeds; (ix) conducting phytosanitary campaigns for the control of migratory pests (birds, army worm, red grasshopper) and warehouse pests (weevils); and (x) control of weeds, by providing herbicides. The average productivity expected by using Technology Package 1 (use of improved seeds) is 1,6 ton/ha and that by using Technology Package 2 (improved seeds, fertilizers and herbicides) is 2,0 ton/ha. The average productivity expected by using Technological package 3 (PT2 under irrigation conditions) is 2,7 ton/ha. On the basis of these productivity levels the total additional production at the end of the 5th year is expected to be 1,9 million tons,

513 thousand tons of which is based on package PT1, 236 thousand tons is based on package PT2, and 372.8 thousand tons is based on package PT3. The total budget for this subprogramme is 6.331 million Meticais.

36. The **Subprogramme to Support the Production of Wheat** – at present wheat production is insignificant. The current shortfall in consumption is estimated at 357 thousand tons. This programme component aims at reactivating production in areas that are suitable for wheat growing by providing improved inputs to increase productivity and by encouraging the expansion of existing production areas. The objective of the subprogramme is the intensification of wheat production in areas with agro-ecological potential, using technology packages that include improved seeds (PT1) and improved seeds with fertilizer in areas where irrigation is ensured (PT2). Priority actions include: (1) testing of varieties; (2) local production of sowing seed; (3) selection, processing and storage of seeds; (4) training; (5) importation of certified seeds; (6) national production of certified seeds; (7) provision of technical assistance to producers; (8) conducting phytosanitary campaigns; (9) large-scale dissemination of wheat purchase prices; and (10) attracting the private sector. The average productivity expected by using Technology Package 1 (use of improved seeds) is 1,5 ton/ha and that by using Technology Package 2 (improved seeds and fertilizer) is 1,8 ton/ha. The average productivity expected by using Technological package 3 (PT2 in irrigation conditions) is 2,7 ton/ha. On the basis of these productivity levels the total additional production at the end of the 5th year is expected to be 1,9 million tons, 513 thousand tons of which is based on package PT1, 236 thousand tons is based on package PT2, and 372,8 thousand tons is based on package PT3. The total budget for the implementation of the subprogramme for the support of wheat production until the 2016/17 agricultural campaign is 692,7 million Meticais.

37. The **Subprogramme to Support the Production of Red Kidney Beans and other pulses**. The kinds of beans most produced in Mozambique are red kidney bean *Phaseolus vulgaris* and cowpea. Other beans produced in small quantities in the country include pigeon pea and bambaranut. The agro-ecological regions R 7, 8, 9 and 10 (see Figure 1) are the ones producing most legumes. Although both products are grain legumes, they have different market perspectives. The red kidney bean achieves higher market prices and is considered a cash crop. The cowpea is a subsistence crop and is prized both for its leaves and for its grain, which is often dried. The objective of the subprogramme to support the production of beans is the intensification of the production of red kidney beans in areas with agro-ecological potential, using technology packages with improved seeds (PT1). Priority actions to be undertaken in this component for the support of bean production include: (i) development/identification of high yielding varieties adapted to the production areas; (ii) production of sowing seeds by the IIAM and specialized companies; (iii) production of certified seeds; (iv) local production of seeds (certified and guaranteed); (v) survey of available and suitable areas for the production of red kidney beans; (vi) entering into a contract programme with specialized seed companies in order to ensure the production and importation of the most productive certified seed varieties; and (vii) provision of certified seeds; (viii) marketing support system and consumer demand creation for red kidney beans and other pulses. With these actions one intends to meet the national objectives that have been established and to realize the additional effort to increase the production of red kidney beans over the next five years till 2016/17. The average productivity expected by using Technology Package 1 (use of improved seeds) is 0,85 ton/ha and the total additional production at the end of the 5th year is expected to be 98,6

thousand tons of red kidney bean. The total budget for the subprogramme to support the production of red kidney beans is 396 million Meticais till 2017.

38. The **Subprogramme to Support the Production of Potato** (o**range fleshed sweet potato)** aims at improving the nutritional quality of production and import substitution, given the growing domestic consumption of potato and orange fleshed sweet potato in urban and peri-urban areas.

39. The objective of the subprogramme is the intensification of production, using the technology package based on improved seeds , vines and fertilizer under irrigated conditions (PT3). In order to achieve the above objective, the support component for irish potato and orange flesh sweet potato production will undertake the following actions: (i) contract-programmes with specialized vine and seed companies to ensure the importation and local production of the most productive certified seed varieties and vines adapted to the areas of production; (ii) provide support for the production of Irish seed-potatoes in Serra Chôa and Tsetsere in the province of Manica, and in Tsangano in the province of Tete in order to gradually reduce imports and support clean orange fleshed sweet potato vine material dissemination from locally based sources; (iii) increase the IIAM production capacity of irish seed-potato through tissue culture; (iv) provision of production inputs in potential sweet potato and potato production areas; and (v) ensure the availability of pesticides and application equipment. For irish potato, the average productivity expected by using Technology Package 3 is 18 ton/ha. It is expected that the current deficit is reduced to a mere 23 thousand tons by the 5th year of implementation of this component. The total budget of the Subprogramme to Support the Production of orange fleshed sweet potato and Irish potato is estimated at 1.533 million Meticais.

40. The **Subprogramme to Support the Production of Horticultural crops, with focus on Tomato**. With Mozamobique's supporting climate and agro ecology, nutritious fruits and vegetables show great promise for export and local market production. The greatest challenge will be processing to reduce loss due to perishability. The objective of the subprogramme is to pilot the intensification of production and marketing of nutritious fruits and vegetables coupled with health and nutrition messaging to generate demand and improve public health outcomes for rural farm and non farm communities.Nutritous fruit and vegetableconsumption by producers and through markets to non farm populations offers one form of improving nutrition security for the poor and undernourished through on farm consumption and through market-based income generation. At present the lack of support for these more nutritious commodities drives prices beyond the reach fromof poor households and public institutions seeking to improve nutrition security through dietary diversification. For tomato in particular, despite being produced at present in considerable quantities during the cold season, the national deficit is about 92 thousand tons. The objective of the subprogramme is the intensification of production in areas with agro-ecological potential, using the proven technology packages (PT3 in particular for tomatoes, which is based on the use of improved seeds and fertilizer under irrigated conditions). Priority actions to be implemented are: (i) provision of high yielding varieties seed (including hybrid varieties); (ii) provision of fertilizers and pesticides (insecticides and fungicides); (iii) support for local and export market development. The average productivity expected in the 5th year, using Technology Package 3 based on the use of improved seeds and fertilizer under irrigation conditions is 20 ton/ha. The additional tomato production at the end of the 5th year using Technology Package 3 based on the use of improved seeds and fertilizer under irrigation conditions is

expected to be 212,9 thousand tons of tomato. Total production costs amount to 761,4 million Meticais.

41. This subprogram will take a phased approach. First understanding market incentives for theproductionof nutritious fruits and vegetables for local and export markets. Given sufficient market opportunity this sub program will employ technology packages including the use of improved seeds and fertilizer under irrigated conditions. Priority actions to be implemented are: (i) research promotion and extension for nutrient-rich horticultural crops, (ii) provision of high yielding varieties seed (including hybrid varieties); (ii) provision of fertilizers and pesticides (insecticides and fungicides); e (iii) promotion, extension and demand creation to producers and consumers and; (iv) finance marketing and processing support

Table 2: **Selected Strategic Objectives and Indicators by Component**

Component	**Strategic Objective**	**Outcome Indicators**	**Outcome Indicator Values**		
			Unit	**B/line**	**Target**
Production and productivity	Increase production and productivity, in order to meet national needs, & promote exports	Production levels	'000 MT	230	900
		Area under production	10^6 Ha	1.8	3
		Average yield increased	MT/ha	1.0	2.5
		Technology adoption rates	%	15	20
Access to yield enhancing inputs	Improve access to yield-enhancing inputs (seed and fertilizer)	Percentage of farmers, by type (according to land holding size), using fertilizer	%	10	20
		Percentage of farmers using improved seed	%	5	35
		Quantity of fertilizer being applied by smallholders in crops	Kg/ha	2	25
Appliication of good agricultural practices	Promote GAP such as pest control, fertilizer application, weed management	Percentage of farmers that practice GAP	%	5	30
Application of agriculture mechanization	Promote mechanization of crop production systems (animal draught, etc)	Area under mechanized agriculture	'000 Ha	375	3000

Table 4 shows the budget per annum of the implementation of the Food Crop Programme, estimated at 9.751.634.000 Meticais.

Table 3: ***Budget of the Food Crop Programme, PNISA.***

Subprogrammes	Implementation Period (10^3 MZM)					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
1.1 Production of Maize	5,971	6,668	7,525	8,501	9,616	38,281
1.2 Production of Rice	759,323	1,061,782	1,254,204	1,486,638	1,768,573	6,330,520
1.3 Production of Wheat	132,718	135,557	138,472	141,460	144,526	692,733
1.4 Production of Red Kidney Bean	65,933	82,419	82,419	82,419	82,419	395,609
1.5 Production of Orange fleshed sweet potato and irish Potato	240,000	300,000	315,000	330,750	347,288	1,533,038
1.6 Production of Nutritious Horticultural crops, focus on Tomato	90,015	94,516	132,322	185,251	259,350	761,454
Budget (MT)	**1,293,963**	**1,680,943**	**1,929,940**	**2,235,017**	**2,611,772**	**9,751,634**

Cash Crop Programme

59. The Cash Crops Programme, unlike the previous programme, is more integrated in the sense that it goes beyond specific production activities and includes outreach activities specific to the crops to be promoted, adaptive research, processing, marketing, and institutional strengthening and reform. This is justified by the fact that the selected value chains (eg cashew and cotton) are the responsibility of specific institutions and overseen by MINAG, or private companies.

60. The **Subprogramme to Support the Production of Cashew**. In the early 1970s Mozambique used to be the world's largest producer of cashew. At the time the country marketed about 200 thousand tons per year and had a market share of about 40%. The installed processing capacity was 75.000 tons per year, exporting 20 thousand tons of cashew kernels per year. In the post-independence period marketed production declined sharply, reaching some 30.000 tons, the lowest level recorded in the 1980s. At present the country markets around 100.000 tons/year, it has an installed processing capacity of approximately 38.000 tons of cashew/year, exports value 50 to 60 million dollars (cashew and cashew kernel) and the cashew industry employs just over 8.000 workers. The cashew sub-sector is vital to the economic development of Mozambique because the production, marketing and processing of cashew is a source of income for about 1,4 million rural households, it generates economic activity for small, medium and large enterprises (formal and informal) and it has the potential to offer employment for thousands of workers. The main constraints identified by the Master Plan (2000-2010) that hamper the expansion of the subsector are the following: (i) the prevalence of pests and diseases exacerbated by the high cost of chemical treatments; (ii) frequent uncontrolled wildfires; (iii) reduced public investment and poor financial capacity of the state in meeting the needs of the subsector; (iv) poor research services and weak links between extension and producers; (v) poor quality of produced kernels; (vi) poor utilization of the potential of the cashew apple; (vii) difficult access to bank financing by traders and manufacturers from the cashew subsector; (viii) high transaction costs due to poor infrastructure in production areas caused by the poor state of the road network; (ix) limited value added to cashew nut processing, which does not allow the maximization of value added, and (x) poor coordination of and lack of control of the activities of traders involved in the marketing of cashew at primary level, mainly due to the entry of unlicensed foreign traders and "tourism visits" in the course of the campaign periods, creating unfair competition to small rural retail traders who are subject to taxation.

61. The implementation of the Cashew Master Plan 2000-2010 (PDC) resulted in important lessons learned on areas relevant for the development of this subsector. These include: (1) The need for a "Master Plan for Cashew Research" that is properly funded, with short, medium and long term objectives, duly financed and focusing on the production of genetic material (clones, varieties, etc.) adapted to the various agro-ecological conditions of the country; on technological solutions that reduce, permanently and sustainably, the costs of fighting pests and diseases (use of biological control and biotechnology); offering more options for producers by providing planting technology (polyclonal and multilocal seeds) that complements the various grafting techniques applied to seedlings; (2) Concentration of resources and efforts in production and distribution of seedlings, through (i) the development of production technologies of vegetative material with good genetic characteristics; the expansion of production areas by locating the centers of seedling production as near as possible to the areas with the greatest potential; rapid replacement of old trees, ensuring the survival of seedlings in the ground and adequate monitoring of the process until the seedlings have grown into productive trees; better balance between investment in integrated management and in production and distribution of seedlings; (3) efforts and resources in the marketing of cashew should be directed towards the promotion of a transparent, rational and disciplined business environment throughout the primary marketing process, particularly in licensing and supervision of the rural retail trade, the promotion of associations; and the identification of creative and innovative schemes for financing for marketing and processing of cashew, which ensure the consolidation and expansion of the cashew industry and its derivatives; (4) efforts and

resources in processing should be directed towards the development of incentives that ensure that factories continue to consolidate their positions and expand their processing capacity; towards deploying supply systems that ensure that factories are supplied first, given the exports of raw nuts; the definition of standards concerning hygiene, safety, work quality and the final product with a view to certification and; the identification of processing technologies that make the cashew industry and derivative activities more efficient.

62. In order to deal with the constraints indicated above, the Cashew Master Plan (PDC) for the period 2011-2020 was approved in 2011 in order to address the constraints mentioned above. The PDC defines as key areas the improvement and strengthening of germplasm, crop management and production systems, vegetative propagation, plant health and the strengthening of the national cashew processing capacity. Another area considered of paramount importance for the successful implementation of the plan is the formation and training of technical personnel, and for each one of the identified areas specific actions have been defined concerning research, promotion and extension, marketing and processing, financing, legal reform, institutional capacity building and technical assistance and monitoring. Within the context of the PNISA, the objectives of the Subprogramme to Support the Cashew Value Chain are based on the Cashew Master Plan 2011-2020, whose overall objective is to "Promote in a sustainable way an increase in production and quality of cashew, the organization of marketing and the structuring of the processing industry in coordination with all stakeholders with a view to transforming the country's comparative advantages into competitive advantages, increase the income of rural families, create employment and contribute to the improvement of the balance of payments". The subprogramme contains the following priority actions:

- **Development of Research**: the objective of this action is to promote, under the direction of the IIAM, the implementation of a research program that meets the needs of the cashew subsector. The focus will be on the production of genetic material (clones, varieties, etc.); the demand for technology solutions based on the use of biological control and biotechnology in fighting pests and diseases; the identification of options for the provision of planting technologies (polyclonal and multilocal seeds) that complement techniques of grafting seedlings.

- **Promotion and Extension**: the objective is (i) produce and distribute 21,3 million cashew seedlings by 2017 (an average of 4,6 million per year) adapted to the various agro-ecological conditions of the country. This action relies on the involvement of other partners through outsourcing schemes; (ii) introduce and popularize the direct sowing of cashew based on polyclonal and multilocal seeds (15.900 kg of seeds in 2016/17); (iii) the concentration of resources and efforts in the production and distribution of seedlings through production technologies of vegetative material; the expansion of production areas; the rapid replacement of old trees, ensuring the survival of seedlings in the ground and adequate monitoring of the process; a better balance between investment in integrated management and in the production and distribution of seedlings; (iv) spray 27,5 million cashew trees by 2017 (an average of 4,8 million trees per year), with strong involvement of the private sector (input suppliers, spray service providers, mechanics, etc.). Outsourcing will be consolidated and expanded to the production of seedlings by the private sector and NGOs, with INCAJU focusing on quality control of the sources of genetic material and the seedlings produced; with respect to the spraying of cashew trees a closer linkage will be

promoted between input suppliers and producers (particularly those in associations), including the possibility of introducing "voucher" schemes; also promoted will be a closer connection between processing facilities and producer associations, particularly concerning the supply of inputs and the provision of extension services. As far as integrated management is concerned the intervention of private providers of spraying services and the network of mechanics involved in maintenance and repair of spraying equipment will be expanded and consolidated.

- **Financing, Marketing and processing**: the action will focus on Marketing and processing: the objectives of this action are: (i) increase the marketed production of 112 thousand tons in 2011 to 136 thousand tons in 2016/17; (ii) expand the national cashew processing capacity of the current 38.000 tons/year to 54.400 tons in 2016/17 and export about 10.000 tons of cashew kernel; (iii) promote the industrial processing of cashew apple and other cashew derivatives. These objectives will be achieved by the private sector, leaving it to the public sector to create a suitable business environment and to mobilize financial resources and subsidies (guarantee funds, credit lines, leasing, etc.) that promote the marketing and processing of cashew nuts and cashew derivatives. Particular attention will be given to secondary cashew processing and the processing of cashew apple. Special attention will also be given to the informal cashew marketing and processing sector, in particular to the promotion of market linkages with the formal sector.

- **Financing of marketing and processing**: the specific objectives of this action are of specific interest: (i) identify and implement innovative mechanisms and solutions for incentives and financing, including guarantee funds and building factories under lease conditions; (ii) establish a technical assistance and mentoring fund for/of the cashew subsector. Financing will be done through subsidized credit lines, guarantee funds, leasing, rural finance/microfinance and carbon credits and should include the adoption of financial instruments that support the development of small and medium sized cashew plantations and the provision of inputs to small producers; (iii) establish a priority system for supply to factories, given the exports of raw cashew; (iv) define standards of hygiene, safety and quality of work and of the final product towards certification; (v) establish a technical assistance and mentoring fund for the cashew subsector.

- **Institutional Strengthening**: given that the development of the cashew sub-sector is attributed to an autonomous institution, INCAJU, with its own resources (technical, extension, and budget), institutional strengthening is critical to the implementation of the subprogramme. The specific objectives of **institutional reform** are: (a) establish an organic unity of technology, training, and mentoring; (b) review and adapt the cashew legislation; (c) a functional analysis of INCAJU; (d) improve monitoring, evaluation and statistics of the subsector. Significant parts of these activities will be undertaken by the private sector through contracting services. In addition to these activities, technical assistance, education and training throughout the cashew sub-sector is essential. These activities will be directed in particular to associations of producers, the cashew industry and the informal sector. Similarly, the monitoring and evaluation of the activities of the subsector will be guaranteed and an inventory of the national cashew stock will be made.

- The specific objective of **technical assistance** is to ensure technical assistance, education and training throughout the cashew subsector: in particular of producer associations, the cashew industry and the informal sector; ensure the monitoring and evaluation of the activities of the subsector and make an inventory of the national cashew stock.

63. Table 2 presents the planned budget for the Subprogramme to Support the Production of Cashew, which is estimated at 3.649.8 million Meticais.

Table 4 : *Budget of the Subprogramme to Support the Production of Cashew, PNISA*

Priority Actions	Implementation Period (10^3 MZM)					Total
	2013	2014	2014	2015	2017	
Research	52,012	36,233	54,720	47,113	53,598	**243,676**
Promotion and Extension	346,528	333,287	358,987	356.109	368,723	**1,763,634**
Marketing and processing	18,584	20,940	23,860	25,740	29,000	**118,124**
Financing of marketing and processing	148,050	170,890	145,804	168,100	198,276	**831,120**
Institutional reform	145,172	151,308	109,201	138,882	84,065	**628,628**
Technical assistance	7,192	8,712	10,722	12,580	15,380	**54,586**
TOTAL	**719,551**	**723,384**	**705,309**	**750,540**	**751,060**	**3,649,843**

64. The **Subprogramme to Revitalize the Cotton Value Chain** aims at recovering cotton production to the average recent levels of about 85 thousand tons/year, its subsequent development up to record levels and beyond, of about 200 thousand tons, thus increasing the income of the producers of this crop and that of the country from the export of cotton. The subprogramme has been formulated in light of the operationalization of the PEDSA and obeyed universally accepted methodologies, as well as those that specifically apply to the formulation of policies, strategies, legislation and subprogrammes at the national level. Hence this subprogramme specifically is an operational project of the PEDSA cash crop programme. The general objective of the subprogramme is to contribute to an increase in market-oriented production and in producer income, to the macroeconomic stabilization of the country and to attracting foreign exchange by increasing the production and productivity of cotton and its domestic industrialization. The specific objectives of the subprogramme are: (i) increase the production, productivity and quality of cotton; (ii) improve the trade and marketing of Mozambican cotton and its by-products; (iii) contribute to local industrialization of cotton products and by-products; (iv) adapt the policy framework and the institutional capacity of the actors in the cotton value chain to the level called for by the dynamics to be created.

65. This subprogramme aims at contributing to the improvement of market-oriented production by means of three-dimensional approaches of structured intervention in the public sector and its partners, in order to strengthen capacity: (1) Production of the small subsistence farmer in order to achieve productivity levels that ensure a basic family income; (2) Promote the revitalization and multiplication of productive means in order to increase competitiveness; and (3) Investments by large agricultural enterprises in order to forge links in the chain, including competitive markets for placing factors and means to harvest production. The public sector maintains its promoting role, with its responsibility for creating an enabling environment through the elaboration of policies, strategies, regulation, monitoring and evaluation, as well as for the intersectoral coordination needed for the creation of various infrastructural facilities for the private sector.

66. The main actions to be undertaken during the implementation of this subprogramme are:

- **Research:** The main activities of this action include: (i) the transformation of the CIMSAN into a Research Centre of Excellence and the acquisition of equipment for the CIMSAN; (ii) the structuring of programmes for technology transfers; (iii) the development of applied research based on operational plans for cotton research; (iv) the testing of production systems under diverse agroecological conditions, such as testing and introduction of genetically modified cotton; (v) the development of plant material under diverse agroecological conditions; (vi) the technical training of researchers on-the-job and formally); (vii) the development of knowledge about and technologies for dealing with climate change; (viii) microzoning of Cotton in partnership with the IIAM; (ix) the exchange of experiences; and (x) the development of the Cotton Seed System, which includes the establishment of a company for the production and processing of quality seed. The budget for this action is estimated at around 544.9 Million Meticais.

- **Training and Capacity Building**: this action contains two major components: (1) the large-scale training of Producers and Technicians; and (2) support to increasing the production capacity of cotton. Major activities within the context of producer and technician training are: (i) the development of a training curriculum that responds to the Better Cotton Initiative; the identification of technical and vocational training institutions; (ii) training and retraining of specialized trainers; large-scale training of producers in improving the quality of cotton and in managing agro-businesses (credit schemes); (iii) the development of producer organizations; (iv) the dissemination of information; (v) the promotion of gender equality in rural areas inside and outside the country; (vi) the acquisition multi-media vehicles; (vii) the establishment of Farmer Field Schools (FFS) and the organization of field days.

  As far as training is concerned, planned activities include: (1) the development of credit schemes; (2) the promotion of coordination between actors of the cotton mechanization chain; (3) the promotion of advanced producers and providers of inputs as part of the strategy to encourage the sustainable intensification of cotton production, broad use of equipment and mechanization implements and the promotion of conservation agriculture and good farming practices; (4) training in improving production and productivity of cotton, in order to respond to the Better Cotton Initiative. The budget for this action is estimated at around 171.2 Million Meticais.

- **Improved Marketing**: this action includes the following activities: (i) improving the image of domestic cotton in the international market and identifying profitable markets of final consumers; (ii) promoting the establishment of a national fiber marketing company to respond to national interests in the cotton trade and improve the system of fiber classification, including instrumental classification; (iii) the collection and dissemination of market information; (iv) Training of technicians and companies in international trade; (vi) establishing an agricultural insurance and other forms of risk management. The budget for this action is estimated at about 62.7 Million Meticais.

  Industrialization of cotton: the activities of this action involve: (i) strengthening the integration of the value chain and development of local infrastructure for the processing of cotton yarn; (ii) exploring the export tariff facilities within the region and internationally; (iii) the promotion of the processing of hospital cotton, and artisanal spinning and weaving; (iv) the coordination of the relevant actors in the value chain; (v) the integration of the deslintagem? of seeds in all cotton ginning factories. The budget for this action is estimated at about 57.5 Million Meticais.

  Institutional Strengthening: strengthening the capacity of key actores of the subsector includes: (i) promoting cotton in priority districts; (ii) Recruit and train field technicians and create proper housing and working conditions for them; (iii) create mechanisms for the annual approval of technological packages and incentives for the improvement of cotton quality; (iv) increase the presence and action of the IAM in priority districts through knowledge and cotton technology demonstration centers; (v) ensure compliance with the cotton legislation and mediate actors of the subsector; (vi) develop the information system of the subsector, manage and disseminate statistical information; (vii) Monitor the markets of seed cotton marketing; (viii) building the IAM headquarters in Maputo and draw up the preliminary design, the design and construct the building of the AMI office in Nampula; (ix) Readjust the role of the IAM in cotton promotion; (x) effectively and efficiently managing the subsector. The budget forthis action is estimated at about 1.082 Million Meticais.

67. The expected impact of the sub-programme to revitalize the cotton value chain is (i) the recovery of cotton production to about 60.000 tons per year, and the subsequent development to a record high of 200.000 tonnes per year, increasing the income of the producers and of the country from the export of cotton; (ii) the revitalization of cotton production and processing into a vigorous and profitable industry that will result in the settlement of populations in their areas, thereby contributing to the country's demographic balance; (iii) the increase of the current 20.000 seasonal and permanent jobs throughout the value chain to 28.000 salaried jobs. The overall annual budget for the Subprogramme and the priority actions is estimated at 1.918,3 million Meticais for 5 years.

Table 5: *Budget for the Revitalization of the Cotton Value Chain, PNISA*

Priority Actions	Implementation Period (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Cotton Research	45,668	67,466	79,436	133,714	102,074	**428,358**
Development of a Cotton Seed System	2,100	1,652	40,124	59,794	12,887	**116,557**

Large-Scale Training of Producers and Technicians	6,573	5,412	19,649	7,574	12,075	**51,283**
Support to the Increase of Cotton Production Capacity	0	980	40,194	36,358	42,364	**119,896**
Improvement of Cotton Trade	140	4,648	5,964	4,508	47,390	**62,650**
Industrialization of Cotton	2,520	3,920	3,920	2,590	44,604	**57,554**
Capacity building of Key Actors	10,836	45,626	252,193	311,368	462,017	**1,082,040**
TOTAL	**67,837**	**129,704**	**441,480**	**555,906**	**723,411**	**1,918,339**

68. The **Subprogramme to Support the Production of Tobacco**. In the post-independence period tobacco growing suffered a considerable decline in Mozambique, as a result of the interaction of various factors. Production in the 1999/2000 campaign stood at 4.655 tons. However, between 2000 and 2011, the combination of favourable ecological conditions accompanied by increased demand in international markets and the introduction of regulations for production, promotion and marketing in Mozambique led to a growth of about 15,5 times the volume of production, resulting in 72.000 tons produced by some 130 thousand peasant families. At present two companies operate in five provinces in Mozambique (Manica, Tete, Niassa, Zambézia and Nampula), producing three varieties, namely Burley, Virginia and Dark Fire, the most common being Burley. In addition to the generation of jobs and income tobacco farming has been responsible for the development of business linkages, the improvement of agricultural techniques not only in the field of tobacco but also of food crops produced in parallel, and for containing the exodus towards the cities. The main constraints for a continuous increase in production are (i) the difficulties in correctly implementing the promotion regulations, thus giving rise to problems that interfere with production, delays in the supply of production inputs; (ii) soil degradation due to deforestation without reforestation; (iii) poor tobacco drying conditions; (iv) insufficient technical assistance to the farmers; and (v) and various problems in the marketing process that may discourage producers.

69. The growth of tobacco production is dependent on the correct implementation of the regulations that promote the production, marketing and supervision, on the proper management of emerging conflicts, on reforestation of production areas, on research into the varieties best suited to the conditions and on the implementation of best practices in production. The objective of the Subprogramme to Support the Production of Tobacco is to “increase production and productivity, improve the classification of tobacco, the management of conflicts, the reforestation of tobacco production areas, the implementation and supervision of best agricultural practices (crop diversification for tobacco growers)”. Priority actions to achieve the objectives and targets established for the Subprogramme are:

- **Dissemination of Regulation**: this action will (i) ensure the permanent dissemination of the regulations on production, promotion and marketing of tobacco among actors of the subsector; (ii) establish inspection and finishing systems.

- **Agricultural research and Extension:** this activity will focus on research into improved tobacco varieties; and on the introduction of new technologies through extension.

- **Institutional Strengthening**: this includes activties related to (i) operationalizing conflict arbitration committee; (ii) training of farmers and conflict arbitration

committees in issues related to classifying tobacco; (iii) the purchase of means of transport to facilitate the functioning of the arbitration, inspection and enforcement committees in the provinces; (iv) monitoring of the marketing process; (v) ensure the holding of annual meetings of the tobacco subsector technicians. The total budget for this subprogramme is 25.985 thousand Meticais.

70. The total budget for this subprogramme is 25.985 thousand Meticais.

71. The **Bio fuels Subprogramme**. The Bio fuels Policy and Strategy adopted in 2009 created a platform for the promotion of bio fuels in the country. The factors that motivated the development of this instrument are (i) the promotion and use of agro-energy resources for energy security and sustainable socio-economic development, which also contributes to the reduction of gas emissions that aggravate global warming; (ii) the need to tackle the instability, unpredictability and volatility of fuel prices in the international market as well as to reduce the dependence of the country on imported fossil fuels. The general objective of this subprogramme is to promote the cultivation of raw material for bio fuels production in accordance with the agricultural zoning by avoiding the use of staple food crops, and following agricultural models that prevent the excessive development of monocultures. To achieve this general objective specific objectives were formulated, including support to the establishment of commercial projects for the production of raw material for bio fuels; the monitoring and evaluation of the performance of bio fuel projects; the promotion and evaluation of the integration of smallholders in the production chain of agro-energy crops. The priority actions of the subprogram are:

- D**evelopment of raw materials** - aimed at making an inventory of potential crops for bio fuel production; surveying agricultural development projects; research into crops and promising varieties for bio fuel production.

- **Investment Promotion** – aimed at establishing a platform for business discussions in order to attract investments in the area of bio fuels; the evaluation of various business models for the production and marketing of bio fuels.

- **Sustainability of the projects** - by following up on the development of sustainability criteria in different forums and markets, and developing Mozambique's capacity in this regard; the identification of development models for the sustainable production of bio fuels.

The bio fuels subprogramme will involve several institutions and civil society actors, whose actions are coordinated by the Interministerial Commission on Bio fuels (CIB), a body created by the Council of Ministers. The instruments for implementation include specific legislation on bio fuels in accordance with internal regulations and international agreements which together will constitute the Mozambican regulatory framework, in particular legislation on percentages of ethanol and biodiesel blends with fossil fuels, standards that incorporate this in fuel price structures, and the bio fuel purchase program. The total budget for this subprogramme is estimated at 6.6 million Meticais.

72. **Subprogramme to Support the Soybean Value Chain**. Soybean production in Mozambique started in the 1980s in the district of Lioma and the district of Gurue in Zambézia province,

promoted by the State Company for Agro-Livestock of Lioma (CAPEL). Production started as a result from a testing programme for soybean varieties by the then National Institute for Agricultural Research (INIA). At present the country has released a few soybean varieties. Varieties grown are Santa, Storm and Solitaire from the Seed Co / Zimbabwe, and the oldest variety Santa Rosa, originally from Brazil. Testing the adaptability of new varieties developed by the Institute of Agricultural Research of Mozambique (IIAM) and the International Institute for Tropical Agriculture (IITA) led to the identification of eight varieties adapted to the central and northern regions of the country. The varieties identified by the IIAM are Ocepara-4, 427/5/7, H7 and TGX 1740 - 2F and those are identified by the IITA are TGX1904-2F, TGX1908-8F, TGX1937-1F and TGX1485-1D.

73. Soybean production has seen significant growth in the course of recent agricultural campaigns. Statistics show that in 2008/09 soybean production was 16 thousand tons. In the following year, production increased to about 18.7 thousand tons. In the 2010/11 campaign production increased slightly to about 19.5 thousand tons. For the 2011/12 season expectations are that production will achieve about 21 thousand tons. The main constraint in the soy production is low productivity and consequently low production and poor competitiveness, resulting from the following factors: (i) the poor adoption of improved production technologies (implementation of good agricultural practices, widespread use of improved seeds, in particular disease-resistant and high-yield seeds); (ii) poor knowledge of varieties adapted to the different agro-ecological conditions of the country; (iii) poor availability of improved seed varieties; (iv) limited access to finance for the entire production chain; (v) weak incentives for marketing andagro- processing; (vi) weak extension network for these crops; (vii) poor utilization of main water resources and irrigated areas; and (viii) poor inter-sectoral coordination does not allow to respond fully to the production chain.

74. The overall objective of the subprogramme for the support of soybean production is to increase the availability of products through an increase in productivity and production. Thus, the specific objectives established include: (1) increase the availability of improved seed; (2) provide fertilizer; (3) ensure major pest and disease control; (4) increase irrigated areas through the construction / rehabilitation of major irrigation systems; (5) ensure the sustainable use of irrigated areas; (6) secure the market by promoting direct links with consumers, and (7) promote soy-bean processing, in particular for nutrient-dense foods for undernourished mothers and children . In order to achieve these objectives the target group of the subprogram was defined as the producers involved in the production of major food crops, with the capacity to generate a return on investment individually or jointly in associations, cooperatives, traders, agro-industrial/agro-processing companies and entities providing outsourced assistance that are located in the programme area. Two groups are being istinguished: (i) commercial producers, with agriculture oriented towards agri-business and with a cultivated area of at least four (4) ha rainfed agriculture and 2 ha irrigation agriculture, who have individual access to credit; and (ii) producers considered having priority, with cultivated areas of less than 2 ha (food security) who will have access to credit through their membership in associations.

75. The priority actions defined for the soybean production support programme are:

- **Financing:** Timley provision of credit by financial institutions;

- **Access to Inputs and Technology:** Timely provision of agricultural inputs (improved seeds, fertilizer, pesticides and inoculants) using pre-defined technological packages (P1-improved seed; P2-improved seed and fertilizer and a combination of P2 and P3 under irrigation conditions);

- **Extension:** correct application of agricultural practices and tending of crops; (4) making main irrigated areas economically viable; and ensuring technical assistance to producers.

- **Processing:** Creation of conditions for agro-processing; and

- **Marketing:** Creating conditions for marketing; improvement of storage of surpluses that should result in the intervention of various actors in the production chain.

76. This programme is expected to: (i) increase the productivity and production of soybean and sunflower crops; in case of soybean ensure the supply of raw material to the animal feed and food industries (with particular attention to foods directed at mothers and young children); (ii) in the case of sunflower, ensure the supply of raw material to the cooking oil industry; increasingly reduce imports of this raw material; (iii) increase the income of farmers involved in the production of these cash crops; and (iv) increase employment and entrepreneurship. The programme approach focuses on value chain, competitiveness in domestic and foreign markets, the potential of the ten (10) agro-ecological zones of the country, as well as on the corridors, in particular the Pemba-Lichinga Corridor, the Nacala corridor and the Zambezi Valley corridor contemplated in the PEDSA, and on the production and the conditions required by the production chain. The support of sunflower production will centre on the Nhamatanda district in the province of Sofala; the Sussundenga district in Manica province; and the Ribaue and Malema districts in the province of Nampula. In these geographical areas the subprogramme seeks selected locations specializing in production, which are supported with seeds, fertilizers, animal traction, agricultural mechanization, irrigation, phytosanitary campaigns, extension and research. The total budget for priority actions in supporting soy production is estimated at 216.24 Million Meticais.

77. **The Subprogramme to Support the Sunflower Value Chain**. Sunflower is a crop from the oilseed family, with enormous potential for production in the country, especially in the central and northern provinces. Sunflower production was established in the country during the colonial period, having been originally intended for the production of fodder and later for oil production. However, its production has dramatically diminished over the years. Only from 1992 onwards has the sunflower production programme been relaunched, consisting primarily in supporting research into cultivation in the country; and testing for the identification of varieties adapted to different agro-ecological conditions. The Faculty of Agronomy of the EMU played a crucial role in the research programme. Later, NGOs and other partners such as Care International, GTZ, CLUSA and others engaged in promoting the crop among smallholders by providing agricultural inputs, technical assistance, presses for the local processing of seeds into oil for the development of nutritious food products and offering support to marketing. Today, in addition to being a promoted crop, sunflower production ensures additional income to small rural farmers.

78. It is recognized that the current production of sunflower as well as the commitment of producers has grown due to the incentives provided by the government and cooperating

partners through the provision of quality seeds at subsidized prices, technical assistance and attractive marketing prices. Current sunflower production is dominated by the private commercial sector which, in addition to producing in its own production units, is encouraging small producers. Statistics show that sunflower production in 2008/09 was 16.7 thousand tons. In the following year, production diminished to approximately 14.4 thousand tons because of droughts in the central and southern regions of the country and the low purchase price. In the 2010/11 campaign production increased to about 19.8 thousand tons. It is expected that in output the 2011/12 campaign will reach 20 thousand tons.

79. The central objective of the subprogramme for support to the production of sesame in the short, medium and long term is to increase production by increasing the yield per hectare in order to satisfy the domestic market, and to explore the export market as a way to substitute imports. To this end the approach to be adopted will be to intervene in all segments of the value chain, including production, transport and storage, processing, distribution (domestic and foreign markets)..

80. The programme approach takes into account the potential of the ten (10) agro-ecological zones in the country, as well as the corridors, including the Pemba-Lichinga Corridor, the Nacala corridor and the Zambezi Valley corridor contemplated in the PEDSA, and on the production and the conditions required by the production chain. The support of sunflower production will centre on the districts of Angónia, Tsangano and Macanga in the province of Tete; the Nhamatanda district in the province of Sofala; the district of Gurue in Zambézia province; the Sussundenga district in Manica province; and the Ribaue and Malema districts in the province of Nampula. The total budget for priority actions in support of sunflower production is 206.23 Million Meticais.

81. The **Subprogramme to Support the Sugar Value Chain**. The Action Plan for the Sugar Sector is being implemented since 2007 and its main objectives are to ensure the viability of the sugar industry in the long term; and increase the contribution of the sugar sector to the socio-economic development of Mozambique. To achieve these objectives the sugar factories are implementing programmes to expand production areas of sugarcane, improving productivity through increases in yields while at the same time working on improving the capacity of the factories to respond to the large volumes of sugarcane resulting from the expansion of the production areas. The expansion programmes are supported by Accompanying Measures funds from the European Union (EU) aimen at supporting the sugar sector in its adjustment to the new market environment after the reform of the European Union in 2006. Among the adjustment measures priority is given to the integration of a research and technology transfer component (applied research and development of small and medium producers) as a way to create internal capacity to meet the growing demand for these services, which also manifests itself in emerging areas such as ethanol.

82. The general objective of this programme is to contribute to the overall performance of agriculture by promoting the competitiveness of the sugar sector, through the increased production of sugarcane and sugar in the country's four existing factories. The programme will monitor the implementation of the action plan for the sugar sector, with the following priority actions being planned: (i) expansion of areas where sugarcane is grown by smallholders in outgrower schemes; (ii) education and training of workers of the subsector; (iii) provision of social and support services in sugar production areas; (iv)

strengthening of the association movement among small sugarcane producers. The total budget for this programme is estimated at 105 million Meticais.

83. Table 2 shows the annual budget for the implementation of the Cash Crop Programme, estimated at 5,929,255.000 Meticais.

Table 6: *Budget of the Cash Crop Programme, PNISA*

Subprogrammes	Implementation Period (10^3 MZM)					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Support to Cashew Production	719,551	723,384	705,309	750,540	751,060	**3,649,843**
Revitalização da cadeia de Valor de Algodão	67,837	129,704	441,480	555,906	723,411	**1,918,339**
Support to Tobacco Production	4,417	8,317	4,417	4,417	4,417	**25,985**
Support to the Soy Value Chain	20,572	21,602	22,683	23,816	26,257	**114,929**
Support to the Sunflower Value Chain	19,638	20,620	21,651	22,734	23,871	**108,514**
Support to the Sugar Value Chain	35,000	35,000	35,000	-	-	**105,000**
Support to Fuel Production	525	900	1,170	1,800	2,250	**6,645**
Total	**867,540**	**958,217**	**1,251,111**	**1,379,013**	**1,551,695**	**5,929,255**

84. The **Subprogramme to Support Sustainable Land and Water Management and reduction of Climate Change Vulnerability**: With agriculture contributing 24% to GDP, 70% of the population depending on subsistence farming, and 40% of which are food insecure, there is urgency for adopting adequate measures to improve productivity and increase production. The Third Poverty Evaluation Report (2008/9) indicates that there has been a decline in productivity in recent years, and production increases has been sustained by increased acreage. With respect to climate risk, historical data shows that in the last 30 years the damages and losses resulting from natural disasters such as flooding, droughts and cyclones have been the most serious threats to reaching high levels of food as well as cash crops production. For instance, cyclone Jokwé has destroyed more than 1.5 million cashew trees in Nampula province which has serious affected the local cashew industry. The 1980's droughts and the 2000 flooding as well as the most recent 2007 and 2008 droughts and flooding contributed to reduction in food production which culminated with an increase in food insecurity and poverty in the central and Northern provinces.

85. PNISA has thus an opportunity through conservation agriculture to increase agricultural productivity and production and reduce vulnerability of agricultural production areas to drought, flooding and cyclones risks. As a result, PNISA will streamline agricultural conservation and reduction of climate change vulnerability into its programmes and sub programmes. These will done in two ways: (i) promotion of conservation agriculture with specific activities to promote conservation agriculture techniques for humidity retention and soil fertility in all programmes in the component 1 aimed at increasing productivity and production; and concrete activities within the Agricultural Research and Extension Programmes with the aim to produce and promote adoption of drought tolerant crops;

and (ii) reduction of drought and flooding vulnerability through concrete priority activities within (1) the Hydro-Agricultural programme with the aim at reducing the impact of drought by introducing or expanding alternative irrigation methods such as use of underground water for irrigation purposes in drought prone areas as well as transfer of water to highly hydro stressed areas; and (2) concrete activities that reduce vulnerability to flooding in the perimeter of irrigated areas through increased protection to irrigation systems.

86. Increased productivity and production to include:

- The Sub programme Conservation Agriculture objective is to promote conservation agriculture techniques for humidity retention and soil fertility to increase productivity and production in both food and cash crops. The aim is to increase acreage that adopts conservation agriculture techniques for the retention of soil humidity and fertility in all sites that produce food and cash crops.

- Within the Agricultural Research programme include a priority activity that is the Production and dissemination of seed varieties that a drought tolerant. The main activity will be to test, improve and multiply drought tolerant/resistant adapted to each Mozambique's agro-ecological regions.

- Within the Agricultural Extension programme include a priority activity that is Promoting adoption of drought tolerant/resistant crops. The aim will be to disseminate among producers drought tolerant/resistant crops appropriate to hydro stress in each of the agro-ecological areas together with conservation agriculture techniques.

- Within the Hydro-Agricultural programme include two priority areas: (i) Promotion of river conservation systems, and uptake of underground water for irrigation purposes in dry areas. The main activity will be to build or increase coverage of systems that capture and store water from rivers and underground deposits for irrigation in dry areas; and (ii) Protection of the perimeters of irrigated areas against flooding. The main activity is, within the irrigated areas, increase the protected area with infrastructure against flooding by building new channels or strengthening of existing ones to offer protection of the irrigated perimeters against medium and large scale flooding.

Fisheries and Acquaculture Programme

87. The marine fisheries and inland waters are recognized as being of great importance in the country due to its ability to generate income and foreign exchange, create employment and livelihood to fishing communities in the coastal zone and around large bodies of inland waters. However illegal, unreported and unregulated fishing is the greatest potential threat to the sustainability of fisheries resources in Mozambique

88. The programme focuses on fishing taking place on approximately 2.700 km of coastline, the great waters in the interior (e.g. Lake Niassa and the Cahora Bassa Reservoir), in rivers with permanent water flow and lagoons. In addition to these resources fishing has the potential to be practiced in an area of approximately 120.300 hectares available for the development of aquaculture. The fishing potential in Mozambique is estimated at 332.000 tons, the main resources being shrimp from shallow waters, deep water crustaceans, horse mackerel and mackerel and demersal fish. Global production in 2011 was about

190.000 tons, 85% of which is produced by artisanal fishing, 14% by commercial fishing and 1% by aquaculture. In 2011 the contribution of national fish production to GDP was a mere 2%. Both artisanal fishing and aquaculture are part of the Fishery Development Promotion Subsystem (PES, 2011). The Artisanal Fishery subsector is an integral part of rural development and has developed activities resulting in an increase in national fish production and in improvements of the livelihoods of fishing communities. Similarly, the Aquaculture subsector has contributed to an increase in fish production and consumption levels through promotion programmes of small-scale aquaculture in rural areas and the training of human resources for extension and support. The sector has a Fishery Master Plan - II (PDP-II) that establishes the following priorities: (i) food and nutritional security; (ii) the improvement of the living conditions of fishing communities and small-scale fish-farmers.

89. The Mozambican government has approved the Policy on Fisheries Monitoring, Control and Surveillance (MCS) and its Implementation Strategy as a Plan of National Action to prevent, deter and eliminate illegal, unreported and unregulated fishing. The policy and MCS activities are harmonized with the programs and regional and international protocols that the country has joined or is part (SADC protocol and Fisheries, The International Plan of Action for FAO prevent, deter and eliminate illegal, Not declareda and Unregulated-IPOA, the UN Convention on the Sea-UNCLOS). Selected interventions in the MCS include the following activities: (i) Raising awareness through informational materials, educational and media to fishermen and ship-owners to comply with the legal instruments concerning restrictions on catches of protected species and prohibited use of harmful arts, respect for seals and nesting period; (ii) Raise the quality of information provided by ship-owners to facilitate the monitoring and management of fisheries; (iii) Program shipments fisheries observers on fishing vessels in order to make catch records that will cross to the data provided by the captains of vessels; (iv) Acquisition of software (ERS) for electronic data recording adapated to national fleets; and (v) Training of technicians in the field of monitoring and management of fisheries at central and province.

90. The main constraints faced by the fishery sector are: (a) the supply of fish products to the population is at a low level and unevenly distributed throughout the country; (b) the potential of fisheries and aquaculture is underdeveloped and does not contribute to the fight against poverty as it should; (c) artisanal fishing communities continue to maintain high levels of poverty; (d) lack of infrastructure to support the development of small-scale aquaculture, in particular of stations/centers for the production of larvae, fingerlings and juveniles in order to allow small producers better access to tank populations, something which does not encourage the involvement of the family sector in this activity; (e) the unavailability of feed, a key element for species in captivity, which constitutes an obstacle to the development of the activity; (f) lack of access to and availability of credit for small fish farmers and artisanal fishermen; (g) use of gear that harms the development of artisanal fishing; (h) a poor marketing network for fishing products and supplies; (i) the use of non-motorized boats, which impedes fishing in the open sea.

91. The general objective of the Fishery Programme is to *increase the availability of fish, through increased fishery production and productivity*. The specific objectives of the programme are: (1) expansion of the national tilapia production; (2) promotion of small-scale aquaculture; (3) establishment of a disease monitoring and prevention plan; (4) promotion of improved gear for fishing in the open sea; (5) creation of conditions for the deployment of fishery support infrastructure; (6) extension of the marketing network for

fish products and inputs; (7) promotion of micro-financing; (8) institutional capacity building. priority actions planned for the fishery programme are grouped into three sub-programmes, namely (1) Development of artisanal fishery, (2) Aquaculture development, and (3) Institutional support.

92. The **Subprogramme for the Development of Small-Scale Fishery** - as an integral part of rural development and household nutritional security, this subsector has a positive impact on the national fish production and on the living and working conditions of fishing communities [it has an impact on production, or it increases production, but it is nonsense to say that it has an impact on the *increase* of production]. In order to achieve these objectives the Council of Ministers approved the Strategic Plan for the Artisanal Fishery Subsector (PESPA) in 2007, one of whose guidelines is the improvement of the living conditions in fishing communities. Priority actions are:

- **Support to the development of Artisanal Fishery** – this includes the following activities: (i) development of fishing based on traditional crafts and methods providing better results corresponding to their potential; (ii) promotion of fishing on the open sea;
- **Extension of fishery**: Support to the development of fishing through the transfer of traditional crafts and methods best suited to its potential in every zone; the promotion of fishing on the open sea for the more advanced forms of fishing; expanded extension activities concerning fisheries with a focus on the marketing of fish products and inputs, providing a wider sustainability and development base for artisanal fishing, both with regard to subsistence and commercial fishing;
- **Financial services**: this includes financing through credit of activities related to artisanal fishing (e.g. marketing of fish products and inputs; more developed and accessible financial services, which not only cater to fishing but also contribute to the diversification of activities of the community members.

93. The **Subprogramme for the Development of Aquaculture** – at present the level of aquaculture development in Mozambique still is unable to remedy the food shortage in fish, ensure food security and contribute to the balance of payments. In order to increase aquaculture production and GDP growth this subprogramme intends to undertake the following actions:

- **Promotion of small-scale aquaculture**: this includes (i) support for the emergence of market-oriented family fishfarming; (ii) the identification of formulas to induce, incubate and monitor the rapid emergence of a national low-cost feed industry based on local ingredients.

- **Fishery health situation**: this includes: (i) conducting a study to assess the epidemiological situation (to prevent the occurrence of viruses) of shrimp and to adopt international standard measures for disease control; (ii) the development of a disease control and prevention plan.

- **Expansion of Tilapia Production**: this includes the following activities: (i) the construction of demonstration units for the production of tilapia in order to draw attention to the participation of the family and private sectors; (ii) the identification of ways that are conducive to the production of low-cost feed for the production of fish by family-based

aquaculture; (iii) the construction of a production facility of tilapia fingerlings in order to supply improved fingerlings with a view to increasing production and productivity; (iv) the production of fingerlings, the acquisition of means of transportation, the training of technicians and producers and the transfer of technology to support the development of fish farming throughout the country.

94. **Institutional Support Subprogramme**: this action includes (i) the development of fisheries extension, (ii) training and capacity building; and (iii) the revision of the aquaculture Regulations.

Table 7**:** *Selected Strategic Objectives and Indicators by Component*

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Fish seed Development	To produce quality fingerlings of right species in sufficient quantities	Increased quantity of improved quality and accessible fingerlings	# million	20	90
Pond and Dam Aquaculture promotion	To establish pond and dam Aqua-parks on the appropriate areas by conducting the EIA.	Increased production and productivity of areas without capture fisheries in their catchment	MT of fish/ ha/ yr	4,000	30,000
Enhancement of Capture fisheries production	To restock the depleting capture fisheries through Aquaculture	Sustainable recruitment of juvenile fish in the depleting lakes	MT fish/ yr	70,000	90,000
Enhancement of Marine fisheries production	To restock the depleting capture fisheries through Aquaculture	Sustainable recruitment of juvenile fish in the depleting lakes	MT fish/ yr	70,000	
Climate change and climate variability	To establish an early warning and planning system.	Adoption rate of climate change or variability mitigation strategies	%	0	75

95. Table 4 shows the budget for the Fishery Programme, estimated at 11,288.3 million Meticais.

Table 8: *Total Budget of the Fishery Programme, PNISA*

Subprogrammes	Implementation Years (10^3 MZM)					
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Artesanal Fishery	110,878	103,948	85,381	74,766	69,301	444,275
Aquaculture	1,638,474	2,268,712	2,495,767	2,135,841	2,248,675	10,787,469
Institutional Support	20,842	12,070	9,035	8,802	5,758	56,506
TOTAL	**1,770,194**	**2,384,730**	**2,590,183**	**2,219,409**	**2,323,735**	**11,288,250**

96. Marine fisheries mapping and surverance

- The fishing activity involves mainly three subsectors, namely, industrial fishing; semi-industrial fishing and artisanal fishing. Industrial fishing is carried out both in the territorial

sea (12 nautical miles) as well as along the exclusive economic zone (200 nautical miles), while the semi-industrial fishing takes place from the three nautical miles and over 12 nautical miles. The fishing takes place along the entire coast to the three nautical, an area reserved for this subsector exclusively. Whether fishing industry as well as the semi-industrial fishing is done in areas delimited and licenses are assigned depending on the resources and targets obeying a plan for fisheries management aimed at sustainable exploitation of resources, equilibrium ecosystems and protect the aquatic environment. Besides fishing in these subsectors are thought to a lesser extent the sport fishing and creative with a specific regulation (Decree n º 51/99 of 31 August) and fishing.

- Under fisheries research, the following activities will be required: (i) Fishing in Industrial and Semi-industrial areas: (i) Assess the resources to ensure optimization of Shrimp, and Gamba Kapenta, (ii) Application of updated VMS software to improve the monitoring of fisheries; (iii) Assess potential fishing other crustaceans (Lobster and Crayfish) depths through specific cruises; (iv) Evaluate the occurrence of springs and advise the best forms of exploitation through research cruises, cephalopods and Shark.

- In Artisanal Fisheries areas: Recommend measures for the management of artisanal fisheries by district or cluster development, Fisheries identify (potential) and define standard operating resources accessible to artisanal fisheries (demurral and small pelagic) Introduce (FAD's) for aggregation of fish, improve the system of collecting statistics.

- Aquatic Environment: Map the occurrence of resources and existing infrastructure (centers Fisheries) and relate to the effect of climate change (GIS and Modelling). Knowing the impact of fisheries on protected species (turtles, marine mammals, etc.) and suggest measures if necessary to reduce the impact through the use of exclusion devices, improve the knowledge about the effect of environment on the distribution and abundance of resources

Table 9**:** Total budget for marine and coastal fisheries programme

Subprogrammes	Implementation Years (10^3 MZM)					
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Conducting awareness campaign	20,000	20,000	20,000	20,000	20,000	100,000
Monitoring of fishing						
Adjustment of the logbook for semi-industrial fisheries	20,000	20,000				40,000
Onboard observetions		55,000	55,000	55,000	55,000	220,000
ERS Fleet Expansion	200,000	100,000	70,000	70,000	50,000	490,000
Acquisition of computer software and hardware						
Capacity building Training	40,000	40,000	40,000	25,000	25,000	170,000
Marine survelance						
Institutional Support						
TOTAL						

Livestock Programme

97. In the 1990s, after the destruction of infrastructure and the drastic reduction of livestock by the war, a program was started to speed up the restocking of cattle and goats, initially run by the state and later transferred to NGOs. As a result of the restocking of livestock, the recovery of management infrastructure and the improvement of health care for livestock, the number of cattle grew from 239.000 to 1.277.000 and that of small ruminants from 269.000 to 4.127.000 between 1994 and 2010. Despite this growth a significant part of the meat, milk and eggs consumed in the country is still imported. In 2009 the country imported about 15.000 tons of various types of meat while national production was 59.200 tons. About 90% of the domestic consumption of fresh milk is imported (18.278.000 litres) while domestic production is 1.759.000 litres. About 71,5% of the national egg consumption (9.949.000 dozens) was imported.

98. The vision for livestock production in the medium and long run is to have a subsector in which the state plays its key roles effectively and efficiently, based on the balance between demand and supply of mandatory public services, allowing all stakeholders to maximize the contribution of livestock to the diversification of livelihoods of the rural population and the development of agro-businesses, thus leading to the reduction of poverty and national economic growth.

    The main constraints faced by the livestock subsector are the following: (i) poor and limited availability of infrastructure for productive and health management; (ii) poor development of processing industry, cold chain and of input production; (iii) difficult access to credit for cattle breeding; (iv) non-compliance with legislation in several areas of the sector; (v) outdated legislation; (vi) small role of research in solving the problems of producers; (vii) livestock extension services currently underdeveloped and offering poor coverage; (viii) weak marketing network of livestock and livestock products in rural areas; (ix) poor knowledge of the real contribution of livestock to the national economy, resulting in neglect of the sector when investment priorities are being defined; and (x) deficient or inadequate organisation of veterinary services.[12] In addition to these constraints ther is (a) the lack of vertical command, which affects the ineffectiveness of veterinary services; (b) general lack of equipment and materials to conduct epidemiological surveillance or sampling in outbreaks; (c) insufficient number of qualified technicians in most districts of the country; (d) insufficient number of field technicians and inefficient or nonexistent disease notification procedures at local level; (e) both passive and active epidemiological surveillance is severely limited due to lack of funds or logistical support at provincial level; (f) control of the movement of animals and animal products is not sufficient to prevent the spread of disease.[13]

99. Given the opportunities offered by the growing demand for meat, dairy products and other animal sourced food, the existing potential in natural resources (vast pasture areas and reduced incidence of the tse-tse fly, particularly in the south), the main objective of the Livestock Programme is to a) increase livestock production and productivity through increasing herds of cattle, pigs, small ruminants and poultry, and b) by encouraging the

[12] OIE (2008) *Relatório de desempenho dos Serviços de Veterinária (PVS) em Moçambique*.
[13] *Ibidem*

processing and marketing of livestock and animal sourced food products. In order to achieve the overall objective four specific objectives were established: (1) create an environment conducive to the development of family and commercial livestock breeding in an integrated and sustainable manner, by solving the main problems faced by small breeders in the various segments of the livestock production, marketing and processing chain; (2) remove the barriers that hamper he development of livestock enterprises in order to enable an increase in production capacity, productivity, storage, marketing and competitiveness of livestock products in the national and international markets; (3) develop the system for surveillance, prevention and control of animal diseases in order to safeguard the development of national livestock production and public health. The Livestock Programme consist of 3 Subprogrammes:

100. The **Subprogramme Surveillance, Prevention and Control of Diseases** - contributes to the Livestock Programme's objective of *"Creating an environment conducive to the development of family and commercial livestock breeding in an integrated and sustainable manner, by solving the main problems faced by small breeders in the various segments of the livestock production, marketing and processing chain"*. The budget of the Surveillance Subprogramme is 1.742,4 million Meticais and includes 9 priority actions:

- **Mandatory vaccinations of cattle**. The main objective of this action is the protection of national herds against animal diseases by expanding the coverage of immunization of cattle from the current 65% to 80%, giving priority to the following diseases: Anthrax, Blackleg, Brucellosis, Nodular Acne, Foot and Mouth Disease and Rift Valley Fever with different degrees of coverage taking into account the type of vaccine and the respective application strategy. The main activity of this action is to ensure an 80% vaccination coverage of cattle through the purchase and distribution of vaccines sufficient to (i) vaccinate 1,4 million cattle in year-1; and (ii) to vaccinate 2 million cattle in year-5 in order to achieve an average annual growth of 8% in the number of animals.

- **Vaccination of Chickens against Newcastle Disease**. Chickens are raised in about 70% of livestock farms. Being the most widely distributed domestic animal in the country it is a major source of animal protein and constitutes o reserve of wealth and income in the family sector. According to the CAP (2010), the country had some 23,9 million chickens in 2009. However, the biggest constraints to significant growth of the number of chickens have been cyclical outbreaks of Newcastle disease in the areas not covered by vaccination against this disease. It is estimated that in 2010 only 15% of chickens covered by the census had been vaccinated against Newcastle disease.

- **Control of Rabies**. Rabies is endemic in Mozambique and it constitutes one of the most important zoonoses in that it is 100% fatal. The occurrence of animal rabies is reported every year from all provinces of the country, with an average of 25 cases per year. However, it is known that the reporting of cases is very low in relation to occurrences, especially in rural areas. The vaccination of the dog population at risk in 2010 was estimated to cover 123.910 dogs, which corresponds to 9,2% of all dogs in the country. Administrative statistics show that between 2003 and 2010, 287 people died in the country victims of rabies. The main constraints that have been identified are: (a) limited availability of resources and funds for the implementation of vaccinations on the ground; and (b) an insufficient number of veterinarians in the field, coupled to inefficient or nonexistent disease notification procedures. In order to address the

rabies problem the Government has approved the Strategy for the Control of Rabies, with responsibilities shared between the Ministries of Agriculture, Health and State Administration. The MINAG is responsible for the vaccination of dogs and cats and for making the general public aware of prevention and control of the disease. Over 50% from the estimated total budget for the MINAG component is intended for the purchase of vaccine. Awareness raising is expected to consist in disseminating information on the most popular television and radio channels. It is expected that more than 80% of dogs are vaccinated annually.

- **Extending the Coverage of Tick Baths**. Ticks are one of the main causes of mortality in cattle and small ruminants in the country, because they transmit agents of five (5) animal diseases, namely Anaplasmosis, Babesiosis, Tick-born Fever, Theileriasis or East Coast Fever (ECF) and Bortelenosis. These agents are also responsible for serious mechanical damages resulting in serious wounds in the reproductive organs of males and in the destruction of the teats-udders, which consequently leads to a higher mortality of calves, low fertility in males and a high culling rate of cows in productive age. The objective of this subprogramme is to increase the coverage of existing tick baths from the actual 7,39 to 12 baths/animal/year. These rates represent a growth of the current number of 12,2 million baths from the first to the fifth year of nearly 75%.

- **Construction and Rehabilitation of Livestock Infrastructure**. This includes two priority activities, namely (i) infrastructure for health management; and (ii) infrastructure for productive management. The first activity is the construction and rehabilitation of **Health Management Infrastructure** for cattle, namely tick tanks and treatment hoses and corridors, due to their importance for vaccinations and treatments and other technical or veterinary interventions. This activity is also justified by the current cattle promotion actions in districts that have not seen the construction of health infrastructure for their assistance. The second activity involves the construction of watering points and dams to solve the problem of lack of water for the watering of livestock in some areas of the country. Also planned is the rehabilitation of posts in some provinces for the facilitation of the subprogramme of genetic improvement, which will serve as a basis for producing improved breeds. The posts are owned by the state and once completed their management should be out-sourced in accordance with the MINAG contract-programme to the private sector.

- **Reducing the Prevalence of Bovine Tuberculosis and Brucellosis** - historically, the districts with the highest prevalence of TB in the country are Govuro in Inhambane province; Buzi and Machanga in Sofala province; Manhica in Maputo province and Mecanhelas in Niassa province. TB control is important because it is in the interest of public health and it is one of the most common opportunistic diseases in people living with HIV-AIDS. The objective of this action is to contribute to reducing the prevalence of bovine TB from 40% to 20% in 2017. The main guideline for this action is to cull and replace tuberculous animals on small cattle farms. By replacing tuberculous animals breeders will reduce the risk of losing more animals, which will result in reducing the risk of contamination to humans through the consumption of non-inspected meat and untreated milk.

- **Development of Epidemiological Surveillance Network**. The development and operationalization of the Epidemiological Information System is determined under Article 7 of Decree 26/2009 of 17 August, which establishes the responsibility of local

governments to notify the Veterinary Authority on any change in health status of animals in the area under their jurisdiction. Develop early warning system for animal disease occurrence

- **Development of contingency plans**. In recent years, health emergencies have been a growing concern of the veterinary authorities worldwide as a result of the growing movement of people and goods. Thus there is a need for the country to be prepared for the prevention and control of health emergencies through the elaboration and operationalization of contingency plans for animal diseases. This action proposes the elaboration and operationalization of emergency plans for the following diseases: (1) Foot and Mouth Disease; (2) Avian Flu; (3) Small Ruminants Plague; (4) African Swine Fever; (5) Newcastle; (6) Rift Valley Fever; and (7) Rabies.

- **Studies on the Distribution of the Tsetse Fly and Trypanosomiasis** - the tsetse fly and the disease it transmits, Trypanosomiasis, constitute one of the major constraints to ruminant production Mozambique. About 75% of the country is infested by one or more species of tsetse fly (*Glossina morsitans morsitans, G. pallidipes, G. brevipalpis and G. austeni*). In addition to limiting the growth of the national livestock this situation also limits the realization of the country's agro-ecological potential, for example by the widespread use of animal traction in the family sector. The main objective of this action is to provide the country with knowledge about the current state of affairs concerning the distribution of the tsetse fly and trypanosome, in order to guide decision making of the various stakeholders in the promotion of livestock.

101. The **Subprogramme to Strengthen the Capacity of the Veterinary Services** has a budget of **340,3 million Meticais** and consists of 5 priority actions, namely:

- **Strengthening the Coverage of Veterinary Services at local level** recognizes that one of the main shortcomings of the Veterinary Services, confirmed by the assessment of the World Organization for Animal Health (OIE)[14], is the lack of qualified technical personnel, equipment and working resources at different levels that enable the Veterinary Services to do their job.

- **Improvement of the Cold Chain of Veterinary Services for Conservation and Distribution of Vaccines and Biologicals**. The cooling system is one of the determinants in maintaining the quality and guaranteeing the effectiveness of vaccines, laboratory reagents and samples from vaccination campaigns. At present the existing cold chain is insufficient. The dispersal of livestock and the distances between the Provincial Livestock Services and the District Services of Economic Activities having cold storage facilities justify: (i) the establishment of intermediate cold storage rooms in some districts for the supply of other districts; and (ii) the installation of fridges in other districts for the conservation of vaccines during vaccination campaigns.

- **Capacity building of Provincial Diagnostic Laboratories** - the laboratory is an important means to help control diseases due to its role in the diagnosis. Over the past 10 years, the provincial veterinary laboratories have lost their diagnosis ability while livestock numbers have increased. With these actions realized it is expected that, like

[14] OIE (2008) *Relatório de desempenho dos Serviços de Veterinária (PVS) em Moçambique*

in the past, provinces will be able to make a timely diagnosis of certain diseases and to meet the demands of the productive sector.

- **Reactivation of Veterinary Inspection for Control of the Movement of Cattle and Animal Products (POA)**. The movement of animals, animal products and fodder, resulting from growing demand in major consuming centers, is the main vehicle for the dissemination of animal diseases. Examples of this situation are the Foot and Mouth Disease outbreaks recorded in 2002 and 2010 and the outbreak of African Swine Fever in the southern region of the country in 1994. In order to tackle this problem, the subprogramme proposes the reactivation and operationalization of veterinary inspection in the provinces.

- **Review and Update of Veterinary Legislation**. This action aims at reviewing and updating current livestock/veterinary legislation on the production chain, in particular: (a) the Livestock Law; (b) marketing of livestock (cattle markets, POA and by-products); (c) abattoirs and slaughterhouses; (d) inspection and conservation of meat, milk and their by-products, (e) production of fodder and other animal feed; (f) compensation for sanitary slaughter; (g) classification of carcasses; (h) creation of special areas for the development of a commercial pig industry; (i) transport of livestock; (j) breeding of game; (l) establishment of poultry incubators; (m) identification and marking of cattle; (n) control of veterinary medicinal products; and (o) ethno-veterinary science.

102. The **Subprogramme for the Support of Production and Marketing of Animals and Livestock Products** has a budget of **671,5 Meticais** and consists of 5 priority actions:

- **Construction of Marketing Infrastructure** – the growing number of cattle has been driving the dynamics of animals marketing in rural areas, as is illustrated by the inter-provincial trade of cattle in 2010. In that year the provinces of Maputo, Nampula and Zambézia slaughtered 31,398, 2.378 and 3.195 heads of cattle respectively. The data show that the slaughtered animals are from other provinces, as follows: (a) 55% of heads of cattle slaughtered in Maputo are from the provinces Gaza, Inhambane and Tete; (b) 60% of heads of cattle slaughtered in the provinces of Nampula and Zambézia are from the provinces Sofala, Manica and Tete. The main activities to be financed include: (i) building marketing cattle fairs in the provinces of Maputo, Inhambane, Gaza, Sofala, Manica, Tete, Nampula and Zambézia; (ii) building of slaughterhouses for cattle and goats in the provinces of Maputo (City of Maputo and Magude) 2, Gaza (Xai-Xai and Chókwè) 2, Inhambane / Maxixe 1, Manica / Chimoio 1, Nampula (Nampula and Nacala) 2, Zambézia / Mocuba 1 and Cabo Delgado / Pemba 1; (iii) building of cattle slaughterhouses; (iv) the promotion of community butchers selling meat in the districts along the slaughterhouses; (v) the training and equipping of 15 veterinary inspectors per year.

- **Improvement of Poultry Production** - Poultry production is currently under pressure of imports both of frozen chicken and eggs for consumption. To support the nationwide production of chicken a technology transfer programme (PITTA) is ongoing in the districts. Within the context of this investment plan and with a view to meet the needs of the productive sector the following actions are proposed, to be implemented in coordination with CEPAGRI: (i) the establishment of 6 chicken processing and conservation units with a total slaughter capacity of 30.000 poultry per day and a cooling system with a capacity of 30 tons in the provinces of Niassa, Nampula, Zambézia, Tete, Sofala and Maputo; (ii) the

establishment of batteries for the production of consumption eggs in the provinces of Niassa, Nampula, Tete/Angonia, Sofala/Beira, Manica/Barué and Maputo, (iii) investment in local market development to improve food availaibility, access and use of eggs for the poor and undernourished population, in particular encouraging and supporting.the addition of poultry/egg production to existing outgrower schemes (link to program 1)..

- **Improvement of the Productivity of Goats and use of goat products**. Small ruminants are the second most important species in the family sector, following poultry and they are among the main species leading to inter-provincial trade. State intervention is thus critical to improve the contribution of goat production, not only for the growth of agricultural production but also for the reduction of poverty among small farmers in the family sector. Despite the strategic importance of goats in rural poverty reduction, their numbers have been declining. The year 2010 recorded 4 million heads as against 5,2 million in 2000. This trend can be partly justified by the mortality of young animals due to the lack of health care. To reverse this situation the subprogramme proposes the following actions: (a) promote the building of management infrastructure in the family sector, such as high corrals, footbaths and treatment corridors, and capacity building activities of farmers in the area of production and health management; (b) purchase and distribute 250 sires of high genetic merit in order to improve productivity, and (c) educational programs on the nutritional benefits of goats milk, and on it's production, processing and storage

    - **Improvement of the Productivity of Beef Cattle**. This action aims at increasing the number of beef cattle and their production (quantity and quality) and productivity through genetic selection of highly productive animal breeds and crossbreeding with exotic breeds, and the promotion of supplemental feeding of livestock. Activities include: (1) increase the average weight per animal carcass from 140 to 160 kg through (i) increasing the use of dietary supplements for beef cattle (beer bagasse, molasses, wheat bran, maize bran, copra bagasse); (ii) dissemination of information on food management (posters); (iii) regulation of the sale and export of byproducts from the milling sugar and beer industries for the feeding of livestock; (2) genetically improve beef cattle of indigenous and exotic origin through (i) the purchase and distribution of semen and embryos of breeds of high genetic value; (ii) the purchase and distribution of breeding animals of high genetic merit; (iii) the purchase of barbed wire to build enclosures for the confinement of cows to be inseminated.

- **Promotion of Milk Production and consumption of dairy products** - Currently the country has a huge deficit in milk consumption. It is estimated that the current deficit is about 90% for milk alone. Thus, this action intends to: (a) improve inputs to the dairy sector through public-private partnerships for (i) the purchase and distribution of semen and embryos of breeds of high genetic value, (ii) the purchase and distribution of breeding animals of high genetic merit; and (iii) the development of programmes to produce crossbred breeds of animals for milk production that are adapted to Mozambique's climactic conditions; and (b)improving technologies used in the sector by: (i) promoting improved and innovative livestock feeding technologies for local production and conservation of protein-rich feed stock, (ii) standardizing farm dairy technology and equipment (e.g. aluminum cans, buckets, strainers, and others) for hygienic production and preservation of milk at village collection centers, (iii) identifying appropriate technology to support family farmers (e.g. non-electric milking machines) and encouraging the private sector distribution of these technologies; (c) strengthening the commercialdairy sector by (i) providing incentives to the private sector for the construction of milk and milk product processing plants in areas

in which production and markets are established, (ii)subsidizing market research performed by the private sectoron dairy product demandto improve product design and marketing effectiveness.iv) marketing and consumer demand creation for milk and dairy products; and (d) ensuring positive impact of a stronger dairy sector on the family farm sector by: (i) supporting the establishment of smallholder dairy cooperatives, (ii) establishing and encouraging links between the processing sector and smallholder cooperatives.

- **Technical Assistance**: this action aims at providing technical assistance to livestock farms concerning the production and sanitation management.

103. Table 4 presents the overall budget of the Livestock Programme for each subprogramme. The total cost of the programme is estimated at 2.754,1 million Meticais.

Table 10: *Total Budget for the Livestock Programme, PNISA.*

Subprogrammes	Budget/Year (10^3 MZM)					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Disease Surveillance and Control	375,634	379,576	353,031	364,148	269,979	**1,742,369**
Strengthening of Veterinary Services	105,995	94,166	56,041	41,182	42,863	**340,246**
Support to Production and Marketing of Animals and Livestock Products	173,065	155,965	115,265	115,265	111,915	**671,475**
TOTAL	**654,694**	**629,707**	**524,337**	**520,595**	**424,757**	**2,754,090**

104. The programmes that follow are considered support programmes for the Production and Productivity component and therefore they are of crucial importance to the food crop, cash crop and fishery programmes. However, many of the actions of these programmes will also support the components of Market Access, Food and Nutritional Security and that of Natural Resources.

Agricultural Research Programme

105. Agricultural research has a leading role in efforts to increase production and agricultural productivity and poverty reduction. Studies indicate that increasing the productivity

decreases by 1% in 0.7% poverty (Thirtle & Piesse, 2002). The IIAM Strategic Plan (2011-2015) calls for increasing the productivity of the production chain by 6%, which would mean reducing poverty by about 4%. The biggest challenge for agricultural research is to generate and transfer appropriate technologies to farmers to reverse the declining levels of agricultural productivity in the last 15-20 years. Since the generation and diffusion of technologies are not sufficient conditions for its adoption by producers, is however recognized the role of the institutions responsible for the provision of infrastructure to link producers to markets and credit institutions in this process. The demand for food fiber and bio-fuels, is increasingly growing in Mozambique. This increasing demand occurs at a time when there are challenges and concerns about climate change the environment. These factors increase the pressure on research institutions such as the Institute of Agricultural Research of Mozambique (IIAM). As such, this institution must generate and deliver technology solutions that contribute both to feed an ever growing and demanding population, as for the development and improvement of raw materials for industry and energy, while safeguarding the environment.

106. The IIAM Strategic Plan (2011-2015) sets out the mission of research as to generate knowledge and technology solutions for sustainable development of agribusiness and food and nutrition security. In this mission, the vision IIAM is to become an organization of research and innovation excellence, dynamic and motivated to contribute to meeting the food, agribusiness development and sustainable use of natural resources. A situational analysis of the external environment and prospective IIAM shows opportunities where research can bring results: (i) Low productivity of all production chains, (ii) Lack of varieties and breeds adapted, (iii) Low soil fertility, (iv) and variations or climate change, (v) Increased costs of inputs (vi) Weak knowledge of modern agricultural techniques, (vii) High demand for food, fiber and bio-fuels; (viii) Working Capital inadequate natural resources, and (ix) Poor quality of food. Risks to the results in these areas include: (1) High transaction costs and transport for products and agricultural inputs, (2) insufficient investment in human resources and infrastructure for the development of research, innovation and knowledge transfer and technologies, (3) High competition for the limited staff researcher; (4) Risk avoidance of the best talent and loss of critical mass in strategic areas for IIAM or the country; (5) dependence on foreign (mainly financial) , (6) Lack of coordination between IIAM and other stakeholders in R & D.

107. To address the problems identified were defined strategic objectives covering research and technology transfer to the main productive chains of Mozambique and the sustainable use of natural resources as shown below: (i) contribute to productivity, production stability and sustainability of basic supply chains, (ii) contribute to the competitiveness of supply chains for market-oriented, and (iii) contribute to food and nutrition security of consumers, (iv) contribute to the productive and sustainable use of natural resources, (v) intensify the interaction and integration to institutional sustainability IIAM (vi) improve the interaction and integration with partners IIAM (vii) Strengthen, develop and manage institutional capacity;

108. The plan is based on connections and strategic alliances IIAM to be operationalized through a platform of agricultural research and technological innovation, consisting of various actors in the production chain such as research institutions and national and international educational, private sector, NGOs, associations producers donors. These

contribute to setting the agenda and research priorities for institutional strengthening, specifically the training of technicians, design and implement programs and joint research projects, mobilization of financial resources for the implementation of research activities and the generation technologies.

109. The strategic objectives will be implemented through programs and research projects through its network of national research, taking into account the six corridors defined below PEDSA discriminated (1) Pemba-Lichinga - with technological support from the Northwest Zonal Center with Headquartered in Lichinga and concentration in potato, wheat, beans, corn, soybeans, cotton, tobacco and chickens, (2) Nacala - with technological support from the Northeast Zonal Center, based in Nampula and concentration on cassava, maize, cotton, fruit, chicken and peanuts, (3) the Zambezi Valley - with technological support from the Center Zonal Centre, based in Sussendenga / Manica and concentration in rice, corn, potatoes, cattle, goats, chickens and cotton; (4) Border - with technological support from the Central Zonal Centre, based in Sussendenga / Manica and concentration in corn, wheat, vegetables, soybeans, rice, cattle and chickens, (5) Limpopo - with technological support from the South Zonal Center with headquarters in Chokwe and concentration in rice, vegetables, cattle and chickens, (6) Maputo - with technological support from the Agrarian Stations Umbeluzi / South Central Zonal and concentration in rice, vegetables, cattle and chickens.

110. The objective of investment plan is to identify the set of investments needed to ensure the productivity of the system of agricultural research in the next five years. This investment will focus on the key gaps in research infrastructure and human capacity to generate knowledge and technologies that have significant impact on rural poverty reduction in the medium and long term a total budget of around twenty eight billion Meticais (28,007,299,123.84 MZM) being about 24% for activities invstigação and 75% for institutional strengthening, especially construction and infrastructure rehabilitation research, residences, offices, purchasing equipment and media, as well as training of researchers. Thus, the Agricultural Research Program comprises four subprograms that are:

111. Sub-Programme for Research in basic supply chains, food security and nutrition: The basic food crops occupy about 4.4 million hectares of land in Mozambique, a figure that represents approximately 79% of the total cultivated area in the country (INE, 2010 .) Part of production chains and basic nutrition security and nutritional food crops consist of cereals (maize, rice, sorghum, millet and wheat), grain legumes (beans and peanuts), roots and tubers (cassava and sweet potato), vegetables, fruit trees and chickens, as defined in the Strategic Plan IIAM. Increased agricultural productivity coupled with improved infrastructure marketing contributes to the reduction of import of agricultural products, increased availability of food throughout the year, thereby improving food and nutritional security of families and increasing the income of households. With this sub-program aims to increase productivity by 10% in 5 years. Through agricultural research will be released at least 20 varieties adapted to the conditions of each location and management, and 2 chicken breeds with high productivity and tolerance to adverse weather conditions. On the other hand, will be freed 4 varieties with high nutritional potential to fill the current nutritional deficiency in both rural and urban centers. Technology packages will be developed to support systems for plant and animal production (2), as well as processing and storage of products (4). We identified the following actions: (i) Studies of production systems for both staple crops as well as for

chickens, (ii) Collection, introduction and evaluation of germplasm of different staple crops and chickens (iii) Working Capital and soil conservation, water and crops, (iv) Production of seed pre-basic and basic (v) Development and production of vaccines for chickens (vi) Working Capital post-harvest, including aspects of preservation and processing, (vii) Development of methodologies and adoption studies, profitability and impact of agricultural technologies, (viii) Training of farmers and extension to promote the use and adoption of agricultural technologies, (ix) Capacity building (investment in the training of researchers and producers and construction of infrastructure support research.

112. Sub-program research chain performance: In this sub-program aims to contribute to increasing the productivity and competitiveness of producers in the agricultural sector by 10% in 5 years. The main agricultural products considered are: cotton, peanuts, cashew nuts, timber, fuelwood, sesame, soybean, sunflower, copra, milk, beef and small ruminants with emphasis on goats and pigs. This sub-program provides for the release of 20 varieties, 2 technologies Harvesting and processing of products in response to the quality standards required by the market. Will also be developed 2 goat breeds adapted to different agro-ecological conditions and scenario 1 and 2 production systems with the potential for climate change adaptation. Different actions can be summarized as follows: (i) Studies of production systems for the production chains of earnings, (ii) Working Capital and conservation of water suitable for different production systems, (iii) Collection, introduction and evaluation of conservation germplasm plant and animal species, (iv) Working Capital integrated pest, disease and weed control, (v) Production of seed pre-basic and basic (vi) Working Capital postharvest (looking mainly to aspects of conservation and processing), (vii) Capacity building (investment in the training of researchers and producers and building research infrastructure - laboratories, greenhouses and purchase equipment specific research), (viii) impact financial profitability of promising technologies developed by the research system land, (ix) Dissemination of technologies generated; (x) Development of methodologies for technology transfer; (xi) studies of adoption and impact of agricultural technologies; (xii) Training of farmers and extension to promote the use and adoption of agricultural technologies.

113. Sub-program research productive and sustainable use of natural resources: This sub-program aims to encourage the sustainable use of natural resources, ensuring both the conservation of the genetic diversity of wild plants and wild animals, or the preservation of biodiversity and integrity of natural ecosystems. The implementation of this sub-program will contribute to the development of 10 technologies and innovations related to natural resources generated and promoted; 25% increase in research capacity in the area of natural resources and 25% generating knowledge and information resources management natural in 5 years. It is intended for this purpose to promote the adoption of silvicultural practices and management to ensure the sustainable use of natural resources. Furthermore, the recognition of ecological services and products including carbon sequestration for the benefit of rural communities will be possible only with the development of tools and methodologies that allow a quick and accurate assessment of the potential land use. In this sub-action technology transfer include: (i) dissemination of technologies generated, (ii) development of methods for technology transfer, (iii) studies of adoption and impact of agricultural technologies, (iv) training of producers and extension to the widespread use and adoption of agricultural technologies. Will be evaluated and developed two management systems for ecosystems miombo and

mopane, collected, preserved and characterized 50 species, identified five new biodiversity products with market potential and developed propagation techniques, processing and use of 3 products. The actions by the area include:

- In the area of ecology and biodiversity, activities are provided for the following studies: (1) description of the state of biodiversity and ecosystems to propose measures for their conservation, (2) studies of the structure, composition and dynamics of forest succession, (3) identification studies, mapping of occurrence of phyto-diversity, (4) taxonomic identification of plant species, studies of management and maintenance of specimens in the herbarium and botanical garden; (5) Update system documentation manual and computerized herbarium; and ethnobotanical studies of biodiversity, (6) identification of areas for in-situ conservation of species of economic value, social and environmental (7) Development / adaptation of systems ex-situ conservation for rare native species and / or threatened including landraces and wild relatives for breeding, bio-prospecting and environmental protection; (8) Strengthening the capacity of IIAM to implement research programs in wildlife.

- In the area of forestry the programme will perform the following actions: (1) identification and selection of priority tree species and / or multiple use, (2) development of silvicultural systems for the establishment, enhancement, and rehabilitation of species including the generation of appropriate technologies for the propagation of native and exotic species, (3) Introduction, development and conservation of vegetative material of improved genetic quality, (4) Conservation of germplasm of native species endangered, endemic and potential uses; (5) Testing of agro- appropriate forest to agro-forestry-pastoral; (6) Conduct studies ethno-botanists for economic and social value of native species secundarizadas.

- With regard to forest management and wood technology, the programme will perform the following actions: (1) search for processes of regeneration and growth rates of forest formations, (2) Development and testing of processing techniques and use of timber and non- timber, (3) Development of techniques for propagation of wild species, (4) Development of silvicultural systems for the establishment and enrichment of forest formations, (5) Evaluation of the potential of ecosystems for sustainable management of forest and wildlife resources.

- In studies of fertility and soil conservation the programme will performed through the following actions: (1) development of fertilizer recommendations (basic crops, yield and forest species), (2) Evaluation of the effect of agro-minerals in agricultural productivity; (3) Evaluation of the effect of bio-fertilizers in agricultural productivity;

- In the area of inventory and assessment of land and agro-meteorology the programme will be carried out through the following actions: (1) Inventory of the different methods / practices for soil conservation along the watersheds and systematic mapping of soils, (2) Evaluation and classification agricultural suitability of land, (3) collecting, analyzing data for the systematic production of agro-meteorological data, (3) Collection, systematization of agro-meteorological data and develop models of land evaluation, (4) Recovery and / or rehabilitation of agro-meteorological stations.

- In the area of agro-hydrology (water management) the programme will be conducted through the following studies: (1) practices and irrigation techniques to increase productivity and efficiency irrigation on crops, (2) working capital and conserving soil water, (3) traditional practices of soil and water conservation and identification of its potential.

- Subprogram Institutional Strengthening: To achieve this subprogram IIAM should strengthen its institutional capacity and improve integration with partners. It is expected that the end of the 5 years is increased: (i) 30% the number of scientists in different strategic areas IIAM, (ii) at least 100% financial resources available for research, (iii) 25 % of physical infrastructure and (iv) 25% of communication products, the production of knowledge and information. For such are provided for the following actions:

- Strengthening institutional capacity: IIAM aims to provide up human resources in terms of quantity and quality of infrastructure research properly equipped and the creation of housing and work for the employees and agents of the State, including the upgrading and improvement of documentary electronic connectivity between the various units of central and local level. Is scheduled for construction and operation of specialized research centers cashew, rice, cotton, tropical fruits, tea and coconut in prospect generation and development of agricultural technology that increases the efficiency and competitiveness of these supply chains of these crops in the regional market and internationally. Also, this program will include training for short and long duration of researchers in the various areas of expertise relevant to improving performance IIAM. To make these activities possible IIAM should enhance its ability to raise funds by encouraging managers and researchers to develop fundable research proposals and conduct the negotiation of financing them on development partners.

- Strengthening of interaction and integration with partners: A situational analysis in the process of preparing the strategic plan IIAM identified weaknesses in their connections with relevant institutions of the State, the private sector, producer organizations, the International Agricultural Research Centers, international organizations aimed at financing of agricultural research and non-governmental organizations and other stakeholders - key in agricultural research and technology transfer. The weak link between IIAM and partners results in a reduced visibility and inadequate flow of funds for the development of research and technology transfer. The pursuit of the national agenda of agricultural research necessarily involves (i) a thorough knowledge by the stakeholders / partners, IIAM mission, priorities, relevance of agricultural research for development of the country, the magnitude of the needs of human resources, materials and financial specificities of agricultural research and its achievements; (ii) Strengthen and improve the interaction and integration with partners will contribute to the sustainability of IIAM (iii) To develop technological packages adjusted to the needs of producers, the activities proposed summarize in the law on the institution, training of human resources, improvement of planning mechanisms with partners and capacity to mobilize resources.

- Monitoring and Evaluation: The Monitoring and Evaluation (M & A) are crucial tools for the management and evaluation of the efficiency and effectiveness of investments in system research and transfer of agricultural technologies. The

evaluation of institutional performance will be internal and external to the institution. The M & A in IIAM assess the benefits for the different stakeholders and the economic, social and environmental results of the generation and transfer of agricultural technologies in the productive sector. The main interventions will be the preparation of the Annual Action Plan and Budget (PAAO) and Annual Operating (OA), request, harmonization and reports sent quarterly, semiannual and annual institutional level, performance monitoring of the activities of PAAO and OA IIAM, participation in planning meetings (annual meeting held by the DE and the other upon request).

114. The summary of the program budget for subprogram is presented in Table 5 below and is estimated to be the total of 28,007.3 Million MT.

Table 11: Total Budget for the Agricultural Research Program, PNISA Subprograms Budget / Year Total (10 ^ 3 MZM)

Subprogramas	Subprograms Budget/Year (10^3 MZM)					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Basic supply chains, food security and nutrition	755,338.0	1,098,089.4	572,514.4	436,354.4	437,794.4	3,300,090
Chains income	508,440.0	595,403.6	303,788.6	303,488.7	303,788.6	2,014,909.2
Productive and sustainable use of natural resources	292,113.2	520,693.2	232,793.2	232,793.2	232,793.2	1,511,186.0
Institutional Strengthening	1,117,072.6	5,957,347.3	5,698,863.7	4,882,453.8	3,477,639.1	21,181,114.0
TOTAL	2,672,962.7	8,171,533.5	6,807,960	5,855,090.0	4,452,015.3	28,007,299.1

Agricultural Extension Programme

115. At present the public extension network covers 128 districts, 88% of the existing 405 administrative posts in the country and 13 cities, employing 872 extension workers and supervisors (including those of the cashew sector). This coverage only reaches 11% of the 4,9 million families in the country. The public extension services are complemented by a private network consisting of about 113 NGOs and 73 agricultural development companies. The main constraints faced by agricultural extension services are: (a) limited technical capacity; and (b) shortage of funds available for its functioning. These constraints are most urgent at district level, because some districts are currently served by a single extensionist while the ideal is to have 3-8 extensionists and one supervisor per team. The above constraints translate into (i) a limited number of extensionists; (ii) limited and / or obsolete transportation (motor cycles); (iii) a lack of housing for extensionists; (iv) limited permanent capacity building for extensionists; (v) budget cuts leading to non-fulfilment of annual targets.

116. To address the above problems the MINAG developed an Extension Master Plan that is being operationalized through the National Agricultural Extension Programme

(PRONEA). The Agricultural Extension Programme presented the following specific objectives: (1) increase the implementation capacity of extension programmes within a pluralistic and participatory framework; (2) improve the technical and managerial capacity of producers with respect to the planning, monitoring and evaluation process and the provision of services; (3) provide extension services at provincial and district level to promote agricultural and fishery productivity for food and nutritional security and food and the sustainable use of natural resources. This programme consists of the following three sub-programmes:

- The **Sub-Programme for the Strengthening of the Provision of Extension Services** will be conducted by the public services and other stakeholders including NGOs, the private sector or producer organizations. In the *public sector* this includes: (a) institutional strengthening through the hiring of additional extensionists and extension agents in order to extend territorial coverage and improve the efficiency of technology transfers; (b) strengthening of provision extension transportation and communication facilities; (c) in-service training of newly admitted extensionists and participation in appropriate skills development training for agriculture and nutrition security as well as knowledge management and information support skills and tools; (d) expanding the approach of the EMCs to all provinces; (e) the production of communication materials for the dissemination of extension messages and knowledge management; and (f) the production of a variety of materials such as newsletters, brochures, flyers, posters, manuals and banners both at central level and in the provinces. *Capacity building by non-public actors* includes (a) the financing of awareness campaigns on food security and nutrition, and the dissemination of the opportunities offered by extension; (b) entering into contracts with regional agencies to provide services for the vocational training of the target group; (c) assistance for the preparation of business plans (service providers) (d) Support intergrated crop-livestock-fisheries systems. The subprogramme plans the allocation of an initial fund for those actors who show the capacity to contribute to expanding the assistance to producers and to the promoters of producers in order for them to start providing services.

- The **Sub-Programme for the Strengthening of the Demand for Extension Services** focuses on the following actions: (i) awareness of and support for the promotion of farmer organizations by organizing them into groups by legalizing these; (ii) capacity building of producer associations and their orientation towards agro-business; (iii) training of farmers on extension approaches, such as the establishment and conduct of EMCs, the use of the methodology of farmer-to-farmer extension; (iv) assistance in the preparation of business plans and the allocation of an initial investment to associations with business plans for competitive extension services provision and to promoters of producers.

- The **Subprogramme for the Provision of Services** includes capacity building of the public extension network by hiring third parties (actors outside the public system) for the implementation of certain activities, both at provincial and district level. The intended activities include: (i) training, such as pre-admission courses for extensionists, and EMCs; and (ii) support in carrying out strategic activities such as realizing Periodic Reviews of Technology (REPETES), impact studies and the adoption of disseminated technologies, documentation of good practices or vaccination campaigns against Newcastle disease. The target groups of this

component are the promoters of producers, who are trained to provide extension services (emerging producers, traders, agro-chemicals sellers, veterinary pharmacies) and associations trained in the provision of services.

117. Some of the areas of focus will include promotion of technology adoption especially through the production and distribution of technical-scientific literature printed for agricultural extension purposes and producers; the production and broadcast of radio programmes on agricultural issues; the installation of radio recording studios in the Central Zonal Center and the Northeast Zonal Center; the creation of video libraries and mini-libraries in primary and secondary schools. The use of radio programmes to be broadcast by public and private radio constitutes a gain when it comes to transferring agricultural technologies, since these programs will reach a large number of local producers. Focus will also be on promotion of adoption of drought torelant crops: One of the best ways to overcome with the menace of poverty and hunger is the large-scale promotion of drought-tolerant crops. There is need to promote drought-tolerant crops on a large scale, convince farmers that these are their best bets for higher income, and enable them to set up strategic food reserves to cope with future crises in food. Drought- and stress-tolerant crops will be one of the most significant factors to drive future agricultural productivity growth, by maintaining yields under suboptimal conditions, expanding production into marginal lands, and encouraging adoption of other complementary yield-enhancing technologies. Historically, genetic innovation has not concentrated as much on stabilizing yields as it has on increasing mean yields under optimal conditions.

118. The total costs of the Agricultural Extension Programme are estimated at7498,1 million Meticais 722,7 million Meticai of which are guaranteed, i.e. about 9,6% of the total costs. Table 7 shows the budget per year and per subprogramme.

Table 12: *Total Budget of the Agricultural Extension Subprogramme of the PNISA*

Components	2013	2014	2015	2016	2017	Total
Strengthening of Service Provision	278,509	69,004	707,406	737,220	698,889	**3,113,028**
Strengthening of Demand for Services	412,313	635,243	815,036	1,000,416	1,134,188	**3,997,196**
Service Provision	69,329	74,859	77,804	81,381	84,498	**387,871**
Total	**760,151**	**1,401,106**	**1,600,246**	**1,819,016**	**1,917,575**	**7 498 095**

Agricultural Irrigation Programme

119. The country has a potential of 3 million hectares of irrigable land, of which 120,000 hectares have infrastructure and of these 62,000 hectares are in use. Of the area currently in use, only about 30,000 hectares are used for food production, which represents a mere 1% of the existing potential, and it is insignificant when it comes to meeting the growing demand for food products. The development of irrigation infrastructure reckons with two levels of approach, namely small (less than 200 ha), and medium/large (equal / larger than 200 ha) irrigation areas. The strategic vision on the

development of infrastructure, beyond that intended for irrigation, includes water storage works for livestock and aquaculture purposes. The vision on irrigation also includes the development of wetlands for agricultural development, such as low lying areas. The use of these lands involves drainage infrastructure and good water management practices. It is an alternative that should be developed by involving low-cost technologies that are easily managed by the producers. The development of irrigation infrastructure provides two approaches, namely small and medium/large irrigation networks. Medium and large irrigation networks cover areas equal to or larger than 200 ha and are promoted from the central level. Small irrigation networks concern areas of less than 200 ha, many of which are located near communities and having a much localized impact. These irrigation networks will have a double coordination, at central and more frequently at provincial level. The main challenges of the irrigation sub-sector are: (i) train and operationalize public irrigation services in accordance with the responsibilities and challenges of the Irrigation Strategy framework at central and local level; (ii) expand the irrigated area by at least 50.000 hectares; and (iii) raise the level of utilization of irrigation networks from the current 60% to 80%.

120. The strategic objective of the investment plan for the irrigation sub-sector is to increase the sustainable use of existing hydro-agricultural potential through public investments in irrigation oriented towards the producer and in infrastructure and irrigation services based on performance and sustainability criteria; focus on market-oriented crops of high economic value most sought after nationally or internationally; efficiency in the use of land and water resources aimed at integrated development in river basins and development corridors with the biggest potential for the creation of “partnership-type” with the private sector for its exploitation. In order to harmonize the interventions a Consultative Forum on Irrigation will be established, headed by the Minister of Agriculture, on which the key stakeholders of the public and private sectors will be represented. The investment plan of the Irrigation Programme contains 2 sub-programmes, namely:

121. **The Subprogram for the Strengthening of the Institutional Capacity of the Irrigation Subsector**. The purpose of this subprogram is to restructure the current capacity of the services in order to make them increasingly dynamic and proactive, thus enabling the improvement of the provision of technical services and other services that complement and accelerate the good and correct implementation of the development programmes and projects of the Subsector. The actions to be carried out under this component are:

- **Support to the Establishment and Functioning of the INIR.** This action includes: (i) the installation of the headquarters and the branches of the National Irrigation Institute (INIR) and strengthening of its management capacity aimed at improving the service provision of the subsector, at ensuring the retention of existing technician and the hiring of new technicians with the capacity to respond to the new demands of the subsector; (ii) equipping the INIR headquarters and branches in order to create working conditions by providing material resources; (iii) training of the staff of the INIR headquarters and branches – recognizing the current acute shortage of human resources, the weak institutional presence and in some cases the lack of public entities responsible for irrigation at central and provincial levels are recognized. As such, this activity seeks to consolidate and train the existing technical staff, recruit and train new staff, that can adequately develop, structure and implement the programmes of the sector and in particular of the subsector.

- The **establishment of a database** seeks to make an inventory of the potential of irrigated arable land and infrastructure in order to support the system of incentives for potential investors interested in the agro-ecological opportunities and potential of Mozambique. The database will allow the calculation of the contribution of irrigated agriculture to national agricultural production.

- **Rules and Regulations for the Construction, Operation and Maintenance of Irrigation Networks**. The objective of this action is to establish the rules to be observed in the implementation of irrigation projects, to establish norms for the design, rehabilitation, construction and supervision phases of hydro-agricultural works.

- **Technical Assistance to the INIR**. This action aims at providing technical assistance on specific issues that are most complicated when issues of public interesthave to be addressed and secondly, to train technicians so that they can respond effectively to any requests of a technical nature.

- **Functional institutional interaction mechanisms in the irrigation subsector**. This action is expected to lead to greater interaction of public irrigation services with other relevant institutions, through memoranda of understanding and ministerial dispatches. Moreover, it is expected that a forum for consultation on provincial-level irrigation will be created within the INIR structure, whose function will be to discuss relevant issues related to the development of irrigation infrastructure, and to harmonize the interests of the stakeholders.

- **Provision of incentives for teaching and research in water management techniques in agricultural production and aquaculture**. The objective of this action is to reactivate the connections of the irrigation subsector with teaching and learning, to influence the curricula taking into account the actions undertaken by the public and private sectors, employment opportunities and self employment, as well as the professionalization of this particular area.

- **Formulation of the National Irrigation Programme (PNI).** This action aims at the strategic planning of interventions in the sub-sector, the participation of key players at all levels, the monitoring and evaluating of the performance of the investments made, and to encourage debate on policies, investments and incentives to irrigation based on techno-economic feasibility.

122. The **Subprogramme for the Expansion and Sustainable Management of Irrigation Systems**. The country has a potential of 3 million hectares, 120.000 of which have infrastructure and 62.000 of these are being used. Of the area currently in use only about 30.000 hectares are for food production, representing a mere 1% of the existing potential, which is insignificant when it comes to meeting the growing demand for food products. The development of irrigation infrastructure reckons with two levels of approach, namely small irrigation (less than 200 ha), and medium/large irrigation (equal to or more than 200 ha). This subprogramme has three priority actions:

- **Irrigation Development Studies**. This action includes studies for irrigation infrastructure projects whose objective is to establish the technical and economic

viability of the areas involved, a necessary condition for making decisions on subsequent actions.

- **Rehabilitation and Construction of Hydro-agricultural Infrastructure**. The objective of this action is to ensure the rehabilitation and construction of hydraulic infrastructure with a view to the expansion of irrigated areas, their management, utilization and sustainability. The development of hydro agricultural infrastructure gives priority to the rehabilitation of existing irrigation infrastructure without overlooking the construction of new ones, and aims at putting them into operation using better water and production management practices, within the irrigated agriculture promotion framework. This action includes the training of small local contractors in building incubators; and oversight and supervision of these construction works.

- **Management of Irrigation Networks**. One of the constraints identified in the irrigation subsector is the low use of irrigation networks, and management is seen as the way to overcome this problem. This component intends to offer producers specific packages aimed at the sustainability of irrigation networks in order to allow farmers to acquire knowledge and skills required for the proper good management of the irrigation systems under their responsibility. This action includes the training of producer associations in operation and maintenance of irrigation networks; the operation and maintenance of irrigation networks; the use of irrigation networks.

- **Promotion conservation of surface and ground water resources for irrigation in drier areas**. Mozambique has 97.3 km^3 of surface water and 17 km^3 of groundwater produced annually considering an overlap between surface water and groundwater of 14 km^3/yr, and total internal renewable water resources at 100.3 km^3/yr. In addition, 116.8 km^3 of surface water enter the country annually, of which 66 percent from the Zambezi River and thus total actual renewable water resources become 217.1 km^3/yr. The total capacity of 27 dams with a height of 10 m or more is estimated at 77.5 km^3. Water use estimates for the year 2000 indicate a total water withdrawal of 635 million m^3. The main consumer of water is agriculture, accounting for 550 million m^3 (87 percent), followed by the municipal sector using 70 million m^3 (11 percent) and industry consuming 15 million m^3 (2 percent). The main source of water is surface water; however, groundwater is utilized on a large scale in a number of urban centres for drinking water supply. Irrigation potential was estimated to be 3 072 000 ha by FAO, while other sources give 3 300 000 ha. The major areas suitable for irrigation are in the centre and north; the Zambezia province alone accounts for about 60 percent of the irrigation potential. The southern provinces have the highest need for irrigation but have only a small share of the land suitable for irrigation. Currently, 118 120 ha are equipped for irrigation, of which 40 063 ha are actually irrigated, consisting mainly of large schemes over 500 ha. The main irrigated crops are sugar cane, rice, citrus fruits and vegetables (mostly tomatoes and lettuce), which are cultivated with a low intensity of 1.1-1.2 crops/year. The main trends in agricultural water management are to promote small-scale irrigation throughout the country, to increase water use efficiency and to integrate irrigation into the social and economic context. However, the insufficient institutional capacity both at the central and local levels is the major constraint hampering the development of the small-scale irrigation sub-sector. A major challenge is posed by the deteriorated status of the hydro-agricultural infrastructure, requiring investment and technical assistance for its rehabilitation as well as maintenance operations.

- **Establish interventions to provent profereation of diseases associated with irrigation**. Where irrigation is practiced, it has contributed significantly to poverty alleviation, food security, and improving the quality of life for rural populations. However, the expansion and intensification of agriculture through irrigation has the potential for causing: increased erosion; pollution of surface water and groundwater from agricultural biocides; deterioration of water quality; increased nutrient levels in the irrigation and drainage water resulting in algal blooms, proliferation of aquatic weeds and eutrophication in irrigation canals and downstream waterways. The potential direct negative environmental impacts of the use of groundwater for irrigation arise from over-extraction withdrawing water in excess of the recharge rate. Water-borne or water-related diseases are commonly associated with the introduction of irrigation. The diseases most directly linked with irrigation are malaria, bilharzia (schistosomiasis) and river blindness (onchocerciasis), whose vectors proliferate in the irrigation waters. Other irrigation-related health risks include those associated with increased use of agrochemicals, deterioration of water quality, and increased population pressure in the area.

- **Protection of perimeter irrigated areas against flooding**, The function of dams and reservoirs in flood control is to reduce the peak flows entering a flood prone area. Rather than maintaining high water levels for increased head or sustained water supply for irrigation, flood control operation requires that water levels be kept drawn down deliberately prior to and during the flood season in order to maintain the capacity to store any incoming floodwater. Promotion of flooding has the potential for improvering flood recession cropping, groundwater recharge, natural vegetation, and wildlife and livestock population in the flood plain which is adapted to the natural flood cycles.

- **Promotion of low-cost irrigation systems**. The most successful small-scale irrigation farms are those which developed from farmers' initiatives. This is in contrast to government initiated, large-scale smallholder schemes, which have been rife with problems. Therefore, to promote farmer adoption, technology should be effective, easy to apply, in the desired amount, easy to operate and maintain with local resources and affordable. The use of appropriate technology on small-scale irrigation developments could be improved significantly. The overall understanding of the requirements of sustainable small-scale irrigation development and active support to small-scale farmers could be improved significantly by increasing contact between farmers and knowledgeable technical support staff in the field.

123. Table 7 presents the overall costs of the **Hydro-agricultural Exploitation Programme** for the period 2013 - 2017 at a value of about 25.384,4 million Meticais.

Table 13: *Orçamento global do Programa de Aproveitamento Hidroagrícola, PNISA*

Subprogrammes	Budget/Year (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Expansion and sustainable management of irrigation systems	4,785,693	5,540,9200	5,348,187	4,955,121	3,655,509	**24,285,429**
Strengthening of the institutional capacity of the Irrigation subsector	282,638	285,433	221,128	181,144	128,622	**1,098,964**
Total	**5,068,330**	**5,826,353**	**5,569,315**	**5,136,265**	**3,784,131**	**25,384,393**

Mechanization Support Programme

124. The Council of Ministers approved the Strategic Plan for Agricultural Mechanization (PEM), whose objective is to increase production and productivity by means of a better quality of agricultural operations and the saving of energy throughout the production and processing cycle of agricultural products. The general objective of this programme endorses the PEM objective and establishes the following specific objectives: (i) promote and consolidate institutional coordination between the stakeholders in the agricultural mechanization chain; (ii) ensure that the productive sector has properly trained and qualified operators and technicians; (iii) promote the grouping of agricultural production units around support infrastructure based on the ongoing agro-ecological zoning process; (iv) allow agricultural producers to have access to more profitable markets, information and the skills to negotiate in order to ensure the return on invested capital. The programme has a budget of 2.406,3 million Meticais and the priority actions for the program include:

- **Development of Network Services for Mechanized Agriculture**: by establishing service centers initially developed and operated by the state through Public Private Partnerships (PPP). This initiative is expected to stimulate the private sector to establish service centers within the context of the Mechanization Strategy.

- **Institutions for Agricultural Development**: This action seeks to strengthen the capacity of agricultural institutions responsible for the implementation of the mechanization investment plan and the provision of support services to farmers, input suppliers and marketing agents.

- **Training of Human and Material Capital**: lack of human capital trained for the operation and maintenance of agricultural machinery is one of the main constraints of agricultural mechanization, which has contributed to the early paralysis of available machinery and consequently to the reduction of the machine park available in the country. Poor access to credit for the purchase of agricultural machinery has resulted in a small contribution of mechanization to the increase of agricultural production and productivity.

- **Reorganisation of Production Areas**: according to the Agricultural Mechanization strategy the main implementing mechanism is service provision through mechanization service centers installed in areas with agricultural potential and potential beneficiaries of mechanization services. The dispersal of farmers in Mozambique requires a reorganisation as a way to make these centers profitable, and more support services to farmers.

125. Table 8 shows the budget of the programme, estimated at 2,406.3 million Meticais.

Table 14: *Overal Budget of the Mechanization Programme, PNISA*

Subprogrammes	Budget/Year (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Construction of infrastructure of service centres	154,000	154,000	154,000	154,000	154,000	**770,000**
Acquisition of Equipment	327,250	327,250	327,250	327,250	327,250	**1,636,250**
Total	**481,250**	**481,250**	**481,250**	**481,250**	**481,250**	**2,406,250**

COMPONENT 2: Market Access

126. Market access is one of the determining factors of component 1, i.e. the improvement of production and productivity. Access to essential modern inputs in order to increase productivity depends on the state of infrastructure, such as roads. The same is true of the product and input markets for which, apart from roads, access to financial services, conditions for value addition, storage and availability of information on prices are essential when it comes to increasing production and productivity. The objective of this component is to expand access to key markets of agricultural products for groups that are vulnerable to food insecurity, thereby allowing the generation of income, the improvement of food and nutritional security and the expansion of trade in agricultural products (cash and food crops) at national, regional and international level. The Market Access component of PNISA includes the following programmes: (1) Post-harvest Management and Marketing; (2) Financial Services; (3) Agro-business; (4) Rural Roads; (5) Information Systems and Agricultural Statistics.

Rural electrification, process of bringing electrical power to rural and remote areas, is used not only for lighting and household purposes, but it also allows for mechanization of many farming operations, such as threshing, milking, and hoisting grain for storage. Noting that in Sub-Saharan Africa less than 10% of the rural population has access to electricity.

Post-Harvest Management and Marketing Programme

127. The Post Harvest Management Programme contains 4 subprogrammes: (1) support to the development of competitive links in the value chain and the market; (2) support to the establishment of a commodity exchange; (3) the promotion of the quality and scale of marketing; (4) the creation of an enabling environment for agri-business and acces to markets.

- **Subprogramme of support to the development of competitive links in the value chain and the market**. This includes activities in the areas of (a) infrastructure and supply markets; (b) access to financial services; and (c) development of the capacity of market operators. The area of infrastructure will focus on public investment in post-harvest infrastructure particulary for preserving and marketing nutrient rich foods, and on the construction of agro-processing units; the construction and rehabilitation of rural and urban markets; the establishment of markets for the supply of livestock and fish products. In the area of financial services one intends to expand financial services aimed at savings, credit for processors, exporters and other entrepreneurs in the sector, and insurance. The total costs of the actions of this subprogramme are estimated at 72,3 million Meticais.

  The **Commodity Exchange Subprogramme**. At present the functioning of agricultural markets in Mozambique involves high transaction costs due to the limited availability of market information, comprehensive agricultural statistics that show supply and demand trends, a lack of transparency among market operators, non-compliance with contracts and lack of quality standards for products. These factors are constraints that

limit the activities of producers, processors and traders in the agricultural sector, resulting in low investment and thus in low trading volumes. This subprogramme seeks to bring order, efficiency, transparency and integrity to the agricultural markets. The activities of this subprogramme include the establishment of: (i) a trading floor where agents (brokers) of sellers and buyers are physically present to negotiate the quantities of purchase and sale of the products; (ii) a certified storage management and cold chain system located in the production areas, near import trading centers or centers close to major import - export terminals able to maintain a high level of technical and financial performance and authorized to store third-party products and issue storage certificates; Financial institutions that accept storage certificates as collateral due to confidence in the high level of liquidity of the goods deposited; (iii) a surveillance system and market information with support technology that includes: (iv) a quality control system with laboratories to verify the quality of the products, incluinding food safety, that enter the exchange. The total cost of this subprogramme is estimated at 57,8 million Meticais.

- **Subprogramme for the Promotion of Quality and the Scale of Marketing**. The objective of this subprogramme is to (i) develop a product and input market and increase the added value through public-private partnerships; (ii) provide laboratories with equipment for the analysis of soils, pesticides, pesticide fibres and residues in food; (iii) promote internal trade and exports of products by means of producer contracts and organizations, market studies, participation in fairs and collective marketing actions; (iv) enforce quality standards (class, packaging) by improving the services provided by national laboratories and quality certification and inspection institutes; (v) train producers, traders and service providers in order to improve their knowledge about standards and quality control. The total cost of this subprogramme is estimated **at 25 million Meticais.**

- **Subprogramme for the Creation of an Enabling Environment for Agro-businesses and Market Access**. The main initiatives include: (i) training of farmers, fishermen, traders and service providers on entrepreneurship in agriculture, fishing and the production of nutritious foods; post-harvest management, marketing and commercialization; agro-processing to reduce crop loss; (ii) support for small and medium scale enterprises to bring nutritious foods to market; (iii) promotion of non-financial services to agro-businesses (business plan, market information, links between suppliers and buyers); (iv) removal of barriers to the free movement of agricultural, fish and animal products. The total estimated costs of this subprogramme are 9 million Meticais.

128. Table 9 shows the overall budget of the Post-Harvest Management Programme, estimated at USD 165 million Meticias.

Table 15: *Overall Budget of the Post-Harvest and Marketing Programme, PNISA*

Subprogrammes	Implementation Years (10^3 MZM)					TOTAL
	2012	2013	2014	2015	2016	
Competitive linkages in the value chain and the markets	1,100	19,700	19,700	19,500	12,300	**72,300**
Commodity exchange	3,079	11,043	16,458	15,079	12,179	**57,838**

Promotion of the quality and scale of marketing	1,350	9,000	6,450	4,750	3,450	**25,000**
Environment conducive to agro-business and market access	470	3,200	2,750	2,450	1,000	**9,870**
TOTAL	**5,999**	**42,943**	**45,358**	**41,779**	**28,929**	**165,008**

The Financial Services Programme

129. A growing body of evidence suggests that increasing poor people's access to better financial tools can help accelerate the rate at which they move out of poverty and help them hold on to economic gains. However, it is costly to serve poor people with financial services, in part because most of their transactions are conducted in cash. Storing, transporting, and processing cash is expensive for banks, insurance companies, utility companies, and other institutions, and they pass on those costs to customers. Increasingly, people are now conducting most of their financial activities in digital form, and value is stored virtually and transferred instantaneously. The global revolution in mobile communications, along with rapid advances in digital payment systems, is creating opportunities to connect poor households to affordable and reliable financial tools through mobile phones and other digital interfaces.

130. The sub-programme on Financial Services in Mozambique for the agriculture sector aims to play a catalytic role in broadening the reach of digital payment systems, particularly in poor and rural areas, and expanding the range of services available on these platforms. Until the infrastructure and customer base are well established, this might involve a combination of mobile banking services that are accessible via cell phones and brick-and-mortar stores where subscribers can convert cash they earn into digital money (and vice-versa).

- Digital payment systems: With a minimum level of connectivity in rural areas, GoM will work with in-country providers to extend the reach of digital payment systems into rural communities and encourage poor people to adopt these systems through a mobile phone or other digital interface. Payment systems are crucial because they enable people to collect payments from customers, buy goods, pay for water and electricity, and send money to friends, family, and business partners.

- E-voucher system: Monetary value system which may be spent only for specific agricultural goods and services goods. Examples include fertilizers, seed and agricultural chemicals. So, the life of a voucher include: (i) Customer receives vouchers from agent for the services purchased, (ii) Customer forwards the voucher to related provider and asks for the service to be provided, and (iii) Provider sends collected vouchers to the agent that sends customers for payment for those services.

The Agro-Business Support Programme

131. The investment plan in the agro-business sector is an instrument to operationalize the PEDSA and defines the main guidelines and priority actions for a coordinated Government intervention that will allow for the revival of the agro-industry in Mozambique in the next 5 years. The plan aims at guiding public and private investment and investment of development agencies in the promotion of the agro-industry and its main focus is: (i) an increase of national production oriented towards domestic consumption and exports; (ii) stimulating the emergence of commercial investment by improving the production and business environment; (iii) the improvement of access to affordable credit by farmers and fishermen. Thus, the general objective of this programme is to boost sustainable development of the agricultural and fishery sectors through the promotion of employment, food and nutitional security and food, and the supply of agricultural and fish products to the national and international markets. In order to achieve the general objective the following specific objectives have been established: (1) increase the contribution of agrobusinesses to national agricultural and fishery production; (2) increase the value added by agricultural and fish products, by increasing the contribution of agriculture, fishery and the agro-industry to the Gross Domestic Product (GDP); (3) increase the value and diversify exports of agricultural and fish products; (4) reduce dependence on imports of agricultural and fish products in general and of food products in particular. This programme has an estimated budget of 2,9 billion Meticais or the five years of the PNISA. The main activities of the programme are the following:

- **Financing**. This action aims at: the establishment of special credit lines for financing agro-businesses, directed towards production, extraction of fish resources, processing, preservation and marketing; at joining the special credit lines in clusters and expand their impact on all activities in the agro-business value chain; creating - or encouraging the private sector to invest in - an agricultural insurance institution that covers the entire agro-business value chain; improving the dissemination of existing financing opportunities among recipients; encouraging financial institutions (IFs) to provide agricultural credit, in particular for SMEs, and at adopting more competitive interest rates for agro-businesses.

- **Incentives and Taxation**. The approval of incentives for the stakeholders in the agricultural sector is one of the strategies to stimulate private investment in the most important priority crops for agrobusinesses and to explore the agricultural potential of the country, especially in the agricultural development corridors. Within this context this action intends to: (i) identify the production factors and priority products to benefit from exemption of VAT and/or customs duties; (ii) study mechanisms for the VAT refund to be realized within the legal deadlines for all taxpayers (not just the average); (iii) encourage the use of national raw materials and semi finished products in the agro-industry; (iv) encourage the purchase of national products by supermarkets.

- **Markets**: Ensuring competitive markets for the marketing of national products is one of the main challenges for the agro-industry. This subprogramme intends to: organize working groups for specific agro-business value chains, national and international agrobusiness forums and regular fairs in clusters; promote the involvement of agro-businesses in international and regional fairs to promote demand.

- **Human Capital Development**: this action will coordinate with the Ministry of Education (and with education and training institutions not directly under Ministry oversight) to promote technical-professional courses in areas related to the agro-industry; promote the development of a class of national agrobusiness entrepreneurs through proper training and entrepreneurial vocation; install agro-business incubators in schools offering agricultural and technical training.

- **Institutional Framework**: This action seeks to coordinate the activities of the various stakeholders in the agro-industry (public, private and NGOs). Thus, the action will focus on capacity building of CEPAGRI in order to promote agro-businesses; the adaptation of policies, laws, rules and regulations and in particular the procedures for stimulating the development of agro-businesses; on facilitating access to land by creating flexible mechanisms for the granting of DUATs and allowing their transfers between farmers and other titleholders in the clusters; on the creation of Agra-Business Centers in the priority clusters; on the development and continuous updating of a specific information system for the agro-industry.

The Rural Roads Programme

132. Roads are an important asset for the growth of the agricultural sector in Mozambique. For the agricultural sector rural roads constitute the key link in the marketing and promotion of agricultural production, in particular of the family sector. The general objective of the Rural Roads Programme is to establish access to and improve the connection between areas with agricultural, tourism, industrial and natural resources potential and the consumption markets. Thus, the program will: (i) prioritize investments in the maintenance of the network of tertiary, vicinal and unclassified roads that enable the transport of agricultural production and access to areas with large population centers in order to facilitate the provision of basic services. The program activities will be implemented mostly by the national private sector, in particular by small local contractors and based on using local resources (material, labour, consultants and local communities) guaranteeing employment to rural populations and respecting gender issues

133. The programme includes the following actions: (1) the signing of a Memorandum of Understanding between the MINAG and the ANE; (2) the identification of sections/routes that will be subject to contracts by the provinces/districts; (3) survey of works to be carried out locally and of the local capacity for its implementation; (4) negotiation of packages to be executed by the ANE and by private contractors or local associations/communities; (5) the organization of local and national tenders for the execution of works, depending on each case; (6) monitoring and evaluation of the works completed; (7) training and capacity building with a view to promote (i) the creation of opportunities for local contractors to increase their knowledge and expertise in the execution of works, particularly in building structures and paving roads; and (ii) the training and capacity building of state officials from the districts, administrative posts, local authorities and local communities in matters related to roads.

134. All activities will take into account cross-cutting themes, such as the environment, in particular with respect to the construction, rehabilitation, maintenance and use of rural

roads. The Government will ensure that environmental protection standards are respected in road building and that they will be part of the specifications of the tender documents for the execution of works. Similarly, in implementing the programme effective measures will be taken to raise awareness about and reduce of HIV/AIDS in the localities and areas influenced by road building, thus promoting the participation of all institutions and organs related to prevention in the fight against this disease. The programme will also promote the equitable participation of men and women in the construction and rehabilitation of roads. The rural road programme covers all provinces of the country. Total costs are 7,2 billion for the duration of five years.

The Agricultural Statistics and Information Systems Programme

135. **The Information System and Agricultural Statistics Programme**: The Reference Regional Strategic Framework for Statistical Capacity Building in Africa (RRSF), which was adopted in 2007 by the Conference of African Ministers of Finance and Planning calls for all countries in Africa to elaborate a National Strategy for the Development of Statistics (NSDS). The strategic plan for the development of agricultural statistics in Mozambique is part of the general statistical planning conducted by the National Institute of Statistics (INE). Within this context, the development of a Master Plan and an Integrated Framework for the Development of Agricultural Statistics in Mozambique has been identified as the best strategy for the creation of a system of sustainable agricultural statistics for the country. Under this program “agricultural statistics” are defined in its broadest sense to include statistics on crops, livestock, beekeeping, forestry and fisheries related to “family households” or farms. Under the PNISA, the Agricultural Statistics and Information Systems Programme comprises 2 subprogrammes:

- The strategic objectives of the **Agricultural Statistics Subprogramme** are: (i) establish a minimum set of core data in order to respond to current and emerging demand; (ii) integrate agriculture in the national system of statistics; (iii) ensure the sustainability of the agricultural statistics system through statistical governance and capacity building; (iv) develop an Integrated Framework for Agricultural Statistics. The main actions to be undertaken under this subprogramme are: (1) establish programmes for the collection of core data - such as the “light” and “heavy” EAA; (2) transform into one single programme the many different systems currently used for data collection in agriculture; (3) promote timely production of on the basis of the DNIA; (4) strengthen the collection and analysis of data at provincial and district levels; (5) create (a) a National Directorate of Agricultural Information Systems (DNSIA), formerly known as the Department of Statistics established in the MINAG; (b) a National Commission for Agricultural Information (CNIA) chaired by the Permanent Secretary of the MINAG to oversee the development of the national agricultural information system, approve the estimates from crop forecasts and advise the government on the food situation in the country; (c) a Technical Commission for the National Agricultural Information System SNIA (CTSNIA) to oversee all technical and operational issues; (6) Raising awareness among the national, provincial and district leadership about the role and importance of statistical data and information in the management of public affairs and society in general; (7) Strengthen the collection and analysis of data at provincial and district level.

- The strategy to be followed will be (a) the creation of sustainable capacity at all levels – the capacity to collect and use information within districts, provinces and at the national level; (b) strengthening of training and supervision of field work; (c) inclusion of agricultural statistics in the INE School of Statistics and in local universities, (d) permanent training of and reduction of turnover among staff; (e) increased investment in capacity building for the production and use of agricultural statistics; and (f) design and implementation of a strategy for human resources development for agricultural statistics. In this regard the plan will help identify capacity gaps - training needs - and train professional statistics technicians in necessary key competencies, for example, sampling, data collection and analysis, etc., and engage in retaining personnel at all levels through training. The Agricultural Statistics subprogramme of has an overall budget of 661.0 million Meticais.

- The main objective of the Agricultural Information System Subprogramme is to promote the use of evidence in decision making at all levels, by taking recourse to the various existing agricultural information systems. The specific objectives are: (1) the development of information systems to address specific issues of the agricultural sector, (2) the improvement of the coordination of the various actors who have to feed the agricultural information system; (3) the promotion of the use of telecommunications for the dissemination of information; (4) increasing the capacity of MINAG officials to efficiently manage agricultural information system through training and updating. The priority areas of this subprogramme are:

    - **Information systems for management**, which aim at developing a plan for integrated monitoring and reactivating the MADER Management. The activities to be undertaken include (i) the definition and design of database software applications; (ii) the design of a template for the collection and circulation of information; and (iii) non-formal training inside and outside the country.

    - **Information System for Markets**: this includes the activities (i) support to the actual process of collecting and disseminating market information to increase its geographical coverage and breadth (e.g. the inclusion of inputs and vegetable products); (ii)); expand the dissemination of information via radio in local languages, and (2) the modernization of the existing Agricultural Markets Information System (SIMA) through the adoption of new information and communication technologies in information gathering; (iii) facilitation of access to market information on agricultural products by using information and communication technologies such as radio, internet, among others; and (v) promotion of the development of systems to use telecommunications to disseminate information on agricultural markets.

    - **Information and Communication Technologies TIC**: its main objective is the operationalization of the DE website and that of the MINAG in general. The activities include (i) the design and hosting of the Website; (ii) the launch of a tender for the purchase of server equipment (hardware and software); (iii) Technical training inside and outside the country.

    - **Management of Agricultural Documentation and its Dissemination**, specific objectives are: strengthen the system of agricultural documentation and

information (SDISA); developing and improving the dissemination of agricultural information at all levels and increase the technical capacity of the technicians. Activities include (a) preparing the Strategic Plan for Documentation and Information; (b) develop and improve the presentation format of the MINAG newsletter "Green Leaves"; (c) create an database of MINAG images including photographs and films - editing of monographs relevant to MINAG; (d) promote and coordinate training and capacity building in the areas of documentation and files.

- The Information System and Agricultural Statistics Programme has an overall budget of 773 million Meticais, as shown by Table 10 below.

Table 16: *Budget of the Information System and Agricultural Statistics Programme, PNISA*

Subprogrammes	Budget/Year (Thousand MZM)					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Development of Agricultural Statistics	137,000	132,000	137,000	129,000	126,000	
Agricultural Information Systems	26,250	22,101	21,132	21,912	20,646	
TOTAL	**163,250**	**154,101**	**158,132**	**150,912**	**146,646**	**773,042**

COMPONENT 3: Food and Nutritional Security

136. By definition Food and Nutritional Security (SAN) is the guarantee that all citizens, especially the most vulnerable groups such as children under 5 years of age, pregnant and lactating women at all times have physical and economic access to the food they need, taking into consideration the promotion of the use/consumption of these foods, adequate health and water and sanitation services, so that they have an active and healthy life and ensure the progressive realization of the human right to adequate nutrition. Therefore the objectives of this component are to strengthen the multisectoral coordination of SAN and strengthen the activities directed towards family households in order to improve access and use of food with a high nutritional value.

Food Security Monitoring and Multisectoral Coordination Programme

137. The Council of Ministers approved the Food and Nutritional Security Strategy and Action Plan (ESAN II) for the period 2008-2015 in Resolution Nr. 56/2007 of 16 October. To ensure the implementation of ESAN II, Decree Nr. 24/2010 of 14 July created the Technical Secretariat for Food Security and Nutrition (SETSAN) as the body of the Government of Mozambique that ensures and coordinates the promotion of food and nutritional security (SAN). The SETSAN is under the tutelage of the Ministry that oversees the area of Agriculture. The actions of this body aim at contributing to the reduction of chronic food insecurity levels by 35% (highly vulnerable) in 2007 to 20% (moderately vulnerable) in 2015. National statistics indicate that in recent years the country has experienced a slight reduction in chronic malnutrition from 48% in 2003 to 42.6% in 2011. To ensure the achievement of the millennium development goal of halving the proportion of people who suffer from chronic malnutrition, hunger and poverty, it is important to accelerate the coordination of multisectoral actions to reduce malnutrition and food insecurity by focusing attention on the main groups most vulnerable to food and nutritional insecurity (InSAN). The Programme includes four subprogrammes:

- **Subprogramme for the Evaluation and Analysis of Food and Nutritional Security Information**. The specific objective of this subprogramme is to provide credible and timely information on SAN. Priority actions are: (i) support to the SAN information system at central and provincial levels; (ii) support to the elaboration of studies and research on SAN; (iii) strengthening of the information system on health, agriculture, trade, public works. These actions will be implemented in coordination with PAMRDC (Budget: 127.949.980 Meticais).

- **Subprogramme for Policy Formulation**. The specific objective of this subprogramme is to ensure that SAN is integrated as a central element in the framework in the framework of national decentralized planning policies, strategies and processes. Priority actions are: (1) support to the elaboration of SAN policies; (2) support to the formulation of policies (3) support to the planning and monitoring of SAN Interventions. (Budget: 23.284.430 Meticais).

- **Subprogramme for the Promotion of Food and Nutritional Security**. The specific objective of this subprogramme is to promote, inform about and influence the availability, access to and use of adequate and healthy food. Priority actions are: (1) nutrition education at various levels; (2) advocacy and raising awareness among members of Advisory Councils, Women Associations, groups of teachers and others about SAN and chronic malnutrition; (3) promote the production, marketing and delivery of diversified crops and fortified foods with high nutritional value to the poor and undernourished such as the promotion of horticulture, roots and tubers, pulses, animal sourced foods , and support for those foods that make up ingredients of fortified foods for mothers and children.

- **Subprogramme for Institutional Development**. The specific objective of this subprogramme is to strengthen multisectoral coordination of the food and nutritional security agenda at central, provincial and district levels. Priority actions are: (1) consolidate the coordination forum of SAN and DHAA; (2) strengthen the SETSAN with human resources; (3) support the institutional setup and operation. This subprogramme has a budget of 305,9 million Meticais.

- **Safety and Food Quality Subprogramme**. This subprogramme aims at strengthening control systems and improving the quality of food products, especially products of nationla origin. Priority actions include: (1) investments in regional laboratories; (2) educational and extension programmes on production, harvest and post-harvest aspects aimed at minimizing contamination risks; and (3) investments in the evaluation of possible food fortification activities.

Table 17**: Selected Strategic Objectives and Outcome Indicators by Component**

Component	Strategic Objective	Outcome Indicator	Unit	B/line	Target
Food Security	Improve food security at national level	Number of months food insecure HHs have inadequate food	#	3.2	1.0
	Reduce HH level post harvest losses	% losses cereals per annum	%	30	15
Nutrition	Improve nutrition security for HH through education	% of targeted households with nutrition knowledge and methods improved	%	30	40
	Promote adequate food utilization at HH level	Diet diversity score (in collaboration with Food Nutrition Commission)	%		
Disaster risk management	Enhance farmers protection to disaster	% vulnerable farmers having access to support	%		
	Strengthen information systems	% Farmers accessing information	%		

138. The total budget of the SAN Monitoring and Multisectoral Coordination Programme is estimated at 484,5 million Meticais, as shown by Table 11 below.

Table 18: *Budget of the SAN Monitoring and Multisectoral Coordination Programme.*

Subprogrammes	Budget per year (10^3 MZM)	Total

	2013	2014	2015	2016	2017	
Evaluation and Analysis of SAN Information	35,505	9,264	10,572	12,654	59,956	127,950
Formulation of Policies	3,695	3,637	4,161	5,031	6,765	23,284
Food Safety and Quality	4,050	4,334	4,940	5,978	8,070	27,371
Institutional Development	140,509	88,518	33,770	19,745	23,315	305,858
TOTAL	**183,759**	**105,748**	**53,443**	**43,407,485**	**98,106**	**484,463**

Programme to Improve Access to and Use of High Nutritional Value Food

139. The objective of this program is to strengthen activities directed towards family households that improve access to and use of foods of high nutritional value food through the integration of key SAN actions in the agricultural and fisheries sector, in line with the pillars of ESAN II and in accordance with objective 4 of the PAMRDC. The program includes 3 subprogrammes:

- **Subprogramme on the availability of high nutritional value foods**, whose main priority actions are: (i) promote the production and consumption of foods rich in micronutrients (e.g. orange flesh sweet potato, amaranths, moringa, cashew, mango, leafy greens, pulses) and protein (beans, chicken, fish, eggs, goat, and milk); (ii) strengthen the capacity of family households to process (taking into account aspects related to aflotoxines, micotoxines, Konzo and other risks associated with post-harvest handling practices) and properly store of locally available food and promote small food processing facilities, including mills; (iii) assist women in having access to natural resources, including land; (iv) reduce post-harvest losses through training of farmers in the use of preservation technologies for nutrient – dense foods, and the treatment of produce against pests and diseases; and (v) build improved granaries, silos and cold storage facilities to ensure food storage at family household and community level respectively:

- **Subprogramme of access to food**, whose priority activities are: (i) ensure that the agricultural sector makes local foods available to support social action programmes/ food support; (ii) provision of timely information on market access and food prices; (iii) promote the flow of staple and nutrient-rich food from production areas to rural and urban consumption areas;, (iv) promote income-generating activities and micro-credit.

- **Subprogramme on food use**, whose priority activities are: (i) promote adequate and diversified food valuing local foods for the population at large but with emphasis on vulnerable groups; (ii) teach farmers' associations, groups of fishermen and other groups simple techniques in processing, conservation and consumption of food with high nutritional value; (iii) promote the consumption of treated water, community mobilization for the construction of improved latrines and their proper use, as well as good personal hygiene practices and environmental sanitation; (iv) through the agricultural extension network support the promotion of exclusive and continued breast feeding and of

complementary feeding after 6 months of age; (v) promote the consumption of fortified foods, in particular iodized salt, as well as locally processed foods (enriched flours).

140. The total budget of the Programme to Improve Access to and Use of High Nutritional Value Food is estimated at 125,01 million Meticais, as shown by Table 12 below.

Table 19: *Budget for the Improvement of Access to and Use of Foods, PNISA*

Subprogrammes	Budget per year (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Availability of food with high nutritional value	6,548	7,006	7,497	8,022	8,583	37,656
Access to food	6,850	7,329	7,843	8,392	8,979	39,393
Use and utilization of food	8,340	8,924	9,548	10,217	10,932	47,961
TOTAL	**21,738**	**23,259**	**24,888**	**26,630**	**28,494**	**125,010**

COMPONENT 4: Natural Resources

141. This component belongs to CAADP Pillar 1, i.e. the expansion of the area under sustainable management and irrigation. Mozambique is considered a country rich in natural resources, with fertile land, forest and wildlife resources that constitute a high potential for socio-economic development and poverty reduction, especially in rural areas where about 70% of the population lives and depends on these resources for its livelihood. Land is one of the most important natural resources of the country. It is estimated that about 36 million hectares of land in the country are arable. Forests occupy an area of about 54,8 million hectares (70% of the country's surface area). These forests are a considerable asset consisting of forest and other woody formations of different compositions and densities. The country also has a rich and diverse wildlife with considerable potential for development, with over 80 species representing commercial and tourism value, more than 59 of them mammals, 16 bird species and 5 species of reptiles, most of which are highly appreciated for hunting. Data from 2004 estimate that the contribution of the forest and wildlife sector to GDP was between 3,14% and 3,86% respectively. It is estimated that the forest sector employs about 10.000 workers, while it shows an upward trend with the current development of forest plantations in the country.

142. The main weakness in this area is weak system of checks and balances in the exploitation of natural resources (forest, land) alongside immense opportunities for development given the existence of large tracts of land uncultivated land; the availability of arable land; and a large demand for bioenergy due to the rising price of oil. The potential of natural resources that the country has constitutes an opportunity to generate economic social and environmental benefits for present and future generations. Among other things, obtaining benefits from these resources requires adequate planning, the definition of intervention priorities and investment in human, financial and material resources in order to create an efficient management and administration system of these resources. At present the challenges for the country in the area of Natural Resources require efforts aimed at (i) improving the use and enjoyment of potential land for agriculture; (ii) using zoning techniques in oder to facilitate the targeting of investments and human settlements; (iii) promoting the establishment of plantations for energy purposes and for the conservation and protection of fragile ecosystems; (iv) promoting the local industry for processing forest products; (v) strengthening of programmes for the prevention, monitoring and control of fires; (vi) strengthening of programmes to reduce the man/animal conflict. This PNISA component includes 4 programas: (1) Land for Agricultural Purposes, (2) Forestry and Wildlife; (3) Institutional Development; and (4) Mapping and Remote Sensing.

Land for Agricultural Purposes Programme

143. The mission of the National Directorate of Land and Forests (DNTF) is to "*ensure access to and the rational use and enjoyment of land, forests and wildlife for the economic, social and environmental benefit of present and future generations of Mozambicans*." In order to comply with this mission, knowledge of current land occupation for different purposes is critical to the MINAG planning process. Within this context the *Land for Agricultural Purposes* Programme has as main objectives: (i) promoting the sustainable use of land; and (ii) ensure and facilitate access to and protection of rights for the use and enjoyment of

land, particularly at local community level. The total budget of the Land for Agricultural Purposes Programme is estimated at 952.6 million Meticais (Table 14), and comprises the following sub-programs and priority actions:

- This **subprogramme for land policy, land use and administration** aims at obtaining comprehensive knowledge of land occupation for various purposes and at ensuring the land rights to occupants in good faith (customary rights) as well as the rights of the local communities. This action also aims at ensuring security, tenure and access to land quickly and efficiently, by providing state agencies with in instrument to facilitate decision-making in the process of authorization of applications for land use and enjoyment rights. Moreover, the subprogramme will support the regulation of occupation, use and enjoyment of land so as to ensure compliance with the land legislation on land, and the reduction of lands lying fallow, focusing on areas with potential for agricultural investment, in order to make these areas available for the development of new investment projects. Priority actions include: (i) survey and inventory of occupations for cadastral mapping; and (ii) strengthening the supervision of land.

- **Subprogramme for the Development of a Land Cadaster**. This subprogramme seeks to address the current need for a national land registry base for the planning and decision making process within the context of the current administration and management challenges with respect to this resource. The priority action is the implementation of a national electronic cadaster that speeds up registration processes and the availability of information to the public and all entities involved in the administration and management of land. The budget for this sub-programme is estimated at 97.5 million Meticais.

- The **agro-ecological zoning subprogramme** only has one single priority, namely the realization of zoning at national level.

Table 20: *Total Budget of the Land forAgricultural Purposes Programme, PNISA*

144. The objectives of the **Forest and Wildlife Programme** are: (i) promote the sustainable use of forests and wildlife; (ii) ensure the supply of raw material to the forest industry and increase exports of processed products (timber and non-timber); (iii) increase community participation in the management of forest and wildlife resources; (iv) increase the reforested area in the country; (v) ensure conservation and management of forest and

wildlife resources; (vi) mitigate the man/animal conflict. This programme contains the following 3 Subprogrammes:

- **Forest and Wildlife Management Subprogramme** The objective of this subprogramme is to strengthen the capacity of the DNTF to supervise forest and wildlife exploitation in a participatory manner; implement a strategy to manage the man/animal conflict; provide information needed for decision-making on how to best manage forest resources, taking into account the existing forest potential; contribute to the preservation of rare, endemic, threatened or endangered flora and fauna species and fragile ecosystems through a detailed survey of the current state of these resources; redefine reservation boundaries and define a model for their management; reduce the degradation of native forests and the loss of native wildlife due to the occurrence of wildfires, by raising awareness among local communities, the development of a management plan for fires, training of natural resources management committees in forest management techniques. The subprogramme also aims at the development of capacity and infrastructure for sustainable forest management, taking into account the mitigation of and adaptation to climate change. Planned within this context is the creation of a monitoring system (MRV) of emissions and carbon sequestration and changes in coverage; an increased participation of local communities in natural resource management through training in sustainable management and utilization of the 20% rates of forest and wildlife exploration, delimitation and certification of community areas, the strengthening and training of Natural Resources management committees. The priority actions of this subprogramme are: (1) Participatory Monitoring of Forests and Eildlife; (2) the implementation of a management strategy of the man/animal conflict; (3) mapping the use and coverage of forest inventories at a scale of 1: 250,000; (4) mapping the use and coverage of and making inventories of mangrove forests; (5) the implementation of the programme to support the forestry sector in Mozambique; (6) the implementation of the forest and wildlife management information system (SISFLOF); (7) the rehabilitation of nature reserves; (8) the prevention and control of forest fires; (9) the implementation of the MRV System Platform under the REED+; and (10) promotion of community management of natural resources.

- The PFNM seeks to promote the sustainable use of the PFNMs and raise awareness about the importance and value of these resources with a view to to meet the needs of communities and develop alternative income generating activities at local level. The priority action of the survey of the current situation of the forest industries at national level is to update and get to know the status of the current industrial park, jobs and production capacity, in order to improve planning and decision making regarding the development of the national timber industry and the use of forest resources.

131. The budget of the Forest and Wildlife Programme is estimated at 1,525.6 million Meticais, as shown in Table 21 below.

Table 21: *Total Budget of the Forest and Wildlife Programme, PNISA*

Subprogrammes	Budget (10^3 MZM)					Total
	2013	2014	2015	2016	2017	

Forest and Wildlife Management	371,467	263,868	141,677	114,669	117,962	**1,009,643**
Reforestation	150,168	161,432	51,223	36,612	23,612	**423,046**
Forest Products	20,026	17,414	17,501	17,570	20,378	**92,908**
Total	**541,660**	**442,714**	**210,401**	**168,871**	**161,952**	**1,525,597**

Institutional Development Programme

145. The *Institutional Development* Programme contains only the subprogramme of Legal and Institutional Reform and contains 2 actions, namely: (1) Institutional Strengthening of the National Directorate of Land and Forests; and (2) its funcioning. This programme is budgeted at 387,029.0 thousand Meticais for a fiveyear period.

146. Table 22below shows the overall budget of the Natural Resources Component, namely 3,160.9 million Meticais.

Table 22: *Overall Budget of the NaturalResources Component, PNISA*

Programmes	Budget (MT)					Total
	2013	2014	2015	2016	2017	
Mapping and Remote Sensing	73,107	102,289	139,703	136,945	105,610	**557,654**
Land for Agricultural Purposes	199,536	126,420	121,440	121,035	122,150	**690,581**
Forests and Wildlife	541,660	442,713	210,401	168,871	161,952	**1,525,597**
Institutional Development	91,200	77,769	75,377	71,055	71,628	**387,029**
TOTAL	**905,503**	**749,191**	**546,921**	**497,906**	**461,340**	**3,160,861**

Mapping and Remote Sensing Programme

147. CENACARTA was created by Decree nr. 38/90 of 27 December, as an autonomous institution under the Ministry of Agriculture, responsible for coordinating all Remote Sensing activities at national level. Decree nr. 48/2004, of 17 November, integrated the areas of cartography, geodesy and aerial photography in CENACARTA, thus making it into the National Authority for Remote Sensing, cartography, geodesy and aerial photography, and ensuring the production of basic geographical information as well as well as the coordination and implementation of geo-mapping activities. The institution's mission is to produce, update and disseminate geographical and mapping information about the national territory, in order to ensure the sustainable development of the country and the preservation of its sovereignty.

148. Present constraints are: (1) outdated geo-cartographic and, in some cases, incomplete or nonexistent legislation; (2) lack of basic guidelines and national technical norm for the standardization of the production of geographical and mapping information in an IT/digital environment; (3) lack of mechanisms to control the quality of maps generated by public and private entities; (4) difficulty in finalizing a National Mapping Plan consistent with real supply and demand, and weak organizational structure for the promotion of coordination among the various bodies producing geographical and mapping information, (5) lack of qualified personnel in the field of geotechnical engineering for the planning, production and quality control of maps; (6) poor preparation of existing technical staff in various areas of the institution; (7) lack of technical equipment for geodesic surveys and map production; (8) inadequate conditions for filing printed cartographic documents; (9) insufficient financial resources for the implementation of map production and geodesic support projects; (10) poor processes for the allocation of financial resources to activities.

149. Despite these constraints the program has the following opportunities: (i) preparation and approval of the National Mapping Plan; (ii) approval of current legislation that clearly defines the procedures to be followed by private entities; (iii) existence of political steering instruments that highlight the role of CENACARTA in exercising its functions (PQG-2010/2014 and PARP), (iv) institutional recognition of CENACARTA as authority in its area of activity; (v) the existence of cooperation partners who can finance the activities of CENACARTA; (vi) acknowledgement of mapping as an essential element of planning and land use planning by the government. In order to realize its mission CENACARTA elaborated the National Mapping Plan, which defines 4 subprogrammes in npriority areas of intervention in mapping and remote sensing, namely:

150. **Subprogramme Review of Geo-Mapping Legislation**: the mission of the state is to provide society with systematic and updated geographic and mapping information on the country based on legislation that is compatible with the existing technological reality. As such, the actions envisaged for this sub-programme are: (1) revision of the legislation on aerial photography and cinematography; (2) review of the new geodesic reference system and the establishment of a legal framework for geodesy; (3) preparation of the long term national mapping plan (10 years); (4) principles and standards for the production of maps; (5) regulation of mapping activities by private entities; (6) specifications and standards for geodesic surveys; (7) standardization of geodesic landmarks and permanent GNSS stations; (8) creation of a national geographic information system; (9) technical specifications for structuring digital geo-spatial vector data.

151. **Subprogramme Map Production**: The elaboration of systematic national mapping (topographic maps at different scales) constitutes the basis of planning and of the support to the operationalization of various actions aimed at development and at defending the country's sovereignty, and it is the exclusive task of CENACARTA. Most systematic mapping of country on the standard scales of 1:50.000 and 1:250.000 is old and very outdated. At present there are no regular topographic maps available at these scales, which hampers not only actions for defence and sovereignty but also the support to the major engineering works promoted in the country. Another important challenge is the production of maps showing the administrative organization (national, provincial and at district level) and urban areas, for which there is an increasing demand by public administration entities. Thus, the main actions planned for this subprogramme are: (1) re-edition and printing of no longer available topographic maps on the scales 1:50.000 and 1:250.000; (2) production of maps on scale 1:25 000 of the Lower Incomati, (3) production of maps on scale 1:25 000

of the Zambezi Valley; (4) production of maps on scale 1:25 000 scale for the development corridors and other priority development areas; (5) production of maps on scale 1:10 000 of Nacala and Nampula; (6) production of urban maps (maps of capitals); (7) production of maps on the administrative organization of the country (at provincial and district level).

152. **Subprogramme for the Modernization of the National Geodesic Network**: the National Geodesic Network is defined on the basis of a set of geodesic points (vertices) marked by markings in the terrain determined by operational procedures and calculated coordinates using precision geodesic models compatible with the purposes for which these are intended. The technological revolution brought by the introduction of the Global Positioning System (GPS) has made it possible that from 1985 onwards the Space Geodesy component can be used in Mozambique in the establishment, consolidation and updating of the National Geodesic Network, making the execution of topo-geodesic work faster and more efficient, and leading to the results (coordinates) that are more consistent and accurate. However, according to the international technical requirements the National Geodesic Network lacks density and remains outdated and not very accurate. Thus, this subprogramme consists of the following actions: (1) the establishment of permanent GPS stations (National GPS Network); (2) increasing the density of the Classic Geodesic Network; (3) the repair of destroyed geodesic markings; (4) the closure of the open circuit of the national levelling network, (5) extension of the levelling network of the area north of the Zambezi river; (6) the creation of a national gravimetric network after the collection of information and data.

153. **Subprogramme Institutional Strengthening**: this aims at address the challenges posed by the implementation of new assignments of CENACARTA (Decree 48/2004). The main constraints in this area have been the difficulties in recruiting technical staff due to the lack of individuals suitably qualified for the specific tasks of geography, geodesy and mapping, the key areas of the institution. To reverse this situation the MINAG has had to fight to promote the introduction of a Geographic Sciences Course at the Eduardo Mondlane University. Thus, this subprogramme includes the following actions: (i) formal training; (ii) capacity building and training in English, GIS, remote sensing, geodesy and photogrammetry; (iii) equipping (equipment, material).

154. The planned budget for the Mapping and Remote Sensing Programme is estimated at 557,6546 million Meticais, as shown in Table 23.

Table 23: *Total Budget of the Mapping and Remote Sensing Programme, PNISA*

Subprogrammes	Budget (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Review of Legislation	2,250	450	600	0	0	**3.300**
Production of Maps	34,375	68,751	65,295	69,625	73,910	**311,956**
Modernization of the Geodesic Network	6,612	8,108	46,188	34,850	4,350	**100,108**

Institutional Strengthening	29,870	24,980	27,620	32,470	27,350	**142,290**
Total	**73,107**	**102,289**	**139,703**	**136,945**	**105,610**	**557.654**

- **Subprogramme for the Use and Enjoyment of Land**. The total budget is estimated at 593,1 million Meticais.

- The cost of this intervention is 262 Million Meticais.

Table 24: **Selected Strategic Objectives and Indicators by Component**

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Land-use Planning, Administration and Management	Improve Land Use Planning	Area targeted under detailed land use planning	ha	0	10,000
	Reduce land degradation in priority catchments	Improved land quality (% of soil organic matter)	%	1	2
		% of small-scale farmers that have adopted conservation agriculture (BY 2010)	%	10	25
Water-use and Flood Control	Increase availability of water for multi-purpose use	% of farmers with access to irrigation for high value crops Area brought under irrigation	% Ha	10 170,000	20 188,000
Forestry Management	Reduce deforestation due to shifting cultivation and agriculture extensification	Area lost to deforestation (ha/year) BY 2011	Ha	250,000	250,000
Capture fisheries management	To promote sustainable exploitation of capture fisheries resources	The per-capita fish consumption (kg fish per person per year)[15]	kg	6.2	12

Forest and Wildlife Programme

- The **Reforestation Subprogramme** contains only one action, namely the development of plantations for energy and conservation purposes.

- The Forest Products Subprogramme has 2 actions: (1) the promotion of non timber forest products (NTFPs); and (2) an assessment of the current situation of the forest industry at national level.

[15] This also applies for aquaculture

COMPONENT 5: Institutional Reform Programme to enhance implementation

Institutional Reform Programme

155. The Strategic Plan for the Development of the Agricultural Sector (PEDSA) advocates the strengthening of agricultural institutions to achieve its objectives. In this sense each component of this investment plan identifies concrete actions to strengthen producers and other stakeholders, as well as their organizational structures. The success of the PEDSA also means that there is a strong body to coordinate action in the public sector.

156. The current structure of the Ministry of Agriculture results from the functional analysis made in 2006 and revised in 2008, as well as from specific adjustments introduced to respond to the dynamics of the sector over the years. Created at central level was the Technical Secretariat for Food Security and Nutrition (SETSAN), an institution supervised by the Minister of Agriculture and the National Irrigation Institute (INIR). The reflections on the efficiency of agricultural statistics and information that led to the drafting of the Agricultural Statistics Master Plan recommended the integration of monitoring and evaluation systems, including the Early Warning and the Agricultural Survey, as well as to the creation of a Directorate of Agricultural Statistics. This exercise seeks to strengthen the capacity to monitor and evaluate the performance of the sector as well as the production and availability of agricultural statistics and information of the highest quality. Moreover, the experience accumulated in the implementation of the structure resulting from the functional analysis referred to above shows that the concentration of functions in a few functional units reduces their efficiency. Thus there is a need to decentralize functions in some functional units and to restructure other ones to allow for a better performance. As a matter of fact adjustments are made at the level of natural resource management and agricultural services and of international planning and cooperation, to achieve this goal.

157. The inspection and internal auditing play a key role in the proper management of public assets. In order to strengthen this service it will be restructured to ensure regular internal audits, currently undertaken by a budget execution body. The office of the minister fundamental to the political and strategic orientation of the sector should be strengthened with expert advice in order to increase its analysis and strategic intervention ability. At provincial level, a review of the structure of the directorates is expected that should match the requirements of the PEDSA implementation, focusing on a simple operational and results-oriented structure. In fact the provincial directorates are responsponsible for the agriculture and fisheries sector and will be called Provincial Department of Agriculture and Fisheries (DPAP).

158. The implementation of the Law on Local bodies (LOLE) led to a new coordination structure of the sector at local level. With the creation of District Services for Economic Activities, the agricultural sector no longer has a specialized service at district level. In order to strengthen the mechanism for dialogue and consultations with stakeholders in the agricultural sector, a national forum for consultation will be established that will support the groups and sub-sectoral forums that exist already. At the level of subordinate institutions, the organizational structure of the IIAM should be revised as part of the

implementation of the research strategy in order to make it more productive. To match this development the staff of the IIAM and the Agricultural Development Fund (ADF) will also be revised.

159. The Institutional reform/Strengthening Programme has 2 subprogrammes, namely: (1) Human Resources Development and Management of the MINAG; and (2) Support to MINAG Administration and Finances.

Subprogramme for the Development and Management of Human Resources

160. Institutional Development is one of the pillars on which the PEDSA rests and it assumes that MINAG must acquire Human Resources in quantity and quality to meet the challenges posed by the strategic plan. To this end, measures should be undertaken to ensure the recruitment, retention, training and development of MINAG Human Resources at various levels. These actions require that the National Human Resources Directorate increases its capacity to manage the sector's Human Resources. One of the key aspects in achieving the established objectives by implementing the PEDSA is the need for reforms in the MINAG structure and for the adaptation of Human Resources management instruments to the ongoing changes. Similarly, the implementation of the strategy to fight HIV/AIDS in the public sector forces the MINAG to reflect upon and implement a set of measures aimed at addressing the pandemic by means of prevention, treatment and mitigation, in order to minimize its effects on MINAG,.

161. The MINAG decided that the development, currently underway, of a MINAG Human Resources Development Plan (PDRH) would offer the most appropriate and systematic way to meet the PEDSA challenges, aiming at creating the necessary conditions to promote the improvement of the performance of the sector's human resources. The process of preparing the PDRH resulted in the following findings: (i) the MINAG currently has a workforce of about 4,478 employees and agents (not counting the staff from the Zonal centres of the IIAM), of which 578 are assigned to the National Directorates (40.5% women), 691 are working at subordinated institutions (40% women) and about 3209 are assigned to the Provincial Directorates of Agriculture, including the SDAE's (18.5% women). In terms of training, 45% of staff serving at the National Directorates have higher education; 31.7% and 12.5% of the staff of subordinated institutions and Provincial Directorates of Agriculture respectively have higher education.

162. Analysis of the MINAG staff also revealed that by 2015 about 11% of employees would be due to retire. When the PEDSA is in its last year of implementation, at least 25% of the current workforce will have accumulated the years needed for retirement. The current data in subordinate institutions indicate that 5% have completed 35 or more years of service. Over the next four years, 16% of employees will be retired. Aggregate data indicate that over the next 15 years 48% of staff will retire. In addition to this, the level of suitability of MINAG officials and employees requires particular attention: only 28% of employees are considered suitably employed. In the subordinate institutions 31.4% of officials and employees with higher education are considered competent for the role they play and only 5.5% of those with medium level education are viewed as the right person in the right place. Overall 63.1% of employees and agents are executing tasks for which they

do not have the right profile, with the exception of the IIAM where approximately 53.2% are suitabçy employed.

163. The main constraints to the development and proper management of HR in the MINAG are perceived to be the following: (i) the absence of a reliable database on staff, for staff management; (ii) the lack of documented strategic management tools/mechanisms – the lack of a plan to train and develop human resources; the lack of clarity about job descriptions; and the practical limitations of the SIGEDAP implementation; (iii) the absence of incentives to motivate, attract and retain qualified staff; (iv) unsuitably employed staff; (v) non-competitive work conditions (pay, benefits, training, professional development and recognition); (vi) lack of clarity in the identification of training needs aimed at sector development; and (vii) poor inter- and intra-sectoral coordination

164. Thus the overall objective of the Subprogramme for the Development and Management of Human Resources is to provide MINAG with sufficient staf able to carry out the PEDSA objectives of ensuring increased production and productivity and food and nutritional security of Mozambican families. To achieve this objective, the following specific objectives been established: (i) align the human resource management instruments to the changes made in the structure of MINAG at all levels, (ii) improve the allocation of qualified human resources based on the correspondence of the training profile with the duties and powers to be exercised in the workplace; (iii) align the objectives of developing individual capabilities with the strategic objectives of the sector in the planning of education and training; and (iv) align the role of education and training institutions and associations of farmers and producers with the PEDSA objectives of increasing agricultural productivity and production; (v) strengthen the institutional, organizational and management; and (vi) operationalize the strategies on the crosscutting issues of the civil service (HIV/AIDS, disabilities and gender)

165. Thus the priority actions of this subprogramme are:

- **Legal reform**: this includes the revision of: (1) Organic Statutes and Internal Regulations of the MINAG; (2) Specific Career Qualifications of the Ministry of Agriculture in order to adapt them to MINAG functions [unclear]; and (3) Staffing

- **Recruitment and management of personnel**: This action involves: (1) *the establishment of a database for HR management in the MINAG*. This includes the creation of a database on and for the management of personnel; computerization of the individual files of staff and state employees assigned to the MINAG; and training of HR staff operating the database; (2) *adoption of mechanisms to link human resources with the right places and functions*, which requires a revision of the staff of different sectors and areas; the recruitment of new staff to fill existing gaps and the training of existing staff in priority areas; studying mechanisms to coordinate recruitment and training of personnel with OLEs within the context of the LOLE; develop and implement the recruitment plan of new staff to replace retirees and/or staff due to retire; and implement the program to suitably employ staff (suitability of staff to sectors and areas corresponding with their skills profiles); (3) *definition of the profile of human resources and of the functions and powers of each of the areas* in order to make the process of employing people suitably more efficient. This includes: designing a program of change management that deals with the process of making people suitable

for the jobs they are doing; prepare job description for employees; make the job and task descriptions; provide for and train working groups for the intervention areas.

- **Training capacity building and HR development**, involving the following activities: (1) *creation of a platform for information about training/capacity building needs, consistent with and appropriate for the objectives of individual and MINAG development, by means of*: exchange of experiences, knowledge and skills between internal and external working groups; training and meetings directed towards consolidation of organizational objectives and goals; elaboration of documents on medium-term training needs; elaboration of an integrated and long-term training plan aimed at continuous improvement and the development of knowledge and skills in priority areas; (2) *deepen the foundations for the creation and consolidation of the SIGEDAP* in order to: consolidate the instruments for implementing the SIGEDAP; create teams to improve performance in the implementation of the SIGEDAP; ensure the signature of performance agreements in the sectors; (3) imp*rove the working conditions of MINAG employees and agents*, which includes equipping the HR sector at all levels with office supplies and equipment; (4) *improve management processes to stimulate retention of qualified staff* through: design and implementation of promotion ad career path plans; mechanisms to award the best employees and work teams; the implementation of the salary policy; design of an incentives policy for the sector and funding mechanisms.

- **Capacity building and strengthening of Institutions for Agricultural Education and Associations of Producers and Farmers.** Agricultural education institutions that have the minimum conditions of eligibility benefit from the programme to strengthening institutional capacity with respect to the financing of educational infrastructure, including teaching means and materials so that education oriented at “knowing how” can be realized. This assumption imposes aligning the indispensable scientific and pedagogical rigour required by teaching, with the necessary practical guidance required by the management of professional day-to-day demands. Within this context, the table below represents the minimum needs of institutional capacity building. These figures reflect the number of educational institutions geared towards agricultural vocational education in Mozambique (each province). The main actions include: establish partnerships and agreements with agricultural education and training institutions; participate in curriculum development of agricultural education and training institutions in order to adapt them to the development needs of the sector by including agricultural, nutrition and food security issues; promote the integration of animal husbandry issues, production techniques and processing and marketing of agricultural products in literacy and adult education curricula.

- **Strengthening the institutional, organizational and management capacity**. The existence and availability of qualified personnel for agriculture should be accompanied by the efficiency of internal support processes that require training and maintenance of qualified support technicians. Thus within the PNISA 25% of training efforts should be allocated to support staff, such as: Planning and Cooperation, Administration and Finance, Inspection and Human Resources Management. This requires: (i) a survey of training needs in support areas and the design of short, medium and long term training programmes; and (ii) the training of support technicians (planning, monitoring and evaluation, human resources, financial and asset management) in courses of short, medium and long duration, in accordance with the identified needs.

- **Operationalization of the Strategies for Civil Service Cross Cutting Issues (HIV/ AIDS, Disability and Gender)**, which includes: development and implementation of actions to improve the integration of people living with HIV and AIDS in the development of the agricultural sector; the design and operationalization of actions that allow for the integration and facilitation of access to services and facilities for the disabled; observation of the percentages set forth or reserved for the handicapped in the recruitmen/admission processes; the creation of access ramps to installations in buildings of the sector; and the promotion of gender balance at all levels and spheres of action of the agriculture sector.

166. Table 25 shows the budget of this sub-programme estimated at 1,310.2 million Meticais for the five-year period of the PNISA.

Table 25: *Budget of the Subprogramme for the Development and Management of Human Resources*

Subprogrammes	Budget (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Legal Reform						
Recruitment and Management of Personnel						
HR training, capacity building and development						
Capacity building and strengthening of Institutions for Agricultural Education and Producer and Farmer Associations						
Strengthening institutional organizational and management capacity						
Operationalization of the Civil Service Cross-Cutting Issues (HIV/AIDS, Disability and Gender)						
HIV/AIDS and other Cross-Cutting Issues						
Total						

167. The **Subprogramme for Support to the Administration and Finances of the MINAG**. The Directorate of Administration and Finances is responsible for linking the agricultural sector with the Financial Management System of the State, through the following functions: (a) general management of the Ministry; (b) coordination of procurement, contracting and distribution of assets of the Ministry (c) control, maintenance and inventory of assets; (d) participation in the preparation of annual and multiannual budgets of the Ministry; (e) executing and monitoring the management of financial resources and assets; (f) ensuring regular information and provide accounts on the use of material and

financial resources; (g) the establishment, dissemination and ensuring of compliance with standards and procedures for asset management of the Ministry; (h) elaboration and submission of reports on implementation of financial activities. At present the main constraints to the functioning of the MINAG in the area of administration and finance are summarized as : (i) technical limitations of administrative and financial staff; (ii) high turnover of skilled technicians; (iii) delays in the processes of accountability; (iv) cumbersome procurement processes; (v) late disbursement of funds by some partners.

168. To address the above constraints the following objectives have been established: (1) improve the performance of administration and finance technicians at all levels; (2) increase the level of financial performance in accordance with the expected results of the sector; (3) improving the content of reports, incorporating the results achieved in the use of resources; (4) minimize the findings of audits regarding compliance with standards and procedures in asset and financial management; (5) improve working conditions in the Ministry through the construction of the new building and its equipment. In order to achieve the objectives the following main actions for this sub-programme have been defined: (i) management of material and financial resources; (ii) construction of the MINAG headquarters; (iii) the construction of a MINAG warehouse. The budget of this subprogramme is estimated at 1.310,2 million Meticais for the five years of the PNISA.

169. The **Subprogramme for Support to capacity building of private sector, civil society and farmer organizations** The role of civil society in agricultural sector has been widely recognized by governments and international institutions and agencies. Civil society organizations (CSOs) such as the Non-governmental organizations (NGOs), farmers' organization (FOs), private sector and other community-based organizations (CBOs) are highly active at the informal levels of economic activity. The new strategy calls for inclusiveness, transparency and participation of all stakeholders. Civil society has contributed to the national development programs. Non-state actors have also been accepted at the international level as genuine partners for sustainable development. In the last ten years in particular, civil society, in all of its dimensions and complexities, has participated in fora on agricultural development planning and, in some areas of implementation. There is need for support, build and strengthen capacity of farmers and their institutions; their inability to influence ARD, their to participate in international trade negotiations, Poor access to, and use of, knowledge and information, Poor linkage with SROs, Need for genuine participation, transparency and accountability in partnerships, and Poor adaptation of agricultural technologies to local conditions and use.

170. Governments are looking to public-private partnerships (PPPs) to radically improve infrastructure networks in their countries and enhance service delivery to their people. Private sector organisations are increasingly important players in the provision of agricultural extension services. The role of the private sector has attained a new prominence in policy debates about agricultural development in recent years. In search of affordable and effective ways to inject new energy and dynamism into agricultural extension services, various countries have explored policy options including privatisation, greater involvement of private sector service providers, and various models of cost recovery or fee-charging.

Chapter 5: Coordination and Monitoring and Evaluation Mechanism

Coordination Mechanisms

171. The National Investment Plan for the Agricultural Sector (PNISA) will be coordinated at various levels. The first level will be responsible for the strategic direction of the programme, it will ensure the allocation of the necessary resources based on national priorities, programme performance indicators and a results-oriented system of monitoring and it will ensure an adequate complementarity in the actions of the various sectors. This level of coordination is ensured by the Council of Ministers. The Minister of Agriculture will submit specific reports to this body on the implementation of the PEDSA and its Investment Plan, taking into account the consistency of the interventions and outcomes with the Government's policies. This committee shall consider and approve the information that will be produced to feed the political dialogue of the Government with the diplomatic corps, donors and civil society in general.

172. A second level of coordination will be responsible for ensuring a regular and effective dialogue between public institutions, donors, the private sector and civil society organizations (CSOs) involved in the programme, either through direct actions for implementation or through direct or indirect financing of public institutions or private CSOs that contribute to the development of the agricultural sector. This body will be called Agricultural Sector Coordinating Committee (CCSA). It will normally meet twice a year and will be responsible for: monitoring the implementation of programme activities; verifying compliance of interventions with the policies and programme of the government; assessing the progress made in implementing the programme; making recommendations for improving coordination and implementation; and feeding the information to the Council of Ministers.

173. The CCSA members are the public institutions involved in implementation - including the Ministry of Agriculture (MINAG, the Ministry of Planning and Development (MPD), the Ministry of Finance (MF), the Ministry of Fishery (MP), the Ministry of Industry and Commerce (MIC), the Ministry of Public Works and Housing (MOPH), the Ministry for the Coordination of Environmental Action (MICOA), the Ministry of Social Action (MMAS) and the Ministry of Science and Technology (MCT) – and representatives of the multilateral and bilateral cooperation partners. The CCSA will be chaired by the Ministry of Agriculture which will entrust this function to the Directorate of Economics and the Technical Secretariat for Food Security and Nutrition (SETSAN). The Secretariat will be responsible for coordinating the collection and systematization of information on the implementation of the PEDSA and its Investment Plan, for monitoring and evaluating the results, for consolidating reports and information required for CCSA meetings, for preparing agendas and dates of meetings. Within the context of interagency coordination the secretariat is also responsible for ensuring proper coordination between the various public and private institutions and CSOs involved in the agricultural sector at both central and provincial levels, and for ensuring the collection of information that allows for the proper monitoring of activities, be it for field visits or for desktop analysis.

174. Although the above mechanisms may provide good quality information on the implementation, specific studies will be conducted on the implementation and

performance of the programme or part of its components in order to obtain better structured information on the progress in implementation and, if necessary, to propose corrections deemed adequate. In addition two regular evaluations of the programme are planned, the first in the second year of implementation and the second in the last year of implementation, which will not only measure progress and/or deviations but above all improve the strategic orientation of the interventions. A third level of coordination of the program will have a greater focus on implementation while ensuring that resources are used efficiently and that the results are effective. This will predominantly be at provincial and district level. The main public institutions to be involved at these levels are the MINAG, MPD, MF, MP, MIC, MOPH, MICOA and MMAS and although these entities are responsible for the implementation of its components, they must create an internal organ that will meet quarterly with the objective to ensure the complementarity between their actions through joint planning, coordination and the balancing of activities and results of their actions.

175. The implementation of the programme at district level will complement the District Development Plans (PDD) and be an integral part of the Economic and Social District Plans (PESOD), so its implementation will be the responsibility of the District Services involved, namely the SDAE, SDI, SDSMAS) and SDEJT, under the guidance of the respective District Administrators. At this level the programme should to the extent possible meet the needs of local producers, which calls for coordination between neighbouring districts even where these belong to different provinces, taking into account the strategic option of promoting development corridors. At this level it is important to ensure that the interventions of all operators from the private sector and CSOs are properly coordinated in order to rationalize the allocation of resources, ensure complementarity and benefit from the experiences and knowledge of the various operators. The Administrators are encouraged to implement mechanisms for coordination and exchange of experiences among the various actors. In order to enhance the implementation capacity at district level the MINAG, MP and other institutions will strengthen the capacity of their district services by increasing the number of technicians and improving the technical capacity of existing technicians through in-service training programmes.

Policy and Legal framework

176. The agricultural sector is guided by the Mozambique's Agriculture Policy and Implementation Plan (PAEI,), Government Five-Year Plan (PQG, 2011-2014), Action Plan for the Reduction of Poverty (PARP, 2011-2014) and the planning and coordination instruments based on Strategic Plan for the Agriculture Sector (PEDSA), Fisheries Policy Plan and Implementation Strategy (PPEI,), Fisheries Master Plan (PDP, 2010-2019), Livestock Strategy (EP,) which undergoes periodic reviews to ensure relevance to prevailing climatic, social and economic status of the country. In addition, the sector has a some pieces of legislation which need updating during PNISA implementation. Processes were initiated in the recent past to repeal, review, amend and enact new legislation aimed at providing a legal framework that will maximize sector development and growth.

177. The following policy statements arrived at by consensus of all the key stakeholder categories in the sector and are contained in the PEDSA and PDP as well as

the Mozambique CAADP Compact of December 2011 which form the basis for the implementation of PNISA.

Table 26: **Key programmes and policies for PNISA implementation**

PNISA Structure	Mozambique CAADP Compact Programmes	CAADP Compact Policy Statements
Agricultural Production and Productivity Improvement	• Agricultural Productivity Improvement Programme	• Government will develop and implement policies and programmes that support crop diversification, livestock and fisheries production, increased productivity in crops and livestock, sustainable land and water management, including forestry, agro-forestry, climate change adaptation and mitigation and other environmentally friendly agricultural systems;
Market Access and Services Improvement	• Post-harvest Management and Marketing Programme • Financial Services Programme • Agro-business Programme • Rural Roads Development Programme • Information systems and agriculture statistics	• Government and the private sector will implement and adhere to predictable, rule-based market and trade policies and strengthen public-private coordination and dialogue • Government in consultation with stakeholders will identify investment priorities in infrastructure development that support the sector • Government will facilitate private sector to scale-up investments in production and postharvest, input and output markets, processing and value addition in crops, livestock and fisheries
Food and Nutrition Security	• Nutrition Programme	• Government will explore social protection instruments in partnership with private sector and civil society
Natural Resources Management	• Sustainable Land Management Programme	• Government will facilitate equitable access to land for agricultural purposes
Institutional Reform and Strengthening	• Cross-cutting	• The sector will also collaborate with relevant stakeholders to speed up the implementation of the National Decentralization Policy in order to facilitate improved service delivery • Government in collaboration with private sector and Cooperating Partners will promote and strengthen cooperatives and other farmer organizations as a vehicle for agricultural development
Key Support Services (Technology Generation and Dissemination)	• Research and Extension Enhancement Programme	• Government in conjunction with private sector will promote diversified extension messages for all categories of farmers (crops, livestock and fisheries) with emphasis on the small-scale farmers • Government in collaboration with private sector and Cooperating Partners will mobilize resources in order to develop cost effective, demand-driven research and extension linkages focusing on Public Private Partnerships
Key Support Services (Capacity building)	• Cross-cutting	• The sector will also collaborate with relevant stakeholders to speed up the implementation of the National Decentralization Policy in order to facilitate improved service delivery • Government in collaboration with private sector and Cooperating Partners will promote and strengthen cooperatives and other farmer organizations as a vehicle for agricultural development

178. It has been realized by Government, the private sector as well as the Cooperating Partners that the existing policies and pieces of legislation are not adequate to create the enabling environment necessary for the private sector to drive the growth envisaged in the sector. Therefore, there will be need to review existing policies and a number of legislations so as to align them to the current social and economic environment, and where possible develop new ones to ensure that the policy and legal framework is conducive for the attainment of the desired growth and reduction in poverty levels.

179. Immediate attention is required to regulate market players in agricultural marketing, use of warehousing receipt system as collateral in obtaining loans; legislations regarding animal health, livestock development, dairy development, animal identification and traceability and veterinary and para-veterinary professional which are necessary to guide the sector on the control and prevention of livestock diseases as well as regulate dairy and livestock production; and the fisheries production.

Coordination and Institutional Arrangements

180. The overall implementation responsibility of the PNISA will fall under the Ministry of Agriculture (MINAG) whose major focus will be the creation of an enabling environment for a private-sector led agricultural development and economic growth.

181. MINAG will ensure linkages and synergies with other relevant government ministries and institutions for effective implementation within its mandate. MINAG will ensure that all key stakeholders are consultated on key issues affecting the sector as well as report progress on the implementation of its mandate. At sub-national level, existing structures, namely; the Provincial Agriculture Subcommittee (PAES); the District Agriculture Subcommittee (DAES) and the Community Agriculture Committee (CAC), will be strengthened under the policy dialogue sub-component of the Key Support Systems (Institutional Strengthening). This will be aimed at promoting stakeholder participation, coordination and decentralization at these levels, which in turn is expected to enhance effective implementation performance of the PNISA.

182. In line with the liberalization policy, the private sector will drive the development and growth of the agricultural sector along with the civil society and farmer organizations (including small scale, medium and large scale farmers). Other partnerships that are critical to the implementation of the PNISA will include Development Partners (DPs), financial institutions, input suppliers, agro-industry, traders and Southern African Development Community (SADC) as a regional economic community.

Roles and responsibilities

183. The **Private Sector** will take a dominating role in driving the development agenda of the Agricultural Sector. In this regard, government and the other stakeholders see a major role for the private sector in all the Investment Programmes. However, it needs to be recognized that the country is coming from a background where government dominated the running of the economy. This implicitly left a weak private sector that needs considerable capacity building for it to effectively undertake its rightful role as an engine to propel the sector's growth.

184. The **Central Government**'s facilitatory functions through MINAG will include: strategic planning; oversight; policy formulation; capacity building of private sector and civil society organizations; enforcement of legislation; regulation and inspection; provision of basic agricultural and rural infrastructure; financing of the control of pests and diseases of national economic importance; sector coordination and overall monitoring and evaluation.

185. The **Local Governments** (at provincial and district levels) will offer investors in all the Investment Programmes incentives for identified ventures that are socially and environmentally sustainable. They will offer the necessary incentives for a heightened private sector driven agricultural development agenda within their respective boundaries within jurisdiction that present a "win" for communities, LGs and the investor. Local governments will negotiate terms and conditions for concessions or contracts for management of infrastructures including Built, Own Operate and Transfer (BOOT) investments. They will ensure the availability of the socially and environmentally feasible sites for resource development and use within their districts or provinces.

186. The **Central Government (CG)** will provide advice to districts and communities on PPP arrangements/modalities. Government will identify and support aspects of proposed local infrastructure development plans that may encourage private investment. CG will establish systems for the routine dissemination of advice to local institutions from inter-district to community level and to individual and community enterprises on sources of public investment funding; and it will promote investments in commercial intensive ventures that also benefit communities.

187. The **communities, community groups or community-based institutions** will participate in negotiating terms, conditions and concessions for investments to ensure community concerns are addressed including, participating in recurrent monitoring and oversight of investments to ensure it is in consonance with community interests. The Participatory Monitoring and Evaluation (PME), could be used by communities for tracking implementation progress and impact of various interventions within community boundaries. Communities will provide services and labour forces required by local investments and generally take advantage to acquire new skills and access to production-enhancing inputs introduced by investors.

Monitoring and Evaluation

188. The Monitoring and Evaluation (M&E) of the PNISA will be executed at different levels to maintain its focus and direction, and provide information to address problems and solve constraints. M&E will also ensure accountability and transparency in the use of funds channeled towards investment. This view is consistent with the CAADP Pact in which the Government and the development partners agree to mobilize funds and work together to develop and implement an M&E system that includes peer reviews, analytical studies, impact assessments and information sharing, aimed at the continuous implementation of the plan. As such, the PNISA monitoring and evaluation system does not intend to replace the existing sectoral instruments, rather it reinforces them and uses them in a systematic way. Thus, the indicators selected for the PNISA in accordance with the respective programmes and subprogrammes will be intrinsically linked to the respective sectors that provide the data and reports for the monitoring and evaluation system. Accordingly, in

addition to the formal M&E mechanisms established by the Government, the PNISA will be annually reviewed in order to analyze progress against the indicators from the framework of agreed outcomes.

189. The overall objective of the National Agricultural Investment Plan (PNISA) is "to contribute to food and nutrition security, increase income and profitability of agricultural producers and the rapid, competitive and sustainable increase in market-oriented agricultural production (PEDSA, 2010). PNISA will contribute towards the attainment of the impact indicators in Table 2 below.

190. There are six main impact indicators (Table 2), some of which are included in GoM Development Policy Documents: Government Five-Year Programme (PQG, 2011-2014), Action Plan for the Reduction of Poverty (PARP, 2011-2014) and Sector strategic policy documents: Strategic Plan for the Agricultural Sector (PEDSA, 2011-2015), Fisheries Master Plan (PDP, 2010-2019), Food and Nutrition Security Strategy (ESAN II, 2008 -2015) and Multi-sectoral Action Plan for the Reduction of Chronic Mulnutrition (PMRDC, 2011-2014). In addition, the CAADP Compact also makes reference to continental targets of achieving 6 percent growth in the Agricultural sector, and allocating at least 10 percent of public expenditure to Agriculture.

Table 27**:** PNISA Impact Indicators

Impact Indicator	**Baseline (2012)**	**Target (2017)**
Rural Poverty	54.9%	45%
Chronic malnutrition (children < 5 years)	44%	30%
Cereal production (x 10^6 MT/year)	1.4	3.0
Fisheries production (x 10^3 MT/yr)	194	280
Livestock production (x 10^3 MT/yr)	51.7	73.2
Soil erosion rate (ton/ha/year)	20	10

Source: PEDSA (2011), MINAG and MF

191. The M&E system of the agricultural sector should be strengthened in order to: (i) prepare and disseminate annual reports; (ii) generate joint review reports of the PNISA by the Government and cooperating partners; (iii) support the implementation of programmes, subprogrammes and projects and generate lessons to be heeded in policy formulation; (iv) provide data for analytical studies on the agricultural sector. All investment in agriculture and fisheries will be monitored and evaluated. As far as this is concerned annual reports shall be elaborated concerning the implementation of activities and results within the framework of the indicators established in the PNISA and embodied in the Development Plan of the Agricultural Sector (PEDSA). These reports include audit and financial management reports about the proposed programs.

192. The Monitoring and Evaluation system will be developed on the basis of PNISA programmes and sub-programmes. The databases and reports should be made on the basis of each programme and sub-programme and at different levels of governance. The indicators to be collected are identified at the level of each programme and sub-programme. The implementation of the monitoring and evaluation system will require the

collection of sectoral and statistical information, and the realization of specific studies. The current data collection systems should be strengthened. The Ministry of Agriculture is primarily responsible for monitoring and evaluation based on the PNISA result and indicator matrix at all levels. The M&E of PNISA will be interactive and will help to identify constraints so that the PNISA objectives are achieved.

In order to increase the efficiency and effectiveness of the M&E of the MINAG, the system should benefit from additional human resources and capacity building of all who work in it, as well as from strengthening the means to work with, in particular computer equipment and monitoring programmes. The M&E system of the agricultural sector should be strengthened in order to: (1) improve the institutional capacity so that the PNISA can be monitored and evaluated; (2) strengthen the system of data collecting in order to generate reliable and timely information that allows for the improvement of the planning and budgeting system; (3) improve the coordination of partners, including the private sector, in implementing the plan; (4) design a holistic approach to M&E that involves all stakeholders, including the private sector, in the implementation of the PNISA.

Chapter 6: Financing of the PNISA

193. The financing of PNISA will follow a mixture of mordalities that allows participating Development Partners (DPs) and other actors to meet their reporting obligations to their respective governments and tax payers. Nonetheless, the prefered modality of financing is the Direct Budget Support (DBS), government allocated through district development funds and non-government organizations (CSOs, CBOs). Notwithstanding a particular mode of financing, all financing activities will come under the Integrated Financial Management Information System (IFMIS).

Financial Needs

194. Table 28 shows the PNISA budget per programme and year for the period of its duration (2013-2017). The overall investment value reflecting the investment needs is 111.959,8 million Meticais (including 9% contingencies), the equivalent to 3.998,6 million USD.

Table 28: *Overall Budget per Component and Programme (MZM)*

Component/Programme	Budget per Year (10^3 MZM)					Total
Component 1: ***Production and Productivity***	**2013**	**2014**	**2015**	**2016**	**2017**	
Programme 1: Food Crops						
Programme 2: Cash Crops	1,293,963	1,680,943	1,929,940	2,235,017	2,611,772	**9,751,634**
Programme 3: Fishery	830,666	880,687	978,964	1,069,400	1,100,709	**4,860,426**
Programme 4: Livestock Breeding	1,644,704	2,273,878	2,499,832	2,138,935	2,251,874	**10,809,223**
Programme 5: Agricultural Research	611,294	586,307	524,338	520,595	424,757	**2,667,290**
Programme 6: Agricultural Extension	4,843,554	4,573,512	4,190,293	3,769,271	4,617,779	**22,000,409**
Programme 7: Irrigation	760,151	1,401,106	1,600,246	1,819,017	1,917,575	**7,498,095**
	5,068,330	5,826,353	5,569,315	5,136,265	3,784,131	**25,384,393**
Programme 8: Mechanization	481,250	481,250	481,250	481,250	481,250	**2,406,250**
Sub-Total Component 1	**15,539,912**	**17,704,038**	**17,774,178**	**17,169,751**	**17,189,847**	**85,377,725**

Component/Programme	Budget per Year (10^3 MZM)					Total
	2013	2014	2015	2016	2017	
Component 1: ***Production and Productivity***						
Component 2: ***Access to Markets***						
Programme 9: Post-Harvest Management	5,999	42,943	45,358	41,779	28,929	**165,008**
Programme 10: Financial Services			to be updated			
Programme 11: Agro-Business	586,525	584,025	586,525	584,025	586,525	**2,927,625**
Programme 12: Rural Roads	3,697,475	2,981,440	149,072	163,974	180,382	**7,172,343**
Programme 13: Agricultural Statistics and Information Systems	163,250	154,101	158,133	150,912	146,646	**773,042**
Sub-Total Component 2	**4,453,249**	**3,762,510**	**939,087**	**940,690**	**942,482**	**11,038,018**
Component 3: ***Food and Nutritional Safety***						
Programmes 14: Programme to Improve Access to and Use of High Nutritional Value Food	21,738	23,260	24,888	26,630	28,494	**125,010**
Programme 15: Multisectoral Monitoring and Coordination	183,759	105,748	53,443	43,407	98,106	**484,463**
Sub-Total Component 3	**205,497**	**129,008**	**78,331**	**70,037**	**126,600**	**609,473**
Component 4: ***Natural Resources***						
Programme 16: Mapping and Remote Sensing	73,107	102,289	139,703	136,945	105,610	**557,654**
Programme 17: Land for Agricultural Puroposes	461,536	126,420	121,440	121,035	122,150	**952,581**
Programme 18: Forests and Wildlife	541,660	442,713	210,401	168,871	161,952	**1,525,597**
Programme 19: Institutional Development	91,200	77,769	75,377	71,055	71,628	**387,029**
Sub-Total Component 4	**1,167,503**	**749,191**	**546,921**	**497,906**	**461,340**	**3,422,861**
Component 5: ***Institutional Reform and Strengthening***						
Programa 20: Institutional Reform			to be updated			

Budget per Year (10^3 MZM)

Component/Programme	Budget per Year (10^3 MZM)					Total
Component 1: ***Production and Productivity***	**2013**	**2014**	**2015**	**2016**	**2017**	
Programa 21: Institutional Strengthening	160,175	445,037	561,984	82,252	60,745	**1,310,192**
Sub-Total Component 5	**160,175**	**445,037**	**561,984**	**82,252**	**60,745**	**1,310,192**
- *Contingencies*	**1,937,392**	**2,053,145**	**1,810,531**	**1,714,378**	**1,728,838**	**9,244,391**
TOTAL GERAL	**23,465,176**	**24,865,866**	**21,927,614**	**20,763,026**	**20,938,158**	**111,959,841**

Component/Programme	2013	2014	2015	2016	2017	Total
Component 1: ***Production and Productivity***						
Programme 1: Food Crops	1,293,963	1,680,943	1,929,940	2,235,017	2,611,772	**9,751,634**
Programme 2: Cash Crops	830,666	880,687	978,964	1,069,400	1,100,709	**4,860,426**
Programme 3: Fishery	1,644,704	2,273,878	2,499,832	2,138,935	2,251,874	**10,809,223**
Programme 4: Livestock Breeding	611,294	586,307	524,338	520,595	424,757	**2,667,290**
Programme 5: Agricultural Research	4,843,554	4,573,512	4,190,293	3,769,271	4,617,779	**22,000,409**
Programme 6: Agricultural Extension	760,151	1,401,106	1,600,246	1,819,017	1,917,575	**7,498,095**
Programme 7: Irrigation	5,068,330	5,826,353	5,569,315	5,136,265	3,784,131	**25,384,393**
Programme 8: Mechanization	481,250	481,250	481,250	481,250	481,250	**2,406,250**
Sub-Total Component 1	**2,190,784**	**2,738,480**	**328,618**	**2,519,402**	**328,618**	**2,519,402**
Component 2: ***Market Access***						
Programme 9: Post-Harvest Management	5,999	42,943	45,358	41,779	28,929	**165,008**
Programme 10: Financial Services	to be updated					
Programme 11: Agro-business	586,525	584,025	586,525	584,025	586,525	**2,927,625**
Programme 12: Rural Roads	3,697,475	2,981,440	149,072	163,974	180,382	**7,172,343**
Programme 13: Statistics and Agricultural Information Systems	163,250	154,101	158,133	150,912	146,646	**773,042**
Sub-Total Component 2	**4,453,249**	**3,762,510**	**939,087**	**940,690**	**942,482**	**11,038,018**
Component 3: ***Food and Nutritional Security***						
Programme 14: Programme to Improve Access to and Use of High Nutritional Value Food	21,738	23,260	24,888	26,630	28,494	**125,010**
Programme 15: Multisectoral Monitoring and Coordination	183,759	105,748	53,443	43,407	98,106	**484,463**
Sub-Total Component 3	**205,497**	**129,008**	**78,331**	**70,037**	**126,600**	**609,473**

Component 4: ***Natural Resources***						
Programme 16:Mapping and Remote Sensing	73,107	102,289	139,703	136,945	105,610	**557,654**
Programme 17: Land for Agricultural Purposes	461,536	126,420	121,440	121,035	122,150	**952,581**
Programme 18: Forests and Wildlife	541,660	442,713	210,401	168,871	161,952	**1,525,597**
Programme 19: Institutional Development	91,200	77,769	75,377	71,055	71,628	**387,029**
Sub-Total Component 4	**1,167,503**	**749,191**	**546,921**	**497,906**	**461,340**	**3,422,861**
Component 5: ***Institutional Reform and Strengthening***						
Programme 20: Institutional Reform	to be updated					
Programme 21: Institutional Strengthening	160,175	445,037	561,984	82,252	60,745	**1,310,192**
Sub-Total Component 5	**160,175**	**445,037**	**561,984**	**82,252**	**60,745**	**1,310,192**
- Contingencies	**1,937,392**	**2,053,145**	**1,810,531**	**1,714,378**	**1,728,838**	**9,244,391**
GENERAL TOTAL	**23,465,176**	**24,865,866**	**21,927,614**	**20,763,026**	**20,938,158**	**111,959,841**

195. The budget allocation per component of the plan is as follows: 84,1% for programmes relating to increasing production and productivity (Component 1); 10,7% for programmes that facilitate access to markets (Component 2); R% for programmes that support the sustainable use of natural resources (Component 3); 0,6% for programmes on Food and Nutritional Security (Component 3) and 3,3% for programs concerning the Institutional Reform and Strengthening.

The Financial Gap of the PNISA

196. Table 29 shows the total financial needs of the PNISA, the amount guaranteed by the State and the Cooperating Partners with activities related to the agricultural sector; and the financial gap per component and programme. As can be noted the overall amount of financial needs is 111.958,8 million Meticais, of which a mere 22% are guaranteed by the cooperation partners for the implementation period of the PNISA. The financial gap is 87.036,6 million Meticais (equivalent to 3.108,5 million USD (78% of total needs).

Table 29: *Budget of the PNIA per Component and the Financial Gap*

Component/Programme	Total Needs	Guaranteed Funds[16]	
	(10^3 MZM)		
Component 1: ***Production and Productivity***	**86,334,908**	**4,965,285**	
Component 2: Market Access	**11,038,018**	**3,206,170**	
Component 3: Food and Nutritional Security	**609,473**	**976,406**	
Component 4: Natural Resources	**3,422,861**	**824,111**	
Component 5: Institutional Reform and Strengthening	**1,310,192**	**14,951,231**	
- *Contingencies*			
GENERAL TOTAL	**111,959,841**	**24,923,203**	
FINANCIAL GAP			**87,036,638**

Implementation Risks

197. The implementation risks of the Investment Plan for the Agricultural Sector are mainly related to the short and medium term challenges that the country faces. In the short term, the challenge is to be able to mitigate the effects of the global crisis while preserving the benefits of the efforts made to curb inflation in the context of monetary policy, and of containing costs with a greater availability of credit for the private sector. Given the downward trend of foreign aid the difficulty in the medium term will be how to ensure non-subsidized loans in order to continue to invest in infrastructure. Despite expectations related

[16] The financial o gap has not been calculated per PNISA component for two reasons: (i) although some attempt has been made to make allocations to each project and each component, the proportions are subjective and should be viewed with caution; (ii) it is difficult to estimate such allocations and since calculating the gap is important for this document, this calculation has only been estimated as a whole, rather than at component level.

to the exploration of natural resources, managing the debt and planning investment planning will be crucial for the development scenario of the country in the long term.

198. The need for funding of the PNISA is beyond the financial capacity of the current government. Only 22% of these needs are met by cooperation partners, which is why we mentioned the above downward trend. With the uncertainty of tax revenues resulting from the exploration of natural resources, the coverage of the plan's financial gap depends on two basic assumptions: (i) the capacity to plan and coordinate government investments; (ii) sufficient and timely commitment of partners to financially and continuously support the PNISA.

199. Table 30 below identifies key risks that may be faced in the achievement of PNISA overall goal and objectives and provides a basis for determining how implementers of PNISA should address these risks.

Table 30: **Summary of Risk Analysis and Mitigation**

Risk	Risk Rating	Risk mitigation measures incorporated into PNISA design	Conditionality (Y/N)	Risk after mitigation
H – High; S – Substantial; M – Moderate; L – Low				
Ownership challenge: Inadequate country ownership of PNISA by MINAG and other stakeholders may negatively affect implementation performance	S	MINAG has identified and specified implementation roles and responsibilities of various actors and stakeholders	N	M
Low capacity: MINAG that will play a critical role in coordination and monitoring of PNISA has had capacity assessment undertaken and found low.	S	A considerable portion of the PNISA is concerned with capacity enhancement of various stakeholders and systems. This includes training and procurement of appropriate equipment. Key Support Services have been particularly targeted for strengthening.	N	L
Donor/implementation fatigue: A number of interventions have been designed in the past to boost agricultural sector growth. There is a danger of "donor fatigue" and "implementation fatigue"	M	The emphasis of PNISA is that this is not an initiative that is a "stand-alone" entity, rather PNISA under CAADP is there to animate already existing strategies and policies	N	L
Funds flow: there may be a failure to mobilize adequate resources. Additionally, the committed funds may not be disbursed timely.	M	The computation of the total PNISA budget has been done cautiously, based on prevailing planned expenditure figures.	N	L
Overall risk assessment	**M**			**L**

200. Based on the above risk assessment, the overall risk of PNISA implementation is low. GoM is currently implementing other supportive measures that will positively impact PNISA implementation performance such as the Integrated Financial Management Information System (IFMIS).

Annex 1: *Structure of the National Investment Plan for the Agricultural Sector (PNISA)*

Extensão, Sementes, Sanidade, Crédito, Investigação, Irrigação, Estradas, Produtores, Comerciantes…

Componente 1: PRODUÇÃO E PRODUTIVIDADE							
Programa 1: Culturas Alimentares	Programa 2: Culturas de Rendimento	Programa 3:Pesca	Programa 4: Pecuária	Programa 5: Investigação Agrária	Programa 6: Extensão Agrária	Programa 7: Irrigação	Programa 8: Mecanização
Sub-Programa 1.1: Apoio a Produção de Milho	Sub-Programa 2.1: Apoio a Produção de Caju	Sub-Programa 3.1: Desenvolvimento da Pesca de Pequena Escala	Sub-Programa 4.1: Prevenção, Vigilancia e Controlo de Doenças	Sub-Programa 5.1: Produção e Transferência de Tecnologias	Sub-Programa 6.1: Fortalecimento da Oferta de Serviços de Extensão	Sub-Programa 7.1: Reforço da Capacidade Institucional da Irrigação	
Sub-Programa 1.2: Apoio a Produção de Arroz	Sub-Programa 2.2: Revitalização da Cadeia de Valor do Algodão	Sub-Programa 3.2: Desenvolvimento de Aquacultura	Sub-Programa 4.2: Reforço da Capacidade dos Serviços Veterinários	Sub-Programa 5.2: Fortalecimento Institucional	Sub-Programa 6.2: Fortalecimento da Procura de Serviços de Extensão	Sub-Programa 7.2: Expansão e Gestão Sustentável Regadios	
Sub-Programa 1.3: Apoio a Produção de Trigo	Sub-Programa 2.3: Apoio a Produção de Tabaco		Sub-Programa 4.3: Apoio a Produção e Comercialização de Produtos Pecuários		Sub-Programa 6.3: Provisão de Serviços de Extensão		
Sub-Programa 1.4.: Apoio a Produção de Feijão	Sub-Programa 2.4: Apoio a Cadeia de Valor do Açucar						
Sub-Programa 1.5: Apoio a Produção de Bata-Reno	Sub-Programa 2.5: Apoio a Produção de Bio-combústiveis						
Programa 1.6: Apoio a Produção de Tomate	Programa 2.6: Apoio a Produção de Gergelim						
	Sub-Programa 2.7: Apoio a Produção de Soja						
Componente 2: ACESSO AO MERCADO							
Programa 9: Gestão pós colheita e Comercialização	Programa 10: Serviços Financeiros		Programa 11: Agro-Negócio		Programa 12: Estradas Rurais		Programa 13: Sistema de Informação e Estatísticas Agrárias
Sub-Programa 8.1: Ligações competitivas na cadeia de valor e mercado							Sub-Programa 13.1: Estatísticas Agrárias
Programa 8.2: Estabelecimento da Bolsa de mercadorias							Sub-Programa 13.2: Sistemas de Informaçao
Sub-Programa 8.3: Promoção da qualidade e escala na comercialização							
Programa 8.4:Criação ambiente propício ao agro-negócios e acesso ao mercado							
Componente 3: SEGURANÇA ALIMENTAR E NUTRICIONAL							
Programa 14: Melhoria do Acesso e Utilização de Alimentos de Alto Valor Nutritivo							Programa 15: Monitoria e Coordenação Multissectorial
Componente 4: RECURSOS NATURAIS							
Programa 16:Terras para Fins Agrários		Programa 17: Florestas e Fauna Bravia			Programa 18: Desenvolvimento Institucional		Programa 19: Cartografia e Teledetecção
Sub-Programa 16.1: Uso Aproveitamento da Terra		Sub-Programa 17.1: Maneio de Florestas e Fauna					Sub-Programa 19.1: Revisão da Legislação geo-cartográfica
Sub-Programa 16.2: Desenvolvimento de Cadastro		Sub-Programa 17.2: Reflorestamento					Sub-Programa 19.2: Produção Cartográfica
		Sub-Programa 17.3: Desenvolvimento de Produtos Florestais					Sub-Programa 19.3: Modernização da Rede Geodésica Nacional
							Sub-Programa 19.4: Reforço Institucional
Componente 5: REFORMA E FORTALECIMENTO INSTITUCIONAL							
Programa 20: Reforma Institucional							Programa 21: Fortalecimento Institucional
							Sub-Programa 21.1: Apoio a Administração e Finanças do MINAG

Extensão, Sementes, Sanidade, Crédito, Investigação, Irrigação, Estradas, Produtores, Comerciantes…

Anexo 2: *List of Ongoing Projects with Contribution to the Agricultural and Fisheries Sector, MINAG*

País/Agencia	Agência Doadora / Agência ONU	Título do Projecto / Programa	Data do início	Data do fim	Localização	Montante disponível para PNISA	Relação com as Componentes do PNISA				
							1	2	3	4	5
CANADÁ	Agência Canadiana para o Desenvolvimento Internacional	Enhancing Food Security and Increasing	2010-06-28	2016-09-30	Cabo Delgado	452,976	X				
SUÍÇA	SDC - Agência Suíça para o Desenvolvimento e Cooperação	Private sector led rural growth in Northern Mozambique	2010-01-01	2013-12-31	Cabo Delgado, Nampula	148,016	X			X	
SUÍÇA	SDC - Agência Suíça para o Desenvolvimento e Cooperação	Advancing Land Use Rights and Natural Resource Benefits	2010-11-01	2013-12-31	Nacional	85,361				X	
FINLÂNDIA	Finlândia	MOZ/Project for rural development	2010-10-01	2014-12-31	Zambézia	45,752	X				
FINLÂNDIA	Finlândia	Support to National Forestry Programme	2009-10-01	2014-12-31	Nacional	37,350				X	
ESPANHA	Agência Espanhola de Cooperação Internacional	Aumentar e melhorar os sistemas de producção sosteniveis em cabo delgado	2012-01-01	2013-01-01	Cabo Delgado	14,270	X				
ESPANHA	Agência Espanhola de Cooperação Internacional	Melhoria da segurança alimentar e nutricional em cabo delgado Cruz roja	2010-03-01	2014-03-01	Cabo Delgado	33,458			X		
CE	União Europeia	DCI - Food	2012-01-10	2017-12-31	Nacional	28,183	X				
ITÁLIA	Direcção Geral para a Cooperação ao Desenvolvimento	Socio-economic development of the Gilé disctrict, Zambesia Province (ngo MATE)	2007-10-01	2013-12-31	Zambézia	5,013	X				
ITÁLIA	Direcção Geral para a Cooperação ao Desenvolvimento	Cashew multiplication and diffusion (ngo MAGIS)	2008-02-03	2013-12-31	Cidade de Maputo	4,053	X				
ITÁLIA	Direcção Geral para a Cooperação ao Desenvolvimento	Development of family agricultural in Nacala District and Experimental cultivation of Artemisia annua in Mozambique, Malawi e Madagascar(NGO ICEI/GUS)	2011-01-01	2013-12-31	Nampula	12,113	X				
ITÁLIA	Direcção Geral para a Cooperação ao Desenvolvimento	Zootechnical multilevel trainig and promotion of community health for rural development in the district of Morrumbane (ONG SCAIP/MMI)	2011-01-01	2013-12-31	Inhambane	21,588	X				
ITÁLIA	Direcção Geral para a Cooperação ao Desenvolvimento	Promoting the development of cereal and oilseed chain (NGO CESVI)	2012-04-20	2015-04-30	Sofala	4,660	X				
IRLANDA	Irlanda	TECHNOSERVE	2004-01-01	2016-12-31	Inhambane	68,415	X				
FRANÇA	Agência Francesa de Desenvolvimento	Apoio ao desenvolvimento de aquacultura de Camarão em Moçambique	2009-06-17	2013-12-31	Nacional	33,328	X				
BÉLGICA	Bélgica	Infra-estruturas de agua - Desenvolvimento rural - Segurança Alimentar	2012-06-01	2015-12-31	Gaza	137,255	X				
BÉLGICA	Bélgica	BOF- Segurança Alimentar na Provincia de GAZA	2012-08-01	2016-03-31	Gaza	461,176	X			X	
RU	GBR-DFID	Community Land Use Fund	2006-06-01	2013-12-31	Gaza, Cabo Delgado, Manica	98,121				X	
RU	GBR-DFID	Beira Agricultural Growth Corridor (BAGC)	2011-02-07	2015-03-31	Sofala	244,327	X				

País/Agencia	Agência Doadora / Agência ONU	Título do Projecto / Programa	Data do início	Data do fim	Localização	Montante disponível para PNISA	Relação com as Componentes do PNISA				
							1	2	3	4	5
JAPÃO	Agência de Cooperação Internacional do Japão	The Project for Improvement of Techniques for Increasing Rice Cultivation Productivity in Nante, Maganja da Costa District, Zambezia Province	2011-01-17	2015-01-16	Zambézia	46,247	X				
NORUEGA	Noruega	Fisheries Sector Support - II	2009-04-01	2013-12-31	Nacional	31,134					X
SUÉCIA	Fundo Comum Agricultura - Suécia	Land administration 12-15	2012-06-01	2015-12-31	Nacional	179,346				X	
SUÉCIA	Suécia	ITC Initiativa Terras Comunitarias 11-14	2011-06-30	2014-12-31	Manica, Cabo Delgado, Gaza	99,186				X	
SUÉCIA	Suécia	Policy M&E agriculture 2012-2014	2012-01-01	2014-12-31	Nacional	67,255					X
IFAD	IFAD	Rural Finance Support Project (PAFR)	2005-07-11	2013-07-11	Nacional	322,515		X			
IFAD	IFAD	National Agricultural Extension Programme (PRONEA)	2007-11-25	2016-06-30	Nacional	223,113	X				
IFAD	IFAD	Rural Markets Promotion Programme (PROMER)	2009-04-26	2015-12-31	Cabo Delgado, Niassa	940,002		X			
IFAD	IFAD	Artisanal Fisheries Promotion Project (PROPESCA)	2011-03-24	2017-09-30	Nacional	208,952	X				X
BANCO MUNI	Banco Mundial	Market led Smallholder Development in the Zambezi Valley	2006-12-28	2013-03-31	Tete, Sofala, Zambézia	179,083		X			X
BANCO MUNI	Banco Mundial	Market-Led Smallholder Development in the Zambezi Valley (GEF)	2007-09-21	2013-09-30	Tete, Sofala, Zambézia	43,528		X			
BANCO MUNI	Banco Mundial	PROIRRI Sustainable Irrigation Development	2011-12-10	2017-06-30	Manica, Sofala, Zambézia	2,235,580	X	X			
PNUD	PNUD	Local Economic Development ART PAPDEL	2012-01-01	2015-12-31	Nacional	14,658,824					X
PNUD	PNUD	Development of Right to Food Law	2012-01-01	2015-12-31	Cidade de Maputo	4,941			X		
FAO	FAO	Building Political Will and Generating Trust to Implement the Forest and Wildlife	2010-08-01	2013-07-31	Nacional	20,151				X	
FLANDRES	Flandres - FICA	General Framework Agreement between the UN-WFP and the Flemish Government	2012-01-01	2014-12-31	Nacional	92,060			X		
ESTADOS UN	USAID	Economic Growth Program	2009-09-30	2014-09-30	Nacional	306,306	X		X		
MCC	MCC	Farmer Income Support Project	2008-09-22	2013-09-22	Nampula	558,390	X				
CE	União Europeia	MDG Initiative - Support to Food I	2013	2017	Nacional	2,771,176	x	x	x		
TOTAL						**23,771,512**					