

# Why did Mozambique's Public Extension Halt the Implementation of the National Agrarian Extension Program (PRONEA)?

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## **ABSTRACT**

Agriculture plays a crucial role in food security and poverty reduction in Mozambique, contributing around 25 percent of the country's Gross Domestic Product (GDP). However, despite the considerable agro-ecological potential and the need for increased production, agricultural productivity remains low. The prevailing gap between domestic food production and demand, as well as lagging exports, continue to pose significant challenges.

As part of efforts to deal with these challenges, the government and other agriculture sector stakeholders have recognized the crucial role of extension services in increasing productivity. The government plays an important role in the extension system through the Ministry of Agriculture (MINAG). This paper assesses critical factors that constrained the successful implementation of the National Agrarian Extension Program, (PRONEA, from *Programa Nacional de Extensão Agrária*), by MINAG's National Directorate of Agrarian Extension (DNEA, from *Direcção Nacional de Extensão Agrária*), which resulted in a decision to halt PRONEA in 2010, three years after its launch. A conceptual framework for planning and implementing programs and strengthening pluralistic agricultural extension and advisory systems identified factors that should ideally have been taken into account before launching PRONEA in order to reduce the risk of failure. The analysis was based on a review of the literature about agricultural extension in Mozambique, official documents, interviews with key informants and experts, and field visits to various provinces.

The analysis found that factors related to the conceptualization, implementation, monitoring and evaluation of PRONEA led to its failure and subsequent discontinuation. Overall, the assessment underscores the need for institutional changes to support successful implementation of public agricultural extension programs. To be noted, a redesigned PRONEA started to be implemented in the second half of 2012.

## List of Acronyms

<b>CAADP</b>	Comprehensive Africa Agriculture Development Programme
<b>CAP</b>	<i>Censo Agro-Pecuário</i> – Agriculture and Livestock Census
<b>DPA</b>	<i>Direcção Provincial da Agricultura</i> – Provincial Directorate of Agriculture
<b>DAF</b>	<i>Direcção de Administração e Finanças</i> – Directorate of Administration and Finance
<b>DINAP</b>	<i>Direcção Nacional de Pecuária</i> – National Directorate of Livestock
<b>DNFFB</b>	<i>Direcção Nacional de Florestas e Fauna Bravia</i> – National Directorate of Forestry and Wildlife
<b>DNSA</b>	<i>Direcção Nacional de Serviços Agrários</i> – National Directorate of Agriculture Services
<b>DNTF</b>	<i>Direcção Nacional de Terras e Florestas</i> – National Directorate of Land and Forestry
<b>DE</b>	<i>Direcção de Economia</i> – Directorate of Economics
<b>DNDR</b>	<i>Direcção Nacional de Desenvolvimento Rural</i> – National Directorate of Rural Development
<b>DNEA</b>	<i>Direcção Nacional de Extensão Agrária</i> – National Directorate of Agrarian Extension
<b>DNER</b>	<i>Direcção Nacional de Extensão Rural</i> – National Directorate of Rural Extension
<b>EMP</b>	Extension Master Plan
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FFS</b>	Farmer Field School
<b>HIV/AIDS</b>	Human Immune-Deficiency Virus/ Acquired Immune Deficiency Syndrome
<b>IAM</b>	<i>Instituto do Algodão de Moçambique</i> – Cotton Institute of Mozambique
<b>IFAD</b>	International Fund for Agriculture Development
<b>IIAM</b>	<i>Instituto de Investigação Agrária de Moçambique</i> – Agricultural Research Institute of Mozambique
<b>INE</b>	<i>Instituto Nacional de Estatística</i> – National Statistics Institute
<b>INIA</b>	<i>Instituto Nacional de Investigação Agronómica</i> – National Institute for Agronomy Research
<b>INIVE</b>	<i>Instituto Nacional de Investigação Veterinária</i> – National Institute for Veterinary Research
<b>IPA</b>	<i>Instituto de Produção Animal</i> – Animal Production Institute
<b>MADER</b>	<i>Ministério da Agricultura e Desenvolvimento Rural</i> – Ministry of Agriculture and Rural Development
<b>M&amp;E</b>	Monitoring and evaluation
<b>MINAG</b>	<i>Ministério da Agricultura</i> – Ministry of Agriculture
<b>NEPAD</b>	New Partnership for Africa's Development
<b>NGO</b>	Non-Government Organization
<b>PAEI</b>	<i>Política Agrária e Estratégia de Implementação</i> – Agriculture Policy and Implementation Strategy
<b>PEDSA</b>	<i>Plano Estratégico de Desenvolvimento do Sector Agrário</i> – Strategic Plan for Agriculture Sector Development
<b>PROAGRI</b>	<i>Programa Nacional de Desenvolvimento Agrário</i> – National Agricultural Development Program
<b>PRONEA</b>	<i>Programa Nacional de Extensão Agrária</i> – National Agricultural Extension Program
<b>SDAE</b>	<i>Serviços Distritais de Actividades Económicas</i> – District Services for Economic Activities
<b>SISNE</b>	<i>Sistema Nacional de Extensão</i> – National Extension System
<b>SPER</b>	<i>Serviços Provinciais de Extensão Rural</i> – Provincial Rural Extension Service
<b>SUE</b>	<i>Sistema Unificado de Extensão</i> – Unified Extension System
<b>TIA</b>	<i>Trabalho de Inquérito Agrícola</i> – National Agriculture Survey
<b>T&amp;V</b>	Training and Visit (agricultural extension model)

## Acknowledgments

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## I. INTRODUCTION AND BACKGROUND

Since its establishment in 1987, public agricultural extension in Mozambique has played an important role in the overall extension system through the Ministry of Agriculture (MINAG). This was especially true after the emergence of other extension service providers from the private and non-governmental organization (NGO) sectors. In August 2007, following the implementation of the first extension master plan, (PDE, from *Plano Director de Extensão*), from 1999 to 2006, MINAG launched the national extension program, the *Programa Nacional de Extensão Agrária* (PRONEA), an eight-year program (2007–2014) budgeted at a total cost of USD 50 million (International Fund for Agriculture Development (IFAD) 2005). The IFAD, an important development partner for public extension, other development partners, and the government were expected to fund PRONEA through the agriculture sector budget support approach under the National Program for Agriculture Development (PROAGRI, from *Programa Nacional de Desenvolvimento Agrário*).<sup>1</sup> However, PRONEA was canceled in December 2010 based on an agreement between IFAD and the government (MINAG & IFAD 2010).

The decision to stop PRONEA was based on the findings and recommendations of the third PRONEA joint annual supervision mission (or midterm program review). Held in late 2010, this mission consisted of IFAD external consultants and some MINAG senior extension professionals. They concluded that, despite some progress in certain planned activities, PRONEA performance was very low in many of the important program components (MINAG & IFAD 2010). This assessment identified the main reasons behind this decision as problems with the program's design, weak institutional preparedness to implement it, and some challenging policy developments in the agriculture sector at the time of implementation.

### I.1. Scope and Rationale of the Study

The justification for our study is threefold:

1. The fact that about 69 percent of the Mozambican rural population depends on agriculture for its livelihood implies that agricultural extension has a crucial role to play in improving household food security, income generation, and poverty reduction, particularly in rural areas (INE 2011). This supports the need for research that strengthens information and knowledge-based extension systems in the country.
2. Public extension is important within a pluralistic extension system. As in many other countries that use the public national extension model (Eicher 2007), agricultural extension is one of the agriculture ministry's core functions, particularly in supporting smallholder farmers' production. An assessment of how MINAG has managed and implemented the public extension will serve to not only inform policy and decision making aimed at improving the functioning of the entire extension system. It will also improve the system's ability to effectively support smallholder farmers.
3. PRONEA was meant to be the vehicle through which the second public Extension Master Plan (EMP) (MINAG 2006a) was to be implemented from 2007 to 2016. PRONEA was supposed to be implemented over an eight-year period (2007–2014) at the national level, albeit on a gradual basis. In this context, it is crucial to assess why the program's implementation was cancelled. The assessment on this report was done with the principal aim of drawing lessons that will inform the design and implementation of future public agricultural extension programs in Mozambique.

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<sup>1</sup> Since its establishment in 1987, public agricultural extension has been mainly supported by development partners through international loans and grants. IFAD has been one of the main development partners involved with public agricultural extension.

## I.2. Study Objectives

The general objective of the study is to assess the critical factors that affected PRONEA's implementation and constrained program performance and success.

Specific objectives were:

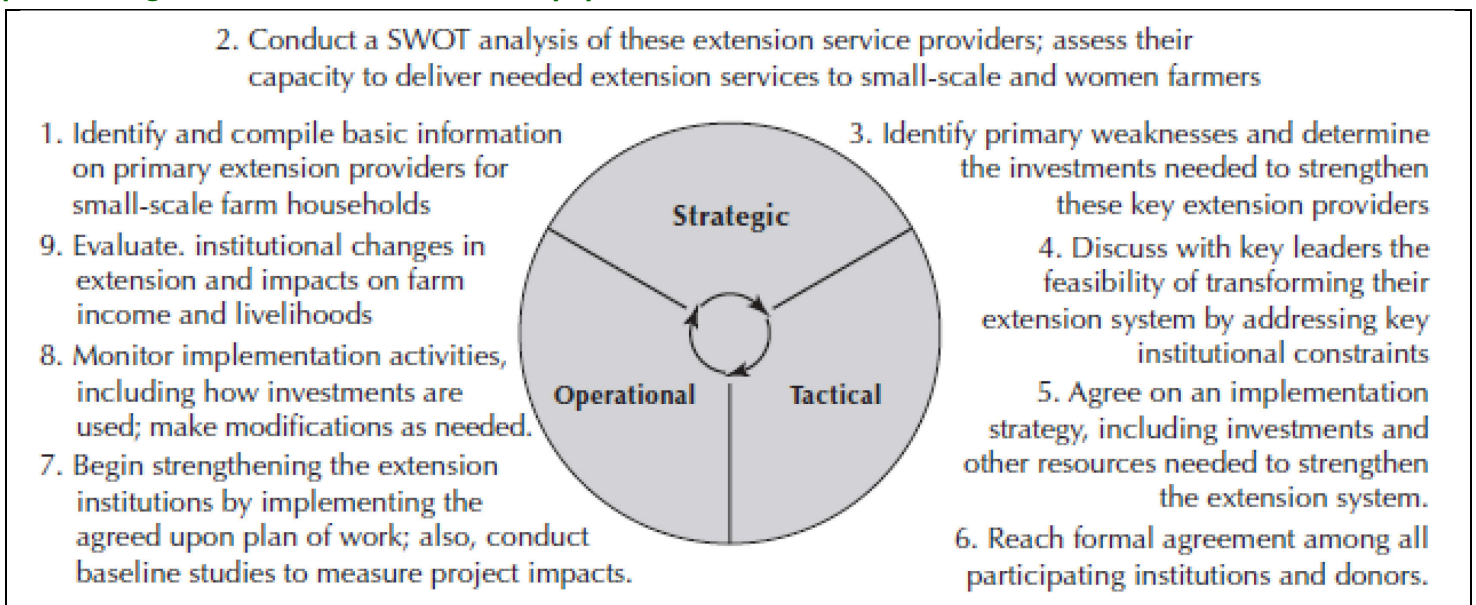
- To assess the public extension services' institutional preparedness to implement PRONEA, using its components, planned activities and expected results
- To assess MINAG's institutional support of the public extension services in implementing PRONEA – an assessment based on implementation principles and commitments made between the government of Mozambique and IFAD
- To assess the role of the environment that prevailed at the time of implementation in terms of relevant policy developments in the agriculture sector. This is particularly important given that PRONEA was aimed at strengthening the pluralistic extension system through outsourcing and partnerships initiatives with other extension providers and relevant local-based organizations.

## I.3. Conceptual Framework and Methodology

### THE CONCEPTUAL FRAMEWORK

As the main reference framework for this study, we used Swanson and Rajalahti's concept framework for planning and implementing programs and strengthening pluralistic agricultural extension and advisory systems (2010). This framework, shown in Box 1, was used to identify and analyze the different steps or factors that should have been taken into consideration in implementing PRONEA. It places particular emphasis on building collaborative and complementary actions between public extension and other extension providers, as well as with other relevant locally-based organizations working in agriculture and rural development. Note that building new relationships and enhancing networking with other non-government actors was one of the key goals of PRONEA.

#### Box 1—Swanson & Rajalahti's conceptual framework for planning and implementing programs and strengthening pluralistic agricultural extension and advisory systems



Source: Swanson and Rajalahti (2010), p. xiii.

The framework is participatory in nature. It promotes consultation with and participation by not only the beneficiaries, but also by a wide range of stakeholders who characterize a pluralistic extension system. In addition, the framework emphasizes the importance of having in place a robust monitoring and evaluation (M&E) system that promotes evidence-based interventions and learning, including the identification of and emancipation from institutional constraints. Thus, the steps in the framework are expected to reduce the degree of uncertainty and, consequently, the risk of failure.

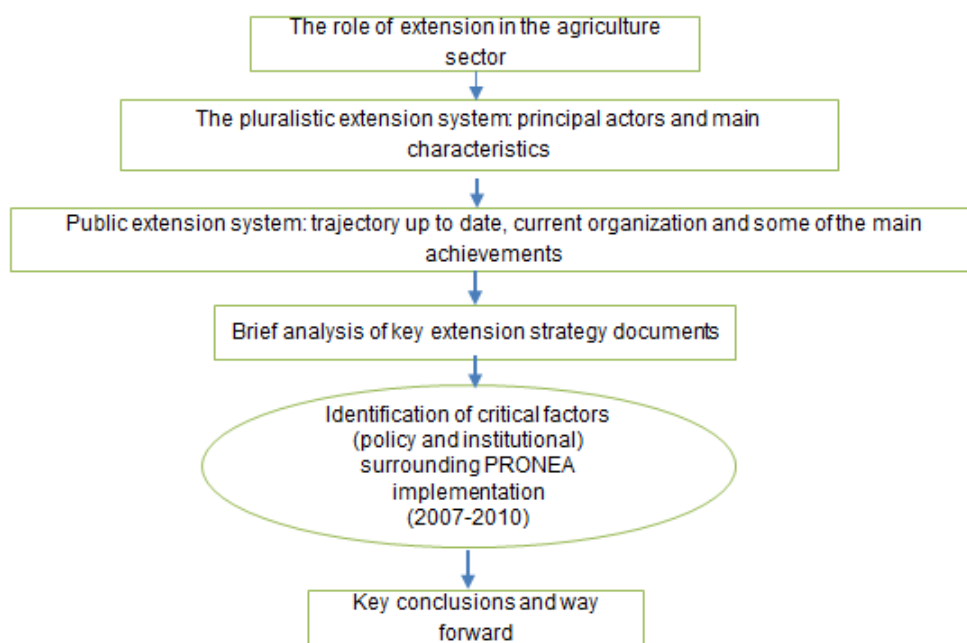


In practical terms, the full implementation of the nine steps highlighted in the above framework is understandably often difficult to accomplish in a sequential and on a timely basis. Confounding factors, such as limited resources, political urgency in designing and implementing extension programs, or low capacity to use evidence and information, can undermine comprehensive extension programs and projects. However, if large and long term extension projects or programs, such as PRONEA was envisaged to be, are to be successfully implemented in a pluralistic extension environment (as is the case in Mozambique), then there is a need to consider the steps or factors perceived as critical among the nine indicated above.

## METHODOLOGY

The study follows the outline indicated in Figure 1. It starts with a comprehensive characterization of the pluralistic extension system in Mozambique. It continues with an analytical description of the evolution of the system since its establishment. The study's principal step is the identification of critical policy and institutional factors that prevailed during PRONEA's implementation and thus affected this process and the outcomes from which our conclusions and recommendations were drawn.

**Figure 1—Outline of the study**



The methodology included review of existing literature and official documents, interviews with key informants and experts and field visits to seven districts across three provinces. Three documents were critical for the review – the first public extension master plan (EMP) (MAP 1998), the second EMP (MINAG 2006a), and the design document for the Agricultural Support Program, PRONEA (IFAD 2005). The three documents are summarized here:

- First public extension master plan:** Prepared in 1996 and 1997, the first EMP was approved in 1998 by the government of Mozambique as one of the components of the National Agriculture Development Program (PROAGRI). The first phase of PROAGRI was implemented from 1999 to 2004, with an extension to 2006, the same period of implementation as for the first EMP. PROAGRI was the first agriculture sector budget support (AgSBS) program in the country. It was implemented through eight vertical components (central to local level) and by the ten Provincial Directorates of Agriculture (DPA). The program focused on the provision of public services in the agricultural sector. Its components were (i) institutional development, (ii) research, (iii) irrigation, (iv) forestry and wildlife, (v) livestock, (vi) land management, (vii) support to (crop) production, and (viii) extension. PROAGRI was designed with a vision of transforming the then Ministry of Agriculture & Rural Development (MADER) into a modern institution for public sector support to the agricultural sector; to increase agricultural production and productivity in order to improve income and food security for rural households; and to protect, conserve, develop and ensure public access to natural resources on a sustainable basis.

The first EMP had as its objectives a concentrated effort at public agricultural extension in 52 districts selected on established criteria; unifying public extension (crops, livestock and agro-forestry) under a flexible system employing different extension models; strengthening human capital; undertaking regular monitoring and evaluation; decentralizing and devolving management and decision-making within public extension to the provinces; and promoting a pluralistic extension system that involved government, the private sector, and NGOs in coordinated action (MAP 1998).

- **Second public extension master plan:** To be implemented from 2007 to 2016, the second EMP included most of the objectives of the first EMP. However, the second plan emphasized the need for major decentralization of extension to district level; collaboration with local partners within the scope of the pluralistic extension providers, including through outsourcing initiatives; and learning by doing through the implementation of different extension models (MINAG 2006a).
- **PRONEA:** Planned to be implemented from 2007 to 2014, PRONEA was designed to operationalize the second EMP, focusing on the establishment of partnerships between public service and other service providers in the agricultural sector. Resources were to be allocated for technical coordination, supervision, monitoring and evaluation, and institutional and technical support at central level; for extension technology transfer and coordination activities at provincial level; and for implementation of extension activities at district level. PRONEA implementation was designed to gradually increase program coverage across the districts of Mozambique over the course of its implementation. With a total cost estimated at USD 50 million, the program was to contribute to a production increase for different commodities based on the adoption of productivity increasing technologies by beneficiary groups. Post-harvest management technologies introduced under the program were to improve farmers' storage and support value-addition through the introduction of agro-processing methods and assisting producers seek out good markets (IFAD 2005).

For this assessment, we also used available public extension annual reports and literature on Mozambique's agriculture extension to gather relevant secondary data and information.

Key informants were interviewed mainly through focus group discussions made up of field extension workers (district-level) and staff members who work in the provincial rural extension services (SPERs). At central level, we interviewed top managers and senior technical staff in relevant MINAG national directorates and institutes. Our questions were open-ended and oriented towards gathering relevant information at both local and central levels. Key informants were either involved with the issue of public agricultural extension provision in Mozambique as a regular part of their job or other activities or because they know about the issue – in this case, Mozambique's extension system, and particularly public extension in this study. Among other uses, our key informant interviews aimed at:

- determining what people think are important issues or problems
- understanding how different groups understand or give meaning to an issue
- assessing what people identify as the causes or roots of the issue or problem; and
- identifying strategies or actions that people believe are possible or effective (Garkovich 2009).

We also interviewed key informants and experts in other relevant institutions besides MINAG. These interviews were meant to assess key issues, such as:

- the degree of dissemination of PRONEA's design and objectives, particularly with regard to the subjects' awareness and sharing of relevant information on PRONEA within and beyond MINAG
- the preparedness of DNEA to implement the program as planned, and particularly to undertake the required institutional improvements and changes in the Directorate's own functioning and its relationship with key stakeholders
- the role of MINAG as a whole in the implementation of PRONEA
- the role of key partners in PRONEA implementation
- developments of expected linkages and networking between public extension agencies and key stakeholders; and
- perceptions of the feasibility of PRONEA goals given the circumstances surrounding the program's implementation.

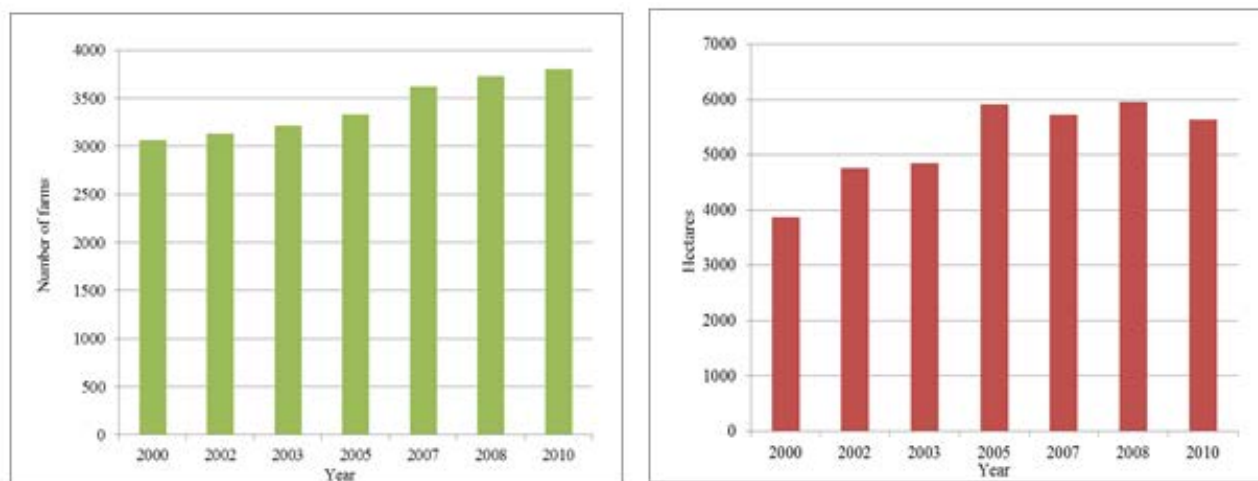
We interviewed 68 people at different levels. The provinces and respective districts we visited include Maputo (Boane and Moamba districts), Sofala (Dondo and Nhamatanda), Manica (Gondola and Sussundenga), and Gaza (Chibuto). We selected these based on their volume of extension activities, relevance to the study, and their accessibility, given our limited resources to support field visits.

In the remainder of this introductory section, we provide a brief background on Mozambique's agriculture sector and a brief history of its agricultural extension, with a focus on the current pluralistic system and MINAG's role within that system. Thereafter, Section 2 provides an analytical description of the trajectory of public extension, with a focus on its organizational structure, functions, and on some of its main achievements in terms of outputs. Section 3 discusses the content of PRONEA in detail. Section 4 assesses the policy and institutional context that surrounded and affected PRONEA implementation. Sections 5 and 6 summarize our conclusions and policy recommendations.

## 1.4. The Agriculture Sector in Mozambique

Mozambique's economy is still heavily dependent on agriculture, with a sectoral contribution to total Gross Domestic Product (GDP) estimated at 25 percent from 2007 to 2010 (INE 2011). Small and medium-scale farms together comprise around 99.3 percent of the 3.8 million farms. Small farms are predominant. Total cultivated land is estimated at 5.6 million hectares (INE 2010a). Figure 2 shows trends in total small- and medium-scale farms and total cultivated land area since 2000. Despite the slight but consistent increase in the number of small- and medium-scale farms between 2000 and 2008, the increase in the total estimated cultivated area within the same period was not as consistent.

**Figure 2—Total farms and cultivated land area in Mozambique, 2000 to 2010**



**Source:** INE 2000; INE 2010a; MADER 2002; MADER 2003; MINAG 2005b; MINAG 2006b; MINAG 2007c; MINAG 2008b.

Of the estimated 36 million ha of total arable land in Mozambique, about 3 million ha are potentially suitable for irrigation (FAO 2005). Across the ten agro-ecological regions of the country (annex I, Region (R) 1 to R10, from marginal, moderate to high potential regions), Mozambique is endowed with considerable potential for diverse annual and perennial crops and for various livestock species, namely cattle, goats, pigs, and poultry. Mozambique also has potential for increased forestry and inland fishing, including through the development of aquaculture. However, agricultural productivity is also constrained by various factors, which include:

- limited key support services, such as research and extension (Gêmo et al., 2005); or support for commercialization, processing and mechanization, land preparation and harvesting – which emerging commercial farmers on irrigated land especially need (MINAG 2010c)
- low use of agricultural inputs, including water for irrigation (INE 2000; INE 2010a; MINAG 2010c)
- limited public and private investment in the agriculture sector as a whole and particularly to support increased production; and
- limited ability of agriculture policies and institutions to contribute effectively to strengthening inter-sectoral coordination and evidence-based policy formulation, planning, and monitoring and evaluation (MINAG 2007a; *Ministério das Finanças* 2010; MINAG 2010f).



To address such constraints, in 2011 the government approved a Strategic Plan for Agriculture Sector Development, known in Portuguese as the *Plano Estratégico de Desenvolvimento do Sector Agrário* or PEDSA (MINAG 2011b). The Strategic Plan is expected to be the guiding policy for the next 10 years under the umbrella of the Agricultural Policy and Implementation Strategy, or, in Portuguese, the *Política Agrária e Estratégia de Implementação* (Ministério da Agricultura e Pescas (MAP) 1995). The Strategic Plan provides the policy framework for Mozambique's implementation of the Comprehensive Africa Agriculture Development Programme (CAADP). The government adopted the CAADP process and launched it in December 2010 in collaboration with various agriculture sector stakeholders (MINAG 2011a; Gêmo 2011). The CAADP framework will be implemented through national agriculture policies and institutions. Both PEDSA and CAADP aim to boost agricultural productivity and food security and reduce poverty by acknowledging the need to:

- increase investment toward the target of having at least 10 percent of the annual total public budget allocated to agriculture
- improve natural resources management, particularly that of water for irrigation to reduce risks to agricultural productivity posed by climate change
- secure the participation and of key stakeholders in fostering agriculture sector development
- develop harmonized policies and effective institutions; and
- strengthen key support services, including research and extension.

## THE ROLE OF EXTENSION IN THE AGRICULTURE SECTOR

Agriculture extension is supposed to provide needed knowledge and skills to rural men, women, and youth an-informal, participatory manner, to improve their quality of life (Qamar 2005). Agriculture extension helps to increase agricultural productivity and farm incomes by providing a framework through which farmers are organized into functional groups in order to gain access to credit, inputs, marketing services, and information about government development programs (Hanyani-Mlambo 2002).

In Africa, CAADP highlights the role of extension (and research) on technology dissemination and adoption, as one of the critical factors that increases agricultural productivity (NEPAD/CAADP, 2003). However, developing and sustaining agriculture extension services, particularly public systems, has been a challenge in many developing countries, and particularly in Africa (Eicher 2002; Gêmo et al. 2005). As Eicher (2002) argues, one of the biggest challenges facing African agriculture ministries in the 1990s was the near collapse of the core (research) and extension institutions that provided services to small-scale family farmers.

In Mozambique, the government and other agriculture stakeholders view the role of extension as crucial in efforts to increase productivity and production (MAP 1998; MADER 2004b; MINAG 2011b). Established only in 1987, Mozambique's public agriculture extension is relatively new when compared with other southern African countries such as Zimbabwe, Tanzania, and Malawi (Hanyani-Mlambo 2002; Rutatora and Matee 2001; Chinsinga & Cabral 2008). Private extension started mainly in the early 1990s following the privatization of large state farms, particularly in the northern region (Niassa, Cabo Delgado, and Nampula provinces) and to some extent in the central region (Zambézia, Manica, and later in Tete province). Although a few NGOs provided extension services starting in the early 1990s, NGOs' extension grew largely after the peace accord ending the civil war in Mozambique was signed in October 1992,<sup>2</sup> when most of these organizations shifted from emergency activities to agriculture and rural development-related efforts. Thus, Mozambique has had a pluralistic extension system since early 1990s (Gêmo et al. 2005).

Extension's contribution to agriculture performance is well known, particularly in technology transfer, farmers' organizations support, facilitation of market linkages and natural resources management (Hanyani-Mlambo 2002; Gaaya 1994). In Mozambique, extension is particularly important because productivity is still generally very low and farmers' organizations and other agricultural community groups are still largely underdeveloped. While small and medium farms account for 99.3 percent of total farms (INE 2010a), most of these farmers face production and market constraints. Nonetheless, the potential for crop production livestock and inland fisheries/aquaculture is high to moderate in much of the ten agro-ecological regions of the country (Annex 1). Moreover, agriculture is the main livelihood for 69 percent of rural people (INE 2011) and for some peri-urban people, giving it a crucial role in boosting food security and improving the welfare of particularly poor people.

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<sup>2</sup> The country was affected by a 16-year-old war that ended in October 1992 with the signing of a Peace Accord.

In general, extension has disseminated improved farming practices, mainly for food crops (principally by public and NGOs' extension services); and basic technologies, such as improved seeds (mainly open pollinated varieties, OPVs), animal traction for plowing and harvest transportation, vaccinations against the most common livestock diseases (such as Newcastle disease in rural chicken production), low-cost irrigation technologies (e.g., treadle pumps), and improved household granaries (public and to some extent NGOs' extension); and price and market information, especially for food crops (public and NGOs' extension). Agricultural extension providers have also helped register farmers' organizations (public and NGOs' extension), and helped with adult education; facilitated market linkages (NGOs and to some extent public extension); helped collect data and information at the local level, including by agriculture surveys, to respond to MINAG's informational needs (public extension); and promoted smallholders' production of cash crops—mainly cotton and tobacco—through contracting schemes comprising input supply, farming technical assistance, and buying of output by the promoters (private extension).

Despite the importance of extension, total coverage has so far been limited, as shown in Table 1.

**Table 1—Farms with access to extension services (public, private and NGOs') from 2002–2008, percent**

Provinces/Years	2002	2003	2005	2006	2007	2008
Niassa	10.6	9.2	13.7	23.1	12.1	8.9
Cabo-Delgado	18.7	14.2	15.8	11.4	5.8	6.8
Nampula	16.1	16.5	18.7	9.8	8.5	10.9
Zambézia	9.5	8.6	10.3	9.7	11.6	6.6
Tete	19.9	16.3	16.0	13.4	13.5	12.8
Manica	14.9	8.9	11.6	14.9	10.9	7.5
Sofala	19.8	24.0	21.1	16.9	14.4	10.2
Inhambane	4.6	9.9	7.8	6.6	7.4	4.6
Gaza	10.4	18.4	22.2	15.3	7.7	4.6
Maputo	11.0	14.5	11.0	9.8	19.9	6.8
National average	13.5	13.3	14.8	12.0	10.1	8.3

**Source:** MINAG/TIA (2002–2008). There was no TIA survey in 2004, so no data is available for that year.

Access to extension services refers to physical interaction between farmers and extension workers or trained local people who support extension activities. Table 1 shows that over the period 2002 to 2008 maximum estimated coverage was attained in 2005 and thereafter declined until 2008. This belies the government's expressed desire to increase extension services during this specific period. Note that the declining coverage was happening at a time (2006–2008) when public extension was expanding across the country at an accelerated pace. In part, this declining coverage is tied to the low increase in total staff for public services, despite the geographic expansion.

## 2. AGRICULTURAL EXTENSION IN MOZAMBIQUE

As mentioned above, agricultural extension is relatively new and is still at a consolidation stage in Mozambique, despite the fact that it has existed for 27 years. Currently, the three types of services providers (public, private-sector, and NGOs) use five of the six basic extension models identified by Eicher (2007):

1. "National public model", adopted by MINAG, here referred to as public extension
2. Training and Visit (T&V) model, also used in modified form by public extension since 1987
3. Farmer Field School (FFS) model, also used by public extension since the late 1990s<sup>3</sup>
4. NGO model, comprising different types of organizations; and
5. Private model, which has been used for cotton, tobacco, and some emerging crops, such as sesame and soybean, through out-growers schemes.

<sup>3</sup> Eicher (2007) noted that there is a debate among extension experts about whether the FFS is an approach or a model. In Mozambique the "National public extension model" has been called "public extension (services)" while the T&V system and the FFS (approach) model have been generally considered as *metodologias de extensão* (extension methodologies).

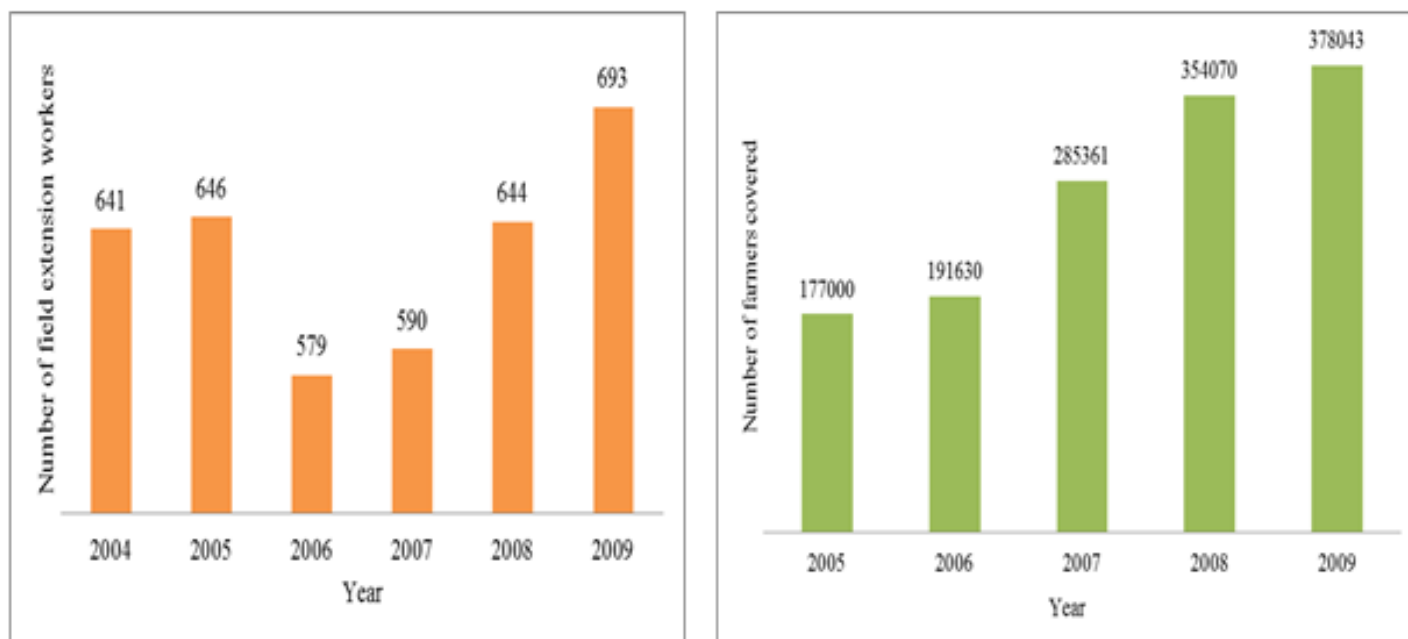
Several NGOs have redefined their coverage at the provincial and district levels, while others have also redirected their intervention focus toward, for example, specialized advocacy on market issues, HIV/AIDS issues, and women empowerment. Holistic extension activities commonly have been implemented by some international NGOs since the civil war ended (Gêmo et al. 2005).

Agricultural training schools are potential services providers. However, the role of universities and other institutions in providing extension services has been limited. Budget constraints and the limited number of full-time agronomy and veterinary lecturers have constrained the contributions of such institutions to the provision of agricultural extension services to farmers (Gêmo 2006).

## 2.1. Public Extension

The left side of Figure 3 shows the number of field extensionists from 2005 to 2009. Public extension employed 781 staff members at the national level, comprising 693 field extension workers and supervisors, 64 technical and administrative staff at provincial level and 24 at central level in 2009. The number of public extension field workers has been limited over time to less than 700. The right side of Figure 3 shows public extension farmers' coverage from 2004 to 2009. In 2009, public extension was operating in selected rural areas of 126 districts (MINAG 2010f) compared with the 66 districts in which it was intervening in 2004 (Gêmo et al. 2005). This reflects an impressive expansion of about 60 districts in five years.<sup>4</sup> Public extension provided services to 378,043 smallholder farmers nationally in 2009.

**Figure 3—Number of public extension field workers (left) and number of farmers covered by public extension (right)**



Sources: Gêmo et al., (2005) and MINAG/DNEA (2010)

Figure 3 indicates that between 2005 and 2006 there was a considerable reduction of field staff members (extensionists and supervisors). In 2007, total extension workers remained very low. Some of the extensionists were at the time assigned to perform new tasks at the district level by the local governments. In 2006, new services were created at the district level, the District Economic Activities Service, or SDAE (from *Serviços Distritais de Atividades Econômicas*). The SDAE comprise agriculture services – before represented at district level through the former District Directorates of Agriculture, or DDAs (from *Direcção Distrital da Agricultura*) – as well as other public services such as fisheries, industry and trade, tourism, and mining; according to main economic activities in each district. Some of the extension workers were appointed to be SDAE directors or to work as heads of “agriculture units” within the SDAE. However, some of the extensionists quit their jobs. The accelerated expansion of DNEA led to the transfer of many of them from one district to another, including to some remote rural districts. Some staff did not accept such transfers and opted instead to quit their jobs.

<sup>4</sup> This was the fastest public extension expansion since the service's formal establishment in March 1987.

Despite the considerable reduction in field extension staff in 2006 and 2007, the coverage of farmers increased (see right side of Figure 3). Key informants at DNEA affirmed that the increase in coverage was because of the expansion of FFS, specifically in Manica, Sofala, and Maputo provinces. Although this can partly explain the increase in coverage, there are different perceptions of what constitutes farmer coverage. For example, while some extensionists view coverage as including the entire population of villages under their responsibility, others consider it to include only the farmers who interact with them regularly. These different understandings may contribute an overestimation of covered farmers.

In terms of funding, public extension has been mainly supported by development partners with some contribution from the government. From its establishment until the late 1990s, it was funded mostly through specific projects at central and provincial levels. These projects involved different development partners, particularly IFAD, the Danish International Development Agency (DANIDA), the World Bank, the Food and Agriculture Organization (FAO) and the German Agency for Development Cooperation (GTZ), the last at the early stages of public extension. An international NGO, Sasakawa Global 2000, also co-funded public extension from 1996 to 2003.

Since 2001, DNEA has been funded mainly through PROAGRI's common mechanism for the flow of funds (CMFF). Since then DNEA has had no significant additional "off-budget" funding, although it received some support through specific small projects. These included the FAO Special Program for Food Security (SPFS) for two districts in Zambézia province (2001–2003); the SPFS for 12 districts in Sofala, Manica and Maputo provinces (2003–2009); and the FAO support for the establishment of FFS in three districts in Sofala province and two districts in Maputo province (2009–2011) within the scope of the United Nations (UN) initiative, "Woman Empowerment and Gender Equality Program." The major role of these programs has been to promote the expansion of FFS and low-cost technology transfer through public extension in some areas of selected districts.

Information on public extension unit costs has not been readily available. The first public EMP (MAP, 1998) estimated the average annual cost per farmer reached per year at USD 17. This seems an underestimation, even taking into account that at the time extension workers with diplomas (equivalent to 12 years of schooling) had salaries equal to about USD 200; bicycles were the main transportation for fieldwork; and field equipment consisted principally of rain boots, raincoats, and metric tapes.

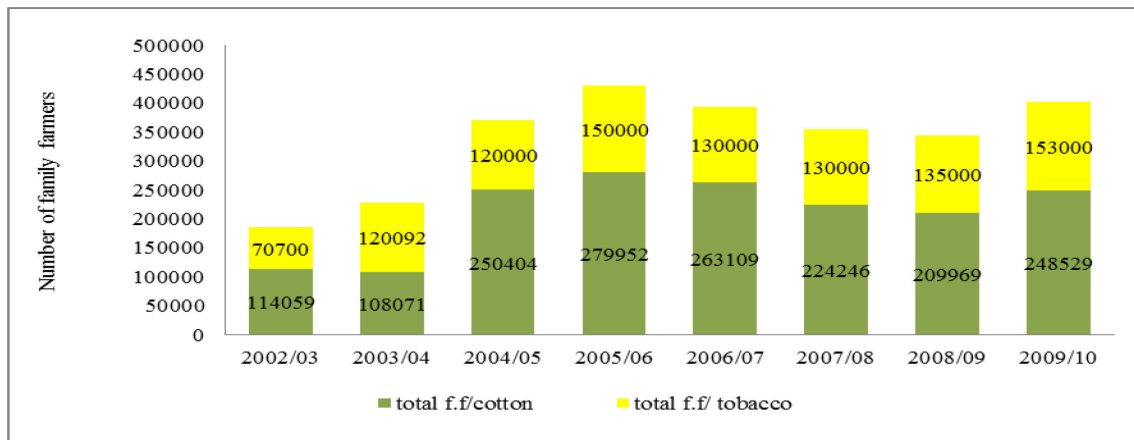
## 2.2. Private Commodity Extension

Private extension has been more active in the northern and to some extent in central regions due to their agro-ecological suitability for cash crops such as cotton and tobacco. With regard to cotton out-grower farming, there are 12 private enterprises involved through sub-contracting schemes with thousands of smallholders while there are only two companies (Sonil and Mozambique Leaf Tobacco (MLT)) in the tobacco industry.<sup>5</sup> Cotton extension providers operate based on concessionary schemes (*Concessões de Algodão*) which consist of government authorizations to the enterprises that allow them to operate in certain districts for a specified period of time (5 to 10 years, or more). Cotton enterprises operate mainly in Nampula, Cabo-Delgado, Niassa, and Sofala provinces, and to some extent in Zambezia province. For tobacco in the central region, the MLT has been the major company promoting the crop in selected districts of Tete, Zambezia and Manica provinces, which operate more or less in the same way as in the case of cotton. Figure 4 shows the total smallholders involved in cotton and tobacco out-grower farming through sub-contracting schemes.

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<sup>5</sup> A third company has asked for authorization to operate in Nampula Province but has not yet begun work (MINAG/ DNSA 2011).

**Figure 4—Total smallholder or family farmers involved in cotton and tobacco subcontracting production through private extension**



Source: MINAG 2010a, MINAG 2010b; MINAG 2010d.

The private enterprises are responsible for ensuring delivery of the main services related to the cotton and tobacco value chains from input supply, field technical assistance, and commercialization of the output, to (partial) processing and export. In addition to cotton and tobacco out-grower farming, some initiatives for sesame and soybean promotion have been emerging through the sub-contracting schemes in northern and central regions of the country.

In terms of extension staff, no comprehensive and up-to-date data on total private extension staff was found during the course of this study. Information provided by MLT (which is the bigger of the two enterprises currently involved in promoting tobacco), indicates that in 2011 the enterprise had 478 extension employees working with an estimated 118,000 smallholder farmers, mostly in the central region of the country. However, it was not possible to get information on the qualifications and professional background of the extension workers. Tobacco out-growers working with MLT are organized in “smallholder farmer clubs,” each comprising between 15 and 25 members. In 2011 there were approximately 8,000 smallholder farmers’ tobacco producers’ clubs working with MLT. The average area cultivated by out-growers is estimated at 0.60 ha. MLT emphasizes using “good agriculture practices”, particularly crop rotation and locally based reforestation initiatives (MLT 2011).

In addition, a study commissioned by IAM on cotton private extension (Givá et al. 2011) revealed that it involves more extension staff than, for example, public extension. However, cotton private extension relies heavily on local extension agents with no formal training rather than on professional extension workers, as shown in Table 2.

**Table 2—Extension staff and foremen in seven of the 12 enterprises currently operating in the country’s cotton private extension**

Qualification	Number of staff holding the qualification
University level (BSc)	10
Diploma	22
Certificate	61
Secondary school	103
Local extension agents with no formal training/ qualification (foremen)	1124
Total	1320

Source: Givá et al. 2011.

The statistics shown in Table 2 were collected from seven of the 12 major enterprises then promoting cotton production and marketing.<sup>6</sup> The use of a high number of foremen is aimed at reaching as many out-growers as possible without

<sup>6</sup> The seven surveyed enterprises (out of 12 in total) include Sociedade Algodoeira de Namialo (SANAM); PLEXUS Mozambique Ltd; OLAM Algodão do Vale do Zambeze, Ribawè and Murrumbala; Sociedade Algodoeira do Mutuali (SAM); Sociedade Algodoeira do Niassa (SAN/ JSF), Chipata and Companhia Nacional do Algodão (CNA) (Givá et al. 2011).

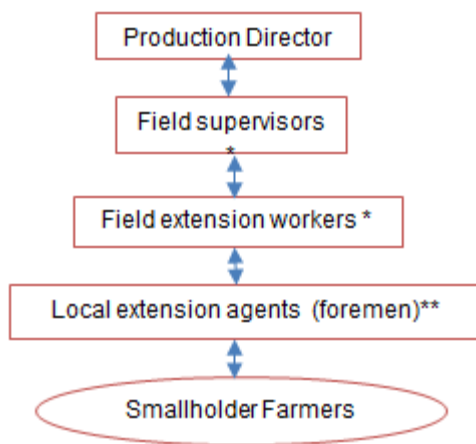


necessarily relying on many professional extension workers, particularly taking into account that the foremen are responsible for delivering routine recommended farming practices to the out-growers.

The use of foremen also brings challenges to their supervision by the field extension workers who must ensure that the foremen are delivering expected field tasks on time and as required. Givá et al. (2011) mentioned the following as some of the main challenges affecting cotton private extension:

- Difficulties in registering farmers at the beginning of each season and in providing support to their organizations
- Limited knowledge of diseases and pests and limited practical knowledge of pesticides on the part of some extension staff, (particularly those from secondary schools) although experience (years of work) helps to overcome these problems
- Limited linkages between field implementation and research in order to update relevant knowledge
- Limited training in extension methodologies, including those related to providing support to farmers' organizations
- Challenges in making sure that out-growers use the recommended levels of pesticides and apply them often enough. Out-growers often consider pesticides “expensive” when the recommendations are followed exactly.

**Figure 5—The hierarchy used in technology dissemination by private enterprises involved in cotton extension**



**Source:** Adapted from Givá et al. 2011.

**Notes:** (\*): Professional staff members of the enterprises but not necessarily with an agriculture training background, some of them are from general secondary schools;

(\*\*) Foremen are selected at local level mainly based on their experience to help ensure key farming practices (e.g. recommended spraying) on a contractual basis.

Figure 5 shows the operational hierarchy used in technology dissemination by the private enterprises involved in cotton extension. Givá et al. (2011) notes that the technology dissemination by private enterprises in cotton extension primarily involves a top-down relationship (one direction arrows, top-down), except for the relationship between field supervisors and field extension workers, which were illustrated as having an interactive relationship. However, although there is a clear type of “commanding” relationship over the hierarchy from the top (production director level) to ensure rigorous accountability from the different levels, there is a need to take into account the bottom-up reporting responsibility in such a hierarchy, from land preparation to the harvest stage and up to crop marketing. This means that there is a two-way relationship (top-down and bottom-up) but that the top-down relationship is very important in ensuring the overall “command” of the extension provision and control of field operations.

Literature on private extension funding and the associated costs is scarce.<sup>7</sup> However, the former CEO of AGRIMO, a large cotton enterprise, told us that private extension costs can vary depending on, among other factors (L. Pereira, pers. comm.):

- quality of field staff (in terms of level of training and experience) and of the equipment they use

<sup>7</sup> For example, the MLT has invested approximately USD 25 million in the 2010–2011 agriculture season for tobacco production through the out-growers schemes (MLT. 2011).

- complexity of field operations related to the different crops
- willingness of the private enterprises to develop farmers' skills beyond those needed to manage specific cash crops;
- introduction of new technologies and farming practices that often require additional smallholders' training and technical supervision during the first few agriculture seasons; and
- level of "social responsibility" investments, such as co-funding rural roads, rural primary schools, and the like to help local communities.

### 2.3. NGO Extension

NGOs undertook extension or extension-related activities in selected rural areas of 84 districts across the country, according to a 2006 estimate (MINAG 2006a). This increased to 87 districts in 2009 (MINAG 2010f). As mentioned above, the size, budget, type and volume of activities as well as the coverage and duration of NGOs' extension projects differ widely. There are small NGOs working in one or two districts and others working in three to five districts or even more in one or more than one province. Although their levels of resources and consequently the scope and volume of activities vary, international NGOs such as World Vision, Care International and Africare, among others, have been by far the most robust in terms of budget, human capital and operational capacity.

In general, NGOs offer a wide variety of approaches in different districts, providing an opportunity to compare and evaluate the various programs and methods used. Moreover, different locations have different problems and constraints that need to be addressed. However, learning from NGOs' extension experience seems to be limited by weak communication among the different kinds of extension services – public, NGO extension and private. Despite some local initiatives seeking to enhance collaboration between public extension and that of NGOs, there is no platform at the national level for sharing relevant experiences and developments. However, some key stakeholders, including NGOs, have been invited to attend the annual meetings of public extension, involving all the ten provinces with involvement of the Provincial Directorates of Agriculture (DPAs) and Provincial Extension Services (SPERs). But these meetings are mainly focused on public extension planning and monitoring and evaluation issues, rather than on issues related to other extension providers.

In terms of human resources, in 2004 NGOs had an estimated total extension staff of 840 people (Gêmo et al. 2005). More recent figures were not found for this study. In fact, compiling data on total staff in NGOs' extension has been a challenge at DNEA, as most NGOs do not provide the required data and those that do provide it do not necessarily disaggregate the data on professional extension works and community extension agents.

To summarize this section on the pluralistic agricultural extension system in Mozambique, Table 3 shows some of the main characteristics of the three main service providers, public, private-sector, and NGOs.

**Table 3—A comparison of the three extension providers' approaches and methodologies**

Extension providers/ issues discussed	Public (DNEA)	Private extension	NGO extension
<b>Leading institutions and other institutions involved</b>	Ministry of Agriculture (MINAG), through the National Directorate of Agrarian Extension (DNEA)	Mainly cotton and tobacco out-grower farming private enterprises, which includes processing facilities, or access to them.	International and some national NGOs funded by different development partners. NGOs vary considerably in terms of size, budget, know-how, type, and volume of activities.
<b>Providing what services</b>	Unified extension (crops, livestock, natural resource management, farmers' organizations, and market development support)	Commodity-oriented extension mainly for cotton and tobacco, and emerging out-grower farming for sesame	From often narrow-focused (for example only livestock or market development support) to holistic extension
<b>How</b>	Offering no-cost services through extension networks based at villages/ community/ district levels throughout the country	Offering sub-contracts (input and services credit) to thousands of smallholder farmers to grow and sell the harvest to the contractors, in agro-ecologically suitable regions for the crops in question	Offering no-cost services through extension teams or through local extension agents at villages/ communities and district levels throughout the country
<b>Approaches &amp; methodologies used</b>	Focused on technology transfer, farmers' empowerment and social capital development; using mainly modified T&V system (Gêmo et al. 2005) and other models, such as FFS	Focused on developing farmer's crop management skills through a rigorous technical assistance aimed at ensuring credit return, as profitably/ efficiently as possible	Mainly focused on farmers' empowerment (advocacy) and social capital development (emphasis on supporting farmers' organizations), although some of them are also involved in technology transfer (e.g. improved seed)
<p><b>The national extension system (<i>Sistema Nacional de Extensão – SISNE</i>) is intended to be an effective system characterized by collaboration and exchange of information among the three actors. SISNE development was one of the main goals of the first EMP and of PRONEA.</b></p>			

**Source:** Author's own representation based on literature review, interviews with informants and direct observation.

Since its establishment, public extension has been part of MINAG's core functions. Box 2 summarizes MINAG's role in agriculture extension.

**Box 2: MINAG's role in agriculture extension**

MINAG has four main roles that contribute to the pluralistic extension system (MINAG 2006a), namely to:

1. Formulate and co-implement extension strategy (with emphasis on the development of a pluralistic system)
2. Provide public extension services through DNEA
3. Ensure policies and regulations are in place for private extension and monitor its activities. In the case of cotton, IAM is the specific institution responsible for this crop, regularly interacting with private extension providers. The MINAG Cashew Promotion Institute (INCAJU, from *Instituto do Fomento do Caju*) also provides extension services for smallholder cashew producers; and
4. Monitor agriculture extension activities at district, provincial and national levels.

In order to better contextualize PRONEA within the public extension services, here a brief institutional trajectory of these services is provided, including a summary of the main achievements to date.

**3.1. The Historical Trajectory of Public Agricultural Extension in Mozambique**

**1987–1992: ESTABLISHMENT PERIOD**

Established in March 1987 through the then-National Directorate of Rural Development (DNDR from *Direcção Nacional de Desenvolvimento Rural*), extension services at the time were confined to rural areas that were politically reasonably safe due to the war that was ravaging the country. This was the case until 1992. Nevertheless, the period from 1987 to 1992 was vital in terms of establishing the services at central and provincial levels; providing essential training to the first frontline and

supervisory field staff; building the first multi-disciplinary team of qualified staff at central level (including foreign professionals); establishing cooperation networks with relevant agencies such as the FAO, the UN Development Program (UNDP), and IFAD, as well as with the bilateral development partners, who have provided support from the very early stages. These include DANIDA and GTZ.

### 1993–1998: INITIAL AGRICULTURAL EXTENSION EXPANSION

The Peace Accord of October 1992 allowed for an impressive geographic expansion of public agricultural extension services, with new networks established in a further 22 districts between 1993 and 1998. This occurred mainly in the northern and southern regions of the country, particularly through World Bank support from 1993 to the late 1990s. The expansion was part of joint government and development partner efforts aimed at reviving the agriculture sector and the rural economy after the 16-year war, which had almost paralyzed agriculture production in most of the rural areas. In addition to public extension, many NGOs were shifted from providing humanitarian assistance to the provision of agricultural extension services or related activities. Commodity-oriented extension (or technical assistance) was also growing through private companies and through some government and private joint ventures. Thousands of smallholders, particularly in areas in central and northern regions of the country, were subcontracted to grow cotton and, from the second half of 1990s, tobacco also (Gêmo et al. 2005).

The growth of the pluralistic extension through the expansion of government, private and NGOs' activities combined with limited resources in public extension dictated the adoption of more strategic interventions by these services. The preparation of the first EMP took place between 1996 and 1998 within the scope of preparation of the PROAGRI I. The terms of reference for the design of the first EMP included:

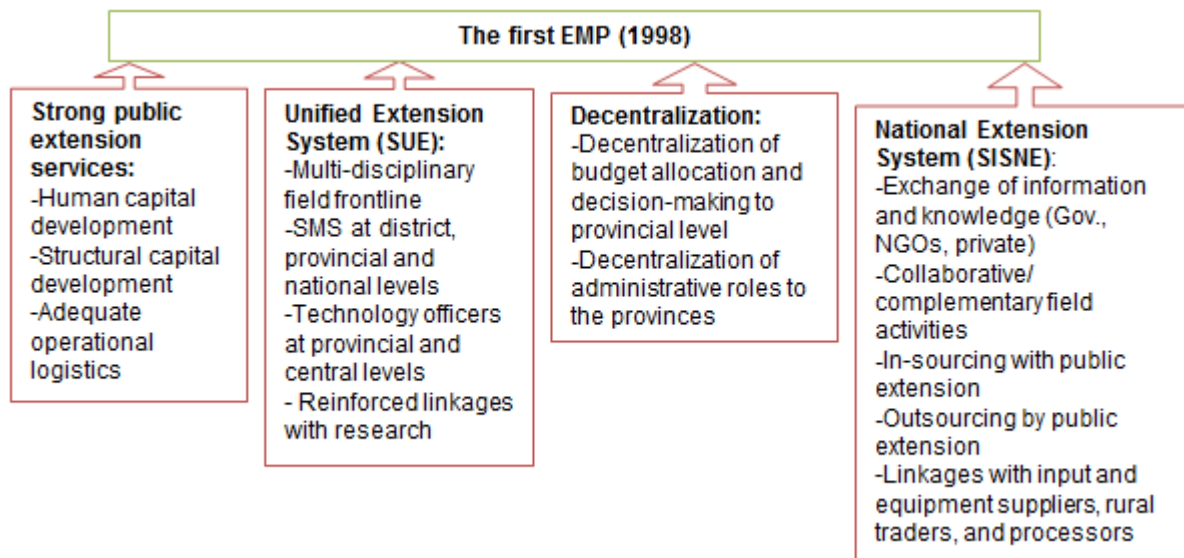
- Reinforcing the strategic interventions of public extension services by redefining principles, coverage targets, the main approaches and methodologies, human capital needs, logistics-related issues, and the main expected results
- Strengthening collaboration with relevant agricultural public services, including research, within the scope of the mandates of the three extension services providers; and
- Providing a platform and contributing to an effective SISNE to promote the sharing of information and collaboration in the field by the three extension services providers. Innovative EMP approaches meant to promote non-public services providers included the reinforcement of in-sourcing initiatives and the introduction of outsourcing of extension activities by public services (Gêmo & Rivera 2001; Gêmo et al. 2005).

The first EMP was initially planned for the period between 1998 and 2003, but was later aligned with the PROAGRI implementation period between 1999 and 2004. Later it was extended to 2006, in line with the extension for the period of implementation of other PROAGRI components.

### 1999–2004: FIRST EXTENSION MASTER PLAN IMPLEMENTATION

This was an important period for public extension services due to the newly introduced field intervention approaches, institutional reforms, and major efforts to strengthen the pluralistic extension system in the country. Figure 6 illustrates the pillars of the first EMP.

**Figure 6—Pillars of the first EMP implemented between 1999 and 2004**



**Source:** MAP 1998.

Building strong public services was a key goal of the first EMP. This was seen to involve improving human and structural capital and putting in place adequate operational logistics. A lack of adequate qualified extension staff has been identified as a major limitation of many agricultural extension services, particularly in African systems (Zinnah et al. 1999; Weidinger et al. 2006). Human capital development under the first EMP focused on in-service or in-house training (formal and informal) and on contracting qualified staff. Structural capital development was related to the need to improve databases of public agencies on agricultural service provision (including non-public relevant data), the analytical quality of the annual reports of the public agencies, and improving the quality of extension publications (case studies, annual performance reports, and policy briefs). The first EMP also strongly emphasized the need to strengthen SISNE.

By 2004, public agricultural extension was operating in 66 districts rather than in the planned 52, with a total staff of about 700. However, the public extension system had started experiencing some logistical constraints. It was having difficulty replacing worn-out motorbikes and bicycles for fieldworkers and replacing vehicles for provincial technical and supervisory staff. It was also having difficulty providing agriculture inputs and equipment for on-farm and other relevant field demonstrations (Gêmo et al. 2005).<sup>8</sup>

### 2005–2006: EXTENSION OF FIRST EXTENSION MASTER PLAN

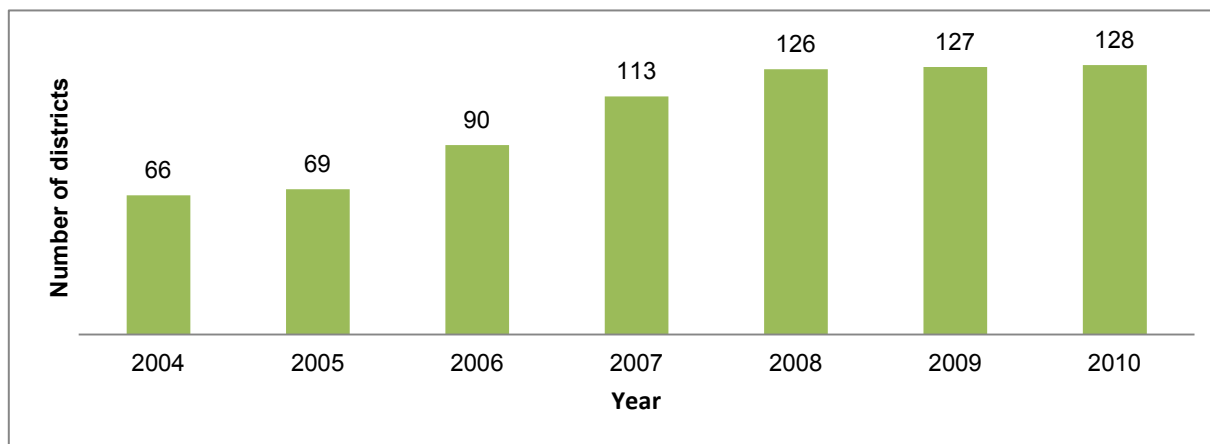
As mentioned above, PROAGRI I was extended from 2004 to 2006 along with the first EMP of MINAG. Despite the limited staff and increasing logistical constraints on conducting field activities, public extension services started an accelerated expansion from 69 districts in 2005 towards the “maximum possible administrative coverage.”<sup>9</sup> In 2006, public extension services had a total staff of 662 at national level, including 496 and 83 field extension workers and supervisors, respectively. Figure 7 shows the expansion of public services between 2004 and 2010, indicating a huge increase from 2005 (69 districts) to 2008 (126 districts).

<sup>8</sup> The establishment in May 2001 of a common mechanism for the flow of funds (CMFF) for all development partners, providing sector budget support to the agriculture sector through MINAG within the scope of PROAGRI, implied the end of earmarked funds or direct funding to extension public services through specific projects. Weak prioritization of extension in MINAG’s overall budget allocation subsequently resulted in severe funding restrictions that exacerbated logistical and operational constraints to agricultural extension.

<sup>9</sup> Thus, in 2006, DNEA had expanded to 21 new districts in relation to 2005, a huge expansion in just one year.



**Figure 7—Number of districts covered by public extension between 2004 and 2010**



Source: Gêmo et al. 2005; MINAG 2010f.

Some of the DPAs started to reassign part of their extension staff to new districts in late 2005 without necessarily coordinating with DNEA at central level. These reassignments fell within the scope of permissible decentralized decision making. In 2006, DNEA expansion continued, achieving coverage of 90 districts. Since 2010, public extension has been operating in selected areas of the 128 rural districts of the country. DNEA expansion is politically and socially justifiable in light of the need to increase access to extension to enhance food production and generate income among smallholder farmers. However, it seems the accelerated expansion was conducted without necessarily considering the following critical factors:

- Additional field staff required
- Training, supervision and M&E implications in the wake of the scattered distribution of the field staff, with no more than three extension workers in some districts
- Additional logistical needs, especially transport for field, supervisory, and provincial technical staff, as well as agricultural inputs for field demonstrations
- Linkages and collaboration with other relevant actors such as suppliers of research, input, and equipment, among others; and
- The need to differentiate activities and expectations according to agro-ecological conditions, at least between high-potential and marginal districts.

Concentrating DNEA in districts selected based on high to moderate agro-ecological potential (until 2004) excluded thousands of smallholder farmers in non-targeted districts from direct access to public extension. However, given limited resources, the rationale had been to concentrate efforts and resources in selected districts to “maximize” effective coverage towards those districts. It is important to note, however, that in districts without public extension at the time there were NGOs or private commodity extension services.

The rapid geographic expansion of public extension services in Mozambique over the period 2005 to 2008 has been widely discussed. Until 2004, the prevailing consensus was that there was a need for careful analysis and decision making on how and when to expand in order to ensure effective and consistent expansion. Even with that consensus, however, in 2004 DNEA was operating in 66 districts, 14 more than the 52 that were initially planned. Bear in mind that PRONEA had considered the need to expand, and that any expansion was to be implemented gradually.

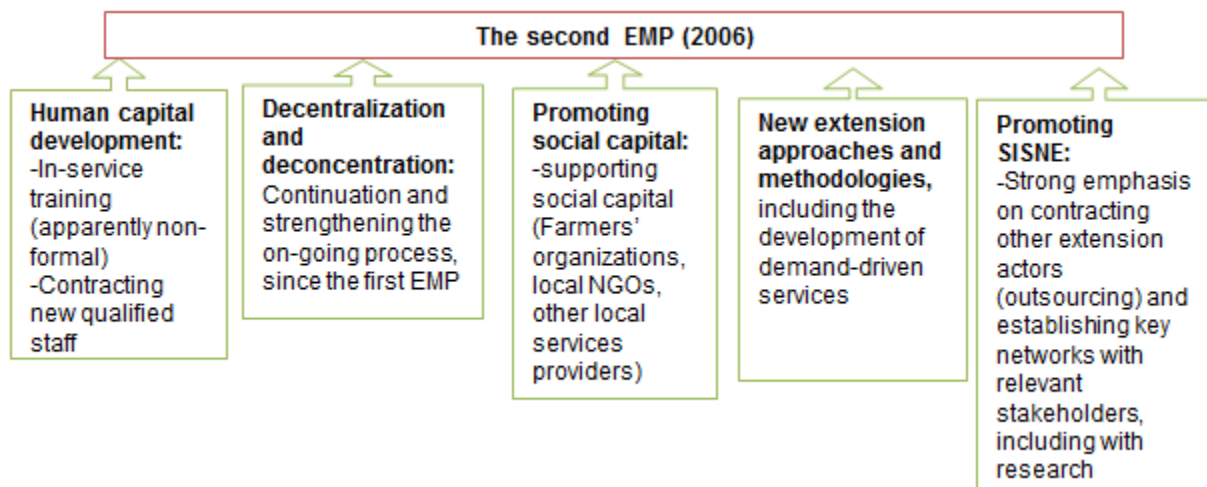
### **2007–2010: SECOND EXTENSION MASTER PLAN AND PRONEA IMPLEMENTATION**

As indicated above, PRONEA was intended as the program mechanism for the implementation the second master plan for public extension from 2007 to 2016, following the implementation of the first plan. PRONEA was planned for the 2007 to 2014 period (IFAD 2005).

## The Second Extension Master Plan (2007–2016)

As indicated in Figure 8, the second plan has several similarities to the first EMP, in terms of, for example, emphasizing human capital development, continuing decentralization and deconcentration, and promoting SISNE through a strong emphasis on contracting other regional and local actors to provide local extension services under close supervision. With stronger emphasis than in the first EMP, the second EMP (and PRONEA program) highlighted the promotion and support of social capital within the extension system as one of the key goals.

Figure 8—Pillars of the second Extension Master Plan that was to be implemented from 2007 to 2016



Source: MINAG 2006a.

Helping farmers' organizations plan and facilitate linkages with markets (input, output, and financial) was described as crucial in promoting relevant local-based organizations and rural traders. Testing new extension approaches and methodologies, in particular through innovative partnerships with local actors, such as NGOs, and implementing demand-driven extension were also described as fundamental. Finally, outsourcing public extension activities and developing key linkages with research institutions were also strongly encouraged within the scope of developing an effective SISNE.

## PRONEA Implementation (2007–2010)

PRONEA implementation was planned to be gradual, expanding from selected districts throughout the country to national coverage by the fifth year. While it continued providing "supply-side" services throughout the country, DNEA had to develop specific capacity to deliver services according to PRONEA's goals and expectations. In order to provide key information on PRONEA, the following was extracted from the PRONEA program document (IFAD 2005).

**Objectives and approach:** The objective was to contribute to absolute poverty reduction and an improvement in the quality of life of the rural poor. The PRONEA contribution was to emerge from the greater relevance of agricultural advice and technology development; and adoption by large numbers of farmers of more productive, economically rewarding and environmentally sustainable practices.

The program's purpose was defined as increased returns and improved household food security for subsistence farmers, particularly female-headed households, through a steady increase in production efficiency. This was to be achieved through a set of complementary interventions with the supporting objectives to establish: i) wider access to effective technical support services focused on districts; ii) better organized producer groups with influence on the supply of services; iii) delivery of support services in response to requests.

The approach was to have the program use contributions from government, local authorities, NGOs, or private sector agencies on terms that best met program needs and at the same time ensured cost effectiveness – and not subject the program to interference by individual agencies or complication by "political etiquette".

**Rationale and strategy:** The rationale for PRONEA rests on the MINAG vision for agricultural transformation; the then-Action Plan for Absolute Poverty Reduction (PARPA, from *Plano de Ação para Redução da Pobreza Absoluta*), analysis and proposals for rural economic growth and poverty alleviation; and the ongoing acceleration of decentralization. In short,

these instruments converge on the proposition that a more stable, productive, commercial, and sustainable pattern of agricultural development and natural resource use are prerequisites for alleviating poverty and deprivation and boosting economic performance; and that these targets are more likely to be met if authority and responsibility for development are devolved to the local agencies that are closest to the needs – and to the scrutiny – of their constituents.

**Target areas and groups:** PRONEA was to use virtually all of the expected government funding for public extension services. It was also to encompass and underpin key agricultural elements of local governance reform, and a large part of district and downstream responsibilities and activities for services delivery and economic advancement. It was therefore expected to be a program with national coverage, accessible to all provinces and districts at year five of its implementation. However, the degree of involvement in, and the level of assistance available through the program for individual districts was expected to vary according to the district's state of development; its propensity to accept and implement reform; its physical, agricultural, economic and social characteristics; and the presence of downstream agencies and constituent communities.

Ideally, the three facets of extension reform were defined as:

- farmer mobilization and organization
- enhancement and diversification of extension capabilities (particularly the development of demand-driven extension); and
- actual service provision, plus any associated investment.

Three PRONEA program components were established in its design, as summarized in Box 3.

### Box 3—PRONEA components, sub-components and main activities per component

#### **Component 1: Supply-side development** (for extension and technical services)

##### **Sub-component 1.1:** Public sector reorientation and support

- Reorientation of public sector ethos and reform at central, provincial and district levels and downstream; emphasis on participation, facilitation and service delivery cost effectiveness
- Building of public awareness and consensus around PRONEA and provision of training, resources, and systems for public extension and research performance improvement
- Assistance to national/ provincial agencies to develop service provider Code of Practice and regulation of contracting terms, conditions, and performance factors; and
- Specific strengthening of district and province agricultural planning, implementation, and supervision capacity; arrangement, oversight, and quality control of contract service provision.

##### **Sub-component 1.2:** Private sector/ NGO promotion and support

- Encouragement, refinement and expansion/ deepening of the outsourcing process already underway, in particular for extension, training, information and technical services
- Facilitation, professional advice, financial assistance for emerging services providers.

#### **Component 2: Demand-side development**

##### **Sub-component 2.1:** Farmer Organization and Empowerment

- Inventory, group strengthening, networking, participatory planning and graduation and registration of associations separated for advanced, limited and lower priority districts.

##### **Sub-component 2.2:** Group, Association and Enterprise Development

- Business plan development, management training, linkage development, service provision capacity and initial association investment separated for advanced, limited, and lower priority districts (grouping farmers around common interests for purpose of interlocution; clarifying and strengthening real demand-balanced gender, HIV/AIDS or other disadvantages—for agricultural production/ productivity services, and means of provision).

#### **Component 3: Agricultural Services Provision**

##### **Sub-component 3.1:** Provincial level services provision

- Strategic/ thematic and/ or consolidated contracts, for instance for seeds multiplication, disease prevention, and natural resource management activities at provincial level.

##### **Sub-component 3.2:** District/Local level services provision

- Advisory, study, information, technology application contracts at district/ local levels.

Source: IFAD 2005.

However, as described above, districts vary in their stage of development and status of extension outreach. Consequently, under the PRONEA viewpoint, districts were classified into three categories:

- 60 districts that were to benefit from substantive assistance through decentralization or agricultural projects. These districts are found in locations of high potential, but have, to a certain degree, less urgent need (in terms of investment)
- 40 districts that, because of needs or potential, were ranked as high priority for mobilization, reform, and service provision; and
- 28 districts that, because of their natural resources, paucity of population, or special conditions, such as arid lands and national park areas, render them unresponsive to program-type interventions.

The anticipated sequence of district uptake was expected to vary from activity to activity. The first two years of program implementation were planned to be primarily preparatory ones, in which the measures necessary for province and district co-optation and for training, selection, approval, and contracting was to be completed. During the preparatory years, actual program interventions were to be made in those advanced districts where the groundwork of farmer participation and realistic agricultural planning and project implementation had been laid. It was anticipated that up to 40 mostly advanced districts would become involved by the end of the third year, building up to about 80 by the fourth year; and for 90 to 100 – including the 28 lower priority districts – to have full coverage by the fifth year.

**Targeting strategy and tactics:** PRONEA was to be inclusive and serve the needs of all clients. It was expected to embrace all sizes and classes of farms and farmers, with the use of specific targeting instruments and mechanisms so that small, marginal female-headed and less advantaged farm households would be adequately and proportionately represented and benefited. The strategy for targeting the poor and disadvantaged was planned to have four main dimensions. The main targeting element would be a primary eligibility criterion for participation: membership of farmer groups and associations comprising at least 70 percent of targeted small farming households – one that cultivates not more than two ha under rain-fed agriculture or less than one ha under irrigation.

A second element of the targeting strategy was aimed at prioritizing districts, localities, and communities with high incidences of poverty. The allocation of funds to districts and downstream was to be determined by criteria that were consistent with the formula for allocation of central government funds for decentralization and district development. For PRONEA, additional criteria of absolute poverty headcounts, district land size, and propensity for food security and improved agricultural productivity were to be included.

Thirdly, targeting goals were to specify fair, minimum levels of gender balance in all implementation teams, committees, farmer organizations and training programs supported by the program; representation of households with a chronically ill member or those that have recently experienced the death of an adult member and other disadvantaged households in membership of groups and activities; and equitable representation of small farming households as resource persons or farmer-promoters. Women are the majority of smallholder farmers and have distinct roles, problems, and needs. The transformation of extension services provision was viewed as depending to a certain degree on greater involvement of women, whether as client farmers or extension agents, and on sensitization and training in the use of gender analytical tools for monitoring and evaluation of progress and impact.

As the fourth element of targeting strategy, the program would provide small grants and services. Self-targeting services were to include introduction of labor-saving technologies and assistance with production of horticultural crops, cassava, and sweet potato.

Finally, within the communities, explicit mechanisms for putting the targeting strategies described above into practice were to be devised in consultation with local leaders during the two preparatory years. The aim was to ensure that membership would be open to all farmers, including women, youth, the elderly, single heads of household, people in HIV/AIDS-affected households, orphans, and others with limited labor, cash, or land. The mechanisms that PRONEA and the local leaders agreed upon were to be applied to all activities, such as formation and support of farmer organizations; and learning and capacity building.

**Program management:** MINAG's central level, through the PROAGRI Coordination Unit, was expected to have overall responsibility for coordination and oversight of the program, with collaboration at central level incorporating close liaison with several ministries. These included the Ministry of Planning and Development (MPD, from *Ministério da Planificação e Desenvolvimento*), the Ministry of Domestic Affairs (MAE, from *Ministério da Administração Estatal*) and the Ministry of Finance (MF, from *Ministério das Finanças*), while DNEA was expected to modify its role to become a center for excellence and resources for technical back-stopping. At provincial level, the main role would be backstopping the preparation and

review process of the District Agriculture Development Plans, which were to also include a component for agriculture services. In particular, the DPAs were expected to provide the necessary guidance and, where appropriate, physical assistance to districts for plan preparation. Provinces, and specifically the provincial directors of agriculture, in conjunction with the chairpersons of the Province Development Committees, were expected to have a pivotal implementation responsibility. They were charged with promotion, facilitation, direction, monitoring, and upward reporting of the program on behalf of their constituent districts and downstream agencies.

After three years of implementation (2007–2010) of the planned eight-year program, PRONEA was cancelled following the third annual supervision mission involving IFAD and MINAG. The reviewers recommended this decision due to “PRONEA’s poor performance” (MINAG & IFAD 2010). IFAD and the government agreed to cancel PRONEA and have MINAG redesign it with support from IFAD, in order to have a new public extension strategy and programmatic investment plan in place by 2012.

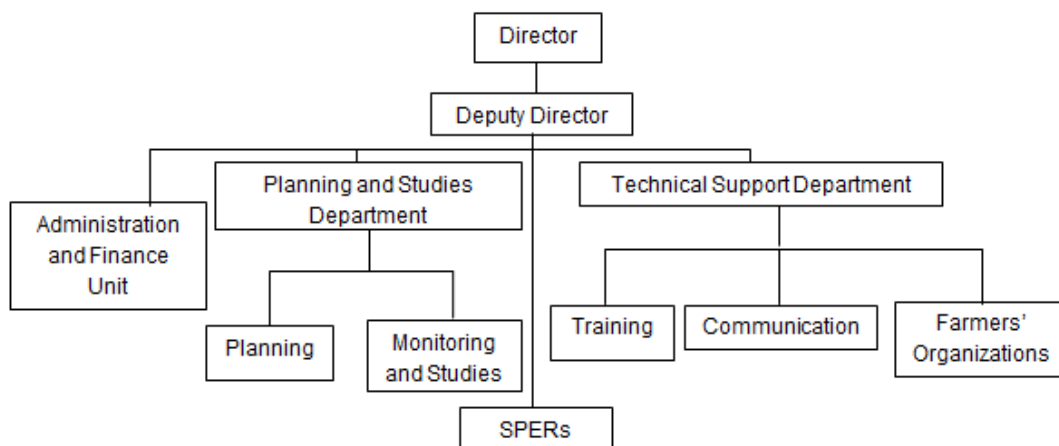
### 3.2. Scope, Organization and Functioning of Public Agricultural Extension

As indicated above, since its establishment in March 1987, public agricultural extension in Mozambique has been institutionally organized and managed as a national directorate within MINAG’s organizational structure. Annex 2 shows how the public services are currently located within MINAG. The name and scope of intervention of the national directorate in charge of public extension have been respectively changed and re-defined over time as described below:

- March 1987 to 1997: National Directorate of Rural Development (DNDR) which was involved in providing public extension services in the ten provinces, and in co-managing or supervising, monitoring and evaluating rural development projects in provinces such as Zambezia, Manica, Inhambane and Maputo. This wide scope of intervention was implemented until the mid-1990s in collaboration with some UN agencies, as well as other development partners
- 1997 to 2006: National Directorate of Rural Extension (DNER), having agricultural extension as the main focus
- 2006-to date: National Directorate of Agrarian Extension (DNEA) a designation that is aimed at distinguishing the broad scope of rural extension activities from those focused on agriculture, for which DNEA is responsible.

Figure 9 shows the current structural organization of DNEA at central level, with the SPERs being responsible for public extension implementation at provincial level.

**Figure 9—Structural organization of DNEA**



Source: MINAG 2011b.

The Planning and Studies Department is responsible for planning at central level at DNEA headquarters, helping in preparing and compiling the public extension annual plan at the national level, as well as contributing to monitoring and evaluation (M&E) at the national level. This includes the compilation of quarterly, semester and annual DNEA countrywide performance reports. The Technical Support Department is responsible for technical and methodological support to SPERs, including through supervision of field visits to the provinces by central level staff members. The Department in the past has been comprised of farmers’ organizations, training, communication, and technology units. However, the functioning and level



of performance of these units have been varied. Factors such as high turnover of qualified staff, the limited availability of financial resources to implement DNEA annual work plans, and the manner in which different public extension leaders have focused their attention on strengthening the aforementioned units, have all influenced the role of such DNEA units over time.

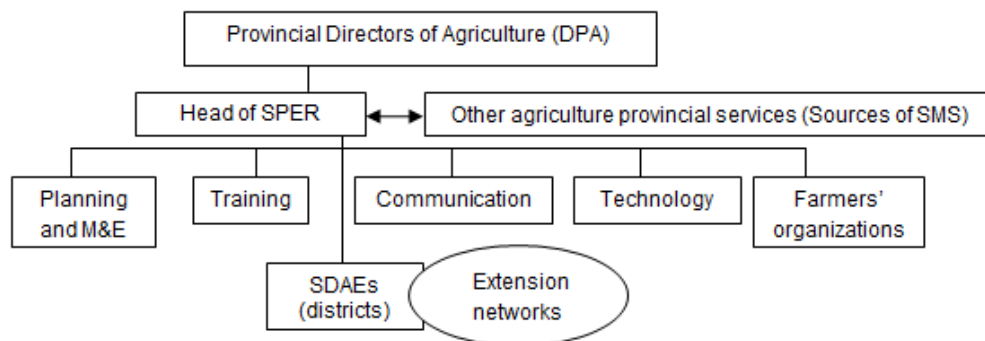
At provincial level, public extension is managed through the SPER at the DPAs. Thus, while at central level the same services are called “agrarian extension,” at provincial level they are still officially called “rural extension.” The designation of DNEA was adopted within the scope of MINAG-wide institutional reforms conducted in 2005 and 2006 at central level. The SPERs comprises mainly planning and M&E, communication, technology promotion, and farmers’ organizations units. However, most SPERs have been affected by high staff turnover over the years and, in general, the ten SPERs have limited qualified staff in charge of the different units. Some relevant provincial services at DPAs, such as the livestock and forestry services, should have subject matter specialists to work closely with SPERs and with extension networks at the district level, as needed. However, the availability of subject matter specialists to collaborate regularly with extension varies from province to province. Moreover, resource allocation at provincial level is decided taking into account the needs of other agricultural provincial services, as well as the availability of resources. The provincial directors of agriculture, at DPAs, play an important role in deciding how resources are distributed to the various services.

At the district level, there are the extension networks. Until 1998, the structuring of the extension networks was district-based, with a team of eight extension workers making up one network. Within the scope of the implementation of the first EMP (1999–2006), the definition of an extension network was revised and became linked to the agro-ecological regions. Under the new definition, the extension networks comprised two or even three districts in some cases, depending on the agro-ecological characteristics of the districts. In total, 36 extension networks were established covering 52 districts (Gêmo et al. 2005). Almost nine years later the definition of *extension networks* was again revised with the implementation of PRONEA (2007–2010), as it was decided to return to the initial organizational structure, based on districts. The need for eight extension members per team was decided based on the Training & Visit (T&V) system, which was adopted after the beginning of the public extension in 1987. However, some modifications meant to align the T&V system to local circumstances were introduced in early 1990 (Gêmo et al. 2005):

- Emphasis on farmers’ groups and farmer’s organizations rather than only on individual farmers (*Camponeses de Contacto*)
- Focus on farmers’ participation, and on the need to promote relevant mutual learning between farmers and extension workers – local based farmers’ knowledge as an important issue to be taken into consideration
- Decentralization of planning and implementation control, with desired strong linkages with central level on strategy, technical and methodology issues
- Flexibility in defining the frequency of the field extension staff technical meetings in each province, instead of adopting the fortnightly period as a rigid schedule; and
- Creation of a receptive environment to test and implement other methodologies while implementing mainly the modified T&V system.

Until 2005, the extension networks were administratively subordinated to the former district directorates of agriculture (DDAs). The district extension supervisors (or the team supervisor in those districts where the extension network comprised more than one district), were responsible for the control of the functioning of the networks and teams and also for reporting to the DDAs and to SPERs. In 2006, the DDAs were abolished and a new broader entity – SDAE – was established. Agriculture services at district level were then integrated into the SDAE, which, as mentioned above, are also responsible for trade and industry, fisheries, tourism, and mining, depending on location, natural potential, and the diversity of economic activities in each district. Figure 10 shows the current organization of the public extension at provincial and district levels.

**Figure 10—Organizational structure and functioning of public extension at the provincial (including districts) level**



Source: MINAG 2011b; Interviews with DPAs.

The supervisors of the extension networks at the district level are still responsible for the functioning of public extension in the field. They report to both the director of SDAEs and the head of SPERs.

### 3.3. The Main Achievements of Public Extension

The years of public extension since 1993 have been characterized by different degrees of progress. The expansion (1993—1998) and the first EMP (1999–2004) implementation periods were critical in reinforcing the role of public extension services. However, the extension period of the first EMP and the start of the accelerated expansion (2005–2006) brought major institutional challenges to the services that continued over the three years of implementing PRONEA up to 2010.

Country-wide or regional level studies on extension outcomes and impact in Mozambique in general, and of public extension in particular, have been scarce. Available studies on extension impact have shown different results and conclusions. This may be explained in part by the differences in methodologies used by the different authors (Cunguara & Moder 2011). Using the limited evidence-based information on performance and outcomes of public extension, some indication can be captured on how public extension has been performing in terms of service delivery.

#### TOTAL FARMERS COVERED BY PUBLIC EXTENSION

Over time, the total number of farmers covered by the public agricultural extension service has been an important performance indicator. Table 4 reports on farmers' coverage and available field staff (field extensionists and supervisors) between 1999 and 2009.

**Table 4—Planned and achieved household total coverage, field extension workers and average rates of individual extension workers coverage**

Items/ years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Annual planned coverage (*1000)	156.6	156.6	156.6	156.6	156.6	156.6	117.0	193.5	223.3	258.3	500.7
Annual achieved coverage (*1000)	130.5	110.2	124.0	125.0	124.0	136.6	177.0	191.0	285.3	354.0	378.0
Under/Over-coverage (*1000)	-26.1	-46.4	-32.6	-31.6	-32.6	-20.0	+60.0	-2.5	+62.0	+95.7	-122.7
Field extension staff	501	540	507	485	541	562	550	496	517	548	693
Planned staff	696	696	696	696	696	696	n.a	n.a	n.a	n.a	1024
Field extension supervisors	54	56	54	58	69	71	96	83	73	96	n.a
Average rate(farmers per extension worker)	260	204	244	258	229	243	322	385	552	646	n.a

Source: Gêmo 2006; MINAG 2010a; 2010f

Table 4 shows that there are two distinct periods in terms of public extension coverage:

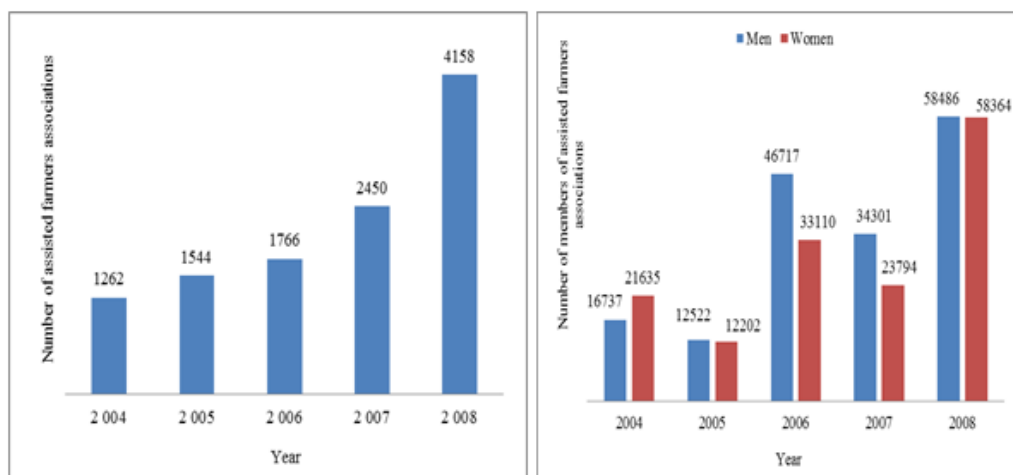
- The 1999–2004 period, during which coverage had been below planned levels, mainly due to the then-persistent annual deficit on the planned field extension staff. In this period, estimated annual average of farmers’ covered per extension worker achieved a minimum of 204 farmers per extensionist in 2000 and a maximum of 260 in 1999
- The 2005–2008 period, in which total coverage achieved had been above total coverage planned, despite the reduction in field extension workers in 2006 and 2007. In this period, the estimated annual average number of farmers’ covered per extension worker ranged between 322 farmers in 2005 and 646 farmers in 2008.

Some key informants argued that the increased number of farmers covered per extension worker and total coverage in the 2005–2008 period were due to the expansion of the FFS in selected areas of Manica, Sofala and Maputo provinces. As the data used in the study is recorded at national level, it was not possible to assess the extent to which FFS had increased farmers covered in each of the three provinces.

## FARMERS’ ORGANIZATIONS

Supporting farmers’ organizations, particularly farmers’ associations, is one of the main expected roles of public extension, according to the official functions of DNEA (MINAG 2006). Public extension’s main activities aimed at supporting farmers’ associations (FAs) include helping in their establishment, providing technical assistance, and facilitating their access to input and output markets. The left chart in Figure 11 shows the number of smallholders’ FAs that interacted with public extension between 2004 and 2008 and, at right, the number of members of FAs helped in this way.

**Figure 11—Number of farmers’ associations covered by public extension (2004–2008) (left) and number of members of assisted farmers’ associations (right)**



Source: MADER2004; MINAG2005; MINAG2010b

The notable balance of men and women affiliated with FAs confirms women’s level of participation in agriculture, despite some substantial differences recorded in 2006 and 2007. Average annual membership varies substantially from an average of 30 members per FA in 2004, 14 per FA in 2005, 45 per FA in 2006 to 28 per FA in 2008. Despite the recorded increase on FAs from 2004 to 2005, the low level of total members and also of average number of members recorded in 2005 may be explained by the severe drought that affected the country that year. On the other hand, the impressive increase in total members and in the average number of members per FA in 2006 can be linked to the relief initiatives carried out by MINAG and NGOs, particularly in the most affected rural areas. Relief initiatives comprised food aid and distribution of food crops seeds (MINAG/National Directorate of Agriculture Services, DNSA 2007). Relief situations have the potential to boost membership because FAs (and farmers’ organizations in general) have been viewed as priority beneficiaries in government-led and NGO interventions in rural areas of the country.

According to key informants at central level, the impressive increase in the number of FAs that received help from 2006 to 2008 can be explained by two reasons:

- The rapid geographic expansion of the public extension, principally from 2006, may have contributed to major interaction with established FAs, particularly in some peri-urban districts of Maputo and Beira cities

- The 2006 reform of the Law of Associations, aimed at making it easier to register agricultural associations<sup>10</sup> may also have contributed to the increased establishment and registration of FAs.

However, little information is available on the typology of assisted FAs in terms of their main purposes and activities. Nor is there much information about the main constraints faced by extension workers in working with FAs or the main constraints faced by the FAs themselves, much less about the main lessons learnt in working with these organizations.

## TECHNOLOGY TRANSFER (FIELD DEMONSTRATIONS)

As mentioned, PRONEA stressed the role of technology dissemination as a crucial element in the wider adoption of technologies that increase production and productivity. One of public extension's major interventions in technology dissemination has been the establishment of on-farm result demonstrations (RD) or CDRs (from *Campos de Demonstração de Resultados*) involving different food crops. Table 5 shows the extent of on-farm RD at national level from 2004 to 2008.

**Table 5—“On farm” RD per crop from 2004 to 2008**

Years/Crops and “on farm” RD	Maize	Rice	Sorghum	Beans	Irish potato	Groundnuts
2004	955	62	38	371		276
2005	1021	139	83	252		222
2006	1926	434	273	604	235	422
2007	1531	201	100	444	102	300
2008	1216	464	659	169	184	215

Source: Gêmo 2006; MINAG 2010 b; 2010f.

The importance of field demonstrations in extension is well known (Richardson 2003; Mudyazvivi 2010). The DNEA has been implementing both “method demonstrations” and “result demonstrations”. Method demonstrations show farmers how to do something. Farmers are shown step by step how to implement, for example, an improved practice or recommendation. Result demonstrations are based on the notion that “seeing is believing.” It shows farmers that a particular new recommendation is practicable under local conditions and that it can benefit them.

DNEA field demonstrations fall within the scope of main activities normally undertaken by extension services, particularly when they involve smallholder farmers. Public extension on-farm RDs are often established in plots of 100 square meters. Improved maize varieties are the most disseminated technologies, by far. Irish potato is an emerging crop in public extension that has been disseminated in some irrigated areas, mainly in southern and central regions. Public extension workers provide basic inputs, while participating farmers provide part of their prepared land for the demonstrations.

Most demonstrations involve improved seeds (principally open pollinated varieties) produced under good agriculture practices. With the exception of Irish potato, whose on-farm RDs often comprise a technological package (seed, fertilizer, pesticides, irrigation), the on-farm RDs for other crops consist mainly of disseminating ways to use new, improved seeds under good agriculture practices – timely land preparation and seeding, plant density and spacing, timely weeding, proper harvesting period, etc. – under rain-fed production conditions.

The use of improved seed is important but needs to be complemented by the use of other inputs such as fertilizer (and pesticides if needed) to effectively improve productivity and subsequently lead to increased farm incomes. In addition, the continuation of demonstrations is constrained by market supply gaps. For example, there is often no guarantee that seeds of specific crop varieties acquired for dissemination in a certain year will be readily available in the subsequent years, whether for continuation of extension's on-farm RD or for farmer adoption (Gêmo 2007). Under-developed input markets (Tostão 2007) and the weakness of other supportive services, including agriculture output markets (MINAG 2010a; MINAG 2011b) have contributed to gaps and weaknesses in input supply over time.

Table 6 shows various technology demonstrations from 2004 to 2008.<sup>11</sup>

<sup>10</sup> The current Decree/Law of Associations, which also regulates registration of agriculture associations, was approved in 2006 and it became easier to register agriculture associations than before.

<sup>11</sup> The numbers given for the year 2004 comprise accumulated data from 1998 for technologies such as improved kraals, beehives and fish culture tanks.

**Table 6—Technology dissemination through “on farm” or household (HH) demonstrations**

Years/ Type of Technologies	HH improved granaries	HH improved poultry sheds	Improved kraals	HH fish culture tanks	HH improved beehives
2004	129	47	961	2290	1174
2005	341	36	383	1401	425
2006	434	248	621	1263	992
2007	270	292	494	1240	755
2008	710	465	696	430	207

Source: MINAG 2010b; MINAG 2010 f

Note that most of the technologies vary in terms of design, volume (e.g., improved granaries), size (e.g., improved poultry sheds), materials used (focus on locally available materials) and associated costs. In general, analytical information about adoption issues and how these demonstrations benefit participating households is limited at DNEA. However, technologies such as fish culture tanks, improved granaries and improved beehives were mentioned by key informants as having been adopted in some rural areas where public extension is operating. However, the paucity of studies on adoption rates makes it difficult to know the level and consistency of farmers’ adoption of various technologies, particularly within the scope of public extension interventions.

Notably, Table 5 and Table 6 show substantial annual variations in the number of the different types of technologies disseminated between 2004 and 2008. According to key informants, possible reasons for the variations include, among others:

- Resource allocations to public extension in the ten provinces (DPA/SPERs) vary each year according to total resources available to be distributed to various public services (livestock management, land and forestry management, irrigation, etc.) in each DPA. Resource constraints led to reductions in field demonstrations
- The priorities defined by the ten SPERs for each year in terms of areas of intervention, that is, the prioritization of on-farm RD and dissemination of other technologies (e.g., livestock technologies), varies from year to year in each province
- Available transport for field extension workers and other questions of the public extension’s operational capacity in each year also influence its ability to perform on-farm RDs and other field demonstrations
- The type and number of locally-based initiatives to be supported by public extension in each year and in each province varies. If, for example, farmers’ demand for a specific technology is high, that technology should be in principle prioritized.

## 4. ASSESSING THE CONTEXT OF PRONEA IMPLEMENTATION

To understand why PRONEA implementation was halted, it is necessary to analyze the circumstances surrounding its implementation. However first it is necessary to identify some of the main characteristics of the first EMP as well as the main features of PRONEA.<sup>12</sup> Given that PRONEA was designed to operationalize the second EMP, PRONEA and the second EMP tackle issues that are closely related in terms of goals and expected outcomes and impact, implementation principles, and approaches. Table 7 summarizes some of the main characteristics of both the first EMP and PRONEA, which, as mentioned above, are closely related to the second EMP.

<sup>12</sup> The implementation of the first EMP was not based on a specific previously designed program. The first EMP comprised an operationalization plan, consisting of agreed principles and the “philosophy” of implementation (*Princípios e Filosofia de Implementação*), including key issues related to geographic coverage, organization and functioning, networking, methodologies, logistics, and the like.

**Table 7—A comparison of the main characteristics of the first EMP and PRONEA**

Item	First Extension Master Plan (1999–2006)	PRONEA (2007-10) as operationalization tool of second Extension Master Plan
<b>Preparation process</b>	<ul style="list-style-type: none"> <li>Mainly internal, involving qualified staff of the then-National Directorate of Rural Extension (DNER) and led by DNER management with some support from international resident technical assistance</li> </ul>	<ul style="list-style-type: none"> <li>Direct involvement of DNEA through selected staff and DNEA management, including consultation at central and local levels, with strong support from international non-resident technical assistance funded by IFAD</li> <li>Validation of the second EMP</li> </ul>
<b>Main principles</b>	<ul style="list-style-type: none"> <li>Human and structural capital development as key institutional development targets meant to improve competence</li> <li>Concentration on districts with high to moderate agro-ecological potential (52 districts until 2004)</li> <li>Decentralization of extension management</li> <li>Promotion of pluralistic extension system</li> </ul>	<ul style="list-style-type: none"> <li>Human and structural capital development as key institutional development targets meant to improve competence</li> <li>Inclusion of ecologically different districts, with the expansion of districts coverage over a five-year period, from those already covered (69 in 2005) to almost all the country's 128 districts by the fifth year</li> <li>Strengthening decentralization and promotion of pluralist extension system</li> </ul>
<b>Pillars</b>	<ul style="list-style-type: none"> <li>Capacity building (extension HC development and collaboration with subject matter specialists from other directorates and research institutions; improved field operational logistics and M&amp;E system)</li> <li>Knowledge and technology transfer and adoption (emphasis on field demonstrations and extension staff field plots) and farmers' organizations support</li> <li>Networking/participating in partnership with relevant stakeholders (including piloting outsourcing and in-sourcing initiatives)</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building (extension HC development and collaboration with subject matter specialists from other directorates and research institutions; improved field operational logistics and M&amp;E system)</li> <li>Information and knowledge management (extension as a center of expertise and resources allocation)</li> <li>Networking/ and enhanced partnerships with relevant stakeholders (with major emphasis on outsourcing initiatives to promote participation of NGOs, community-based organizations and private sector)</li> </ul>
<b>Main approaches &amp; methodologies</b>	<ul style="list-style-type: none"> <li>SUE – Unified Extension System (crops, livestock and natural resources management) - supply-driven and encouragement of demand-driven extension</li> <li>Participatory planning and M&amp;E with emphasis on farmers' organizations</li> <li>Modified T&amp;V system and openness to other methodologies (learning by doing)</li> <li>At least 12 field demonstrations per field extension worker per agriculture season</li> <li>Emphasis on learning from the interventions</li> </ul>	<ul style="list-style-type: none"> <li>SUE</li> <li>Major emphasis on demand-driven extension and support to farmers' organizations and community-based organizations</li> <li>Participatory planning and M&amp;E, intended to be "rigorous"</li> <li>Need for major /new approaches and methodologies (continuing "learning by doing") and enhanced learning culture from the interventions as the basis to build experience-based knowledge</li> </ul>
<b>Resources needed</b>	<ul style="list-style-type: none"> <li>Total estimated budget of USD 24 million for five years (1999–2004) for logistics, operations (including outsourcing) and training</li> <li>696 field extension workers needed over the implementation period</li> </ul>	<ul style="list-style-type: none"> <li>Total estimated budget of 50 million for eight years (2007–2014) for logistics, operations (including outsourcing and to support local initiatives) and training</li> <li>About 1024 extension workers needed by 2009</li> </ul>
<b>Main implementation partners</b>	<ul style="list-style-type: none"> <li>Livestock and Forest national directorates (unified extension, SUE) and Research</li> <li>input and equipment suppliers and actors involved in output marketing</li> <li>Farmers' organizations</li> <li>Local leaders and local authorities to some extent</li> <li>NGOs and private extension (piloting outsourcing)</li> <li>Relevant agricultural education institutions</li> <li>Development partners involved in funding MINAG/PROAGRI I</li> </ul>	<ul style="list-style-type: none"> <li>Veterinary, Land and Forestry national directorates (continuation of SUE) and Research</li> <li>input and equipment suppliers and actors involved in output marketing</li> <li>Farmers' organizations</li> <li>Local authorities and local leaders</li> <li>NGOs and private extension (scaling up outsourcing)</li> <li>Development partners involved in funding MINAG/PROAGRI II, especially IFAD with 40 percent budget contribution</li> </ul>
<b>Main outputs and outcomes (by 2004)</b>	<ul style="list-style-type: none"> <li>SUE established and functioning in 66 districts, in excess of the planned 52</li> <li>Tangible technologies introduced and disseminated to the assisted farmers<sup>13</sup></li> <li>An estimated 180 940 families covered by 2004</li> <li>Pilot districts with outsourcing and in-sourcing contracts implemented</li> <li>Increased productivity in some areas with extension under technology packages dissemination</li> </ul>	<ul style="list-style-type: none"> <li>Expanded district coverage to almost all districts (128) by the fifth year of PRONEA's implementation with major ownership of local authorities/actors (decentralization)</li> <li>Tangible progress in supporting farmers organizations and in promoting non-public extension/ local development actors (scaling up outsourcing)</li> <li>Increased productivity in areas with extension; enhanced integration of smallholder farmers into markets (particularly through demand-driven extension)</li> </ul>

**Source:** Author's representation based on relevant literature

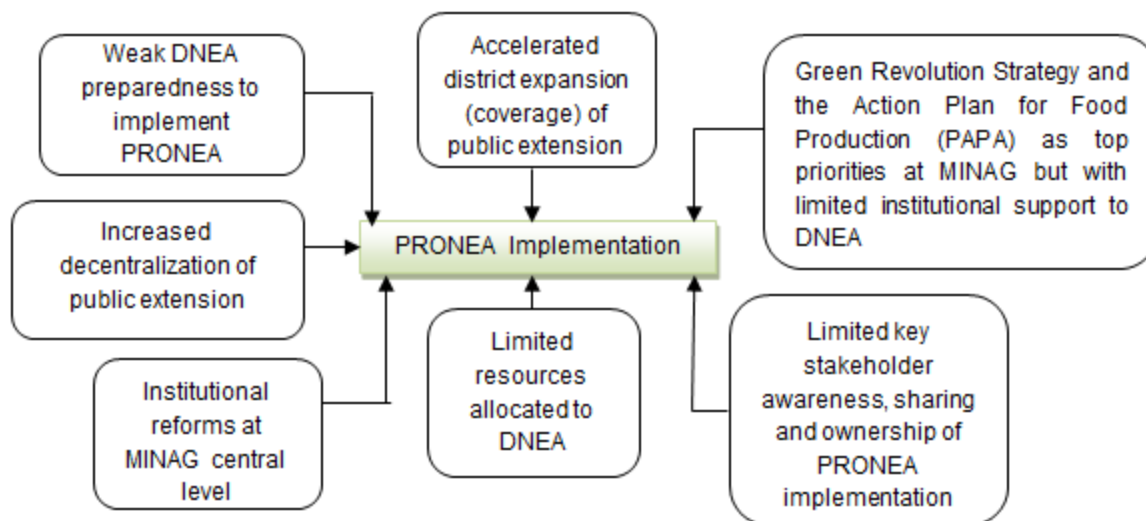
A review of available documents, field visits, and interviews with key informants indicated that PRONEA was implemented in a unique policy and institutional environment. This has to be taken into account in analyzing the reasons

<sup>13</sup> Technology packages were introduced with respect to maize and rice in collaboration with the international NGO Sasakawa Global 2000; chicken vaccines against "Newcastle disease" in rural areas; and small scale fish culture, using mainly tilapia, among thousands of households in suitable rural areas.



behind the decision to stop its implementation. Figure 12 illustrates the policy and institutional factors that surrounded PRONEA implementation. In many cases these constrained the program's implementation due to reasons discussed below.

**Figure 12—Policy and institutional factors that affected the implementation of PRONEA (2007–2010)**



**Source:** Author's own representation based on reviewed literature and official documents, as well as interviews with key informants

#### 4.1. Weak DNEA Preparedness to Implement PRONEA

PRONEA implementation was demanding in terms of the actions that needed to be taken if it was to be done successfully. It required an increase in the number of field extension workers; the strengthening of M&E; and the development of new relationships, approaches, procedures and guidelines, particularly for implementing demand-driven extension activities. Among others, the sound implementation of PRONEA implied the following actions:

##### CHALLENGES IN EXPANDING FIELD EXTENSION STAFF

Adequate staffing levels have been a challenge since the establishment of the public extension services in 1987. More recently, even with the accelerated expansion of district coverage from 2004 to 2008, very limited progress was achieved in increasing staffing levels particularly until 2009 when the target defined by MINAG was of 1024 public extension workers at national level. In order to provide some background information on the introduction of new staff in public extension over time, Figure 13 illustrates the four main stages in contracting new staff to DNEA.

**Figure 13—The main public extension stages in contracting new staff since establishment in 1987**



**Source:** Gêmo 2001; Gêmo et al. 2005; Gêmo 2006; and MINAG 2010f.

Significant progress was made in bringing new staff into public extension during the first expansion period (1993 to 1998). This was partly because of specific projects that were funded by some development partners that paid for new extension workers for one to two years in the context of agriculture services expansion following the Peace Agreement in October 1992. However, in many cases, MINAG was finding it difficult to pay the salaries of the new staff after the agreed transitional period of the first two years. This problem was substantially resolved with the implementation of PROAGRI I in 1999, when almost all extension workers were paid through PROAGRI funding. However, the integration of new and existing

staff as civil servants was particularly difficult until 2008, when the majority of the staff was integrated into the MINAG system (Central DNEA/ Head of Planning Department, pers. comm.).

The difficulties that hampered efforts to contract and integrate new extension staff were underestimated and, consequently, not addressed in order to be resolved in a timely way. As mentioned above, for example, of the 1,024 field extension workers planned for 2009, only 693 existed, including field supervisors. The limited number of field workers was one of the major constraints on PRONEA's implementation. Moreover, many extension workers were dispersed after 2006 because of the then-accelerated district expansion of public extension nationwide. The accelerated expansion made it harder for DNEA to ensure effective M&E of field activities, field technical supervision, and regular, informal training sessions based on identified needs. PRONEA was unquestionably demanding. It called for a stronger M&E system, technical supervision in the field, and regular in-service training to make sure field extension workers had up-to-date knowledge and information and that field activities were regularly monitored and evaluated.

## STRENGTHENED PLANNING OF EXTENSION ACTIVITIES AND M&E SYSTEM

Public extension's monitoring and evaluation (M&E) system relies largely on data and information provided by frontline extensionists. How accurately the extension workers record information about their daily work with farmers at the field level, is critical to providing realistic performance information for extension managers at the district, provincial, and national levels. Ensuring close supervision of the extension workers, in particular on their recording of field activities, has been regarded as an important issue for the public service since its establishment.

The M&E system has focused on tracking almost the same set of input and output indicators over the last 10 years. The indicators the M&E system tracks are shown below (Gêmo 2001; Gêmo et al. 2005; Gêmo 2008; MINAG 2010f).

- Human resources:
  - Field extension workers, field technical supervisors, SPER level extension staff, DNEA central level staff members.
- Logistical support (quantities):
  - Transport and logistics – vehicles, motorcycles, bicycles – operational and non-operational
  - Seeds, and to a lesser degree, fertilizers and pesticides for field demonstrations
  - Other field equipment – balances, measuring tapes, rain boots, rain coats.
- Direct outputs:
  - District coverage
  - Total farmers' coverage (per district, province and at the national level)
  - Assisted farmers' groups (not necessarily legally formalized)
  - Assisted FAs and membership issues
  - Field demonstrations on different crops
  - Livestock (including fish culture) and forestry related field demonstrations
  - Local collaborative initiatives with research, or with stakeholders such as local-based organizations or other services providers (e.g. NGOs), if any.
- Relevant processes and methodologies used – how extension activities have been conducted annually
- Key constraints, particularly related to limited annual budget, delayed disbursements, and budget limitations due to allocations not meeting planned expenditures
- Information on agricultural extension activities of NGOs and their district coverage – number of NGO extension staff, information on content of NGOs' assistance to farmers.<sup>14</sup>

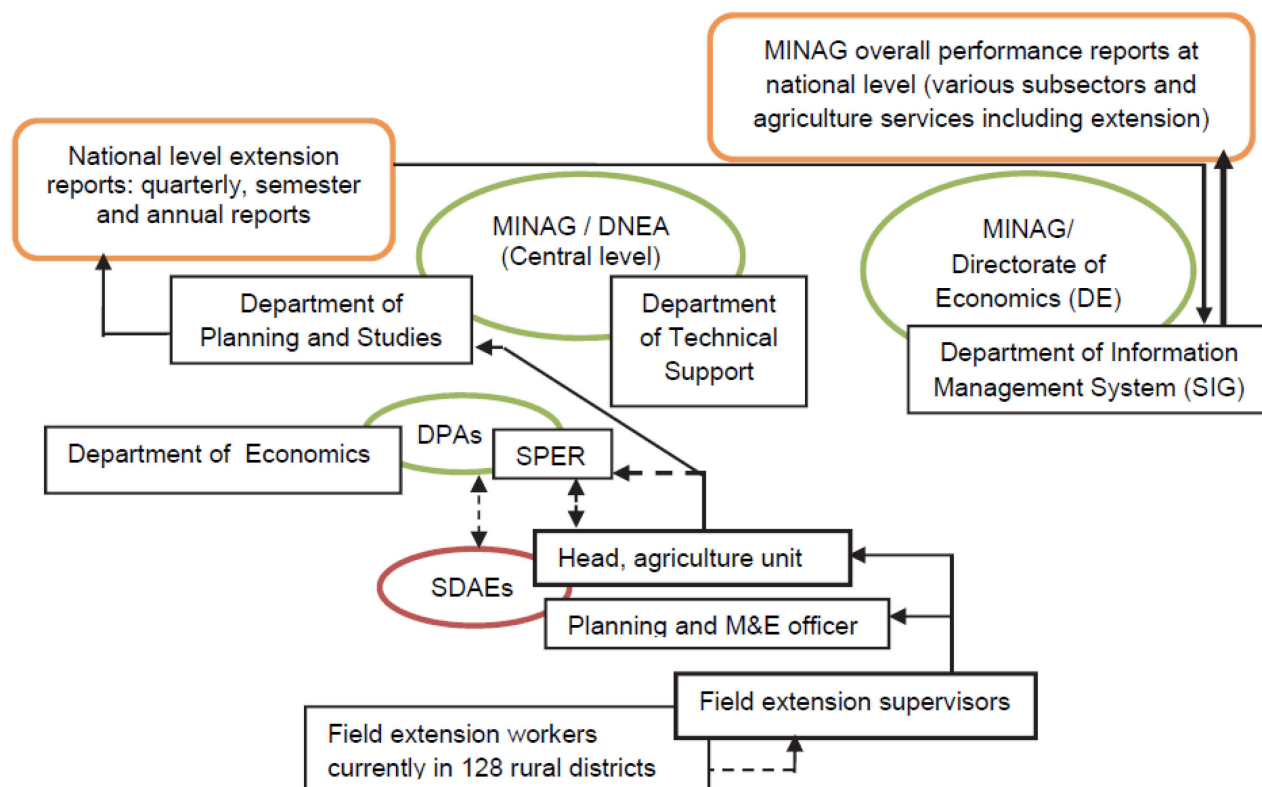
As shown in Figure 14, the field supervisors have the primary responsibility of checking the reliability and quality of data and information provided by the field extension workers in their respective geographic areas of supervision. However, in practical terms, and particularly since 2006 with the expansion of district extension coverage under a limited budget, this has been a challenge. This is mainly due to difficulties in ensuring adequate logistical support to the field supervisors, lack of

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<sup>14</sup> Information on NGOs is often incomplete and at variance with information on public extension service due to definitions. For example, within public extension, extension workers must have at least 12 years of schooling, preferably in agriculture. This is not necessarily the case to be considered an extension worker in many NGOs.

supervisors in some districts and the tendency of the extension staff to overestimate or exaggerate their performance (Gêmo 2001; MINAG 2010f).<sup>15</sup>

**Figure 14— Organizational functioning of the public extension’s monitoring & evaluation system**



**Source:** Based on interviews with key informants at district, provincial, and central levels.

At the district level, besides the field extension supervisors, the planning and M&E officers (where present) and the heads of agriculture units at the SDAEs may also help to compile extension performance data and information to be sent to provincial level (DPA/ SPERs) on quarterly, semester and annual basis.<sup>16</sup>

District (SDAE) extension performance information is sent directly to the SPERs and to the DPA/ Provincial Department of Economics (DE). This is done as part of the overall district agriculture services performance information that is periodically sent by the SDAE (agriculture unit) to the DPAs. The SPERs are responsible for compiling data and producing information on extension performance at provincial level. This is sent to DPA/ DE, and also to DNEA at central level according to the process portrayed in Figure 14. According to our interviews, data and information about extension performance in some cases are readjusted at provincial level when there are indications of some discrepancies from some districts. However, it was not clear how and to what extent such readjustments are made.

DNEA at central level is responsible for compiling data and information about public extension performance nationally, with the frequency described above. The national reports are sent regularly to the Department of Management Information Systems (MIS, or SIG from *Sistema de Informação para Gestão*) at MINAG/Directorate of Economics. The national reports highlights key performance indicators on public extension outputs, principally district and farmer coverage (i.e., assisted farmers), including FAs and field demonstrations. Public extension performance data and information respectively gathered and produced through the DNEA M&E system is an essential part of the overall MINAG performance information produced through the Ministry MIS.

<sup>15</sup> As mentioned above, while some extension staff considers the number of farmers with whom they interact regularly to be farmers' coverage, others may consider the total number of farmers in villages where they operate to be extension workers.

<sup>16</sup> Although the extension field workers are obligated to regularly channel data and information to field supervisors and SDAEs, interviews with key informants at the district and provincial levels suggested that feedback from the SDAEs to the field extension workers, and from the SPERs to the SDAEs is weak.

In summary, the constraints that affect the current public extension M&E system are as follows, among others:

- Weaknesses in closely supervising the recording of data by field extension workers in some districts
- Weak, if any, validation processes for collected (district level) and compiled data particularly at district and provincial levels
- Emphasis on output performance indicators (quantification) without necessarily undertaking analytical efforts toward describing the quality of the outputs as, for example, in the case of on-farm RD for different crops
- Very limited information about outcomes of public extension activities, particularly through case studies aimed at assessing, for example, the extent of farmers' technology adoption and the associated impacts on productivity and household income generation or on food security at household level
- Some, but still limited and irregular, data and information about other extension providers, especially NGOs. In fact, reporting on activities implemented by other stakeholders has been a difficult task. Its success depends on the goodwill of various private-sector and NGO extension actors in providing data and information to SDAEs and SPERs; and
- Limited investments in the M&E system in terms of qualified staff with training in extension M&E, M&E in-service training and working materials for involved staff at different levels.

Improving the M&E system of DNEA was one of the important institutional actions aimed at contributing to a sound implementation of PRONEA. The M&E system was supposed to be adapted so as to be able to capture the implementation and progress of key activities of PRONEA's components. The improvement of the M&E system implied the introduction of new performance indicators to assess progress on joint planned field activities with farmers' groups and associations. This was especially the case with regard to demand-driven extension activities; collaborative activities with other local-based activities; more careful assessment on technology transfer and outcomes and other activities in the same bracket. In order to achieve these objectives, it was expected that new or updated tools and eventually procedures for data collection and analysis would be introduced in the DNEA M&E system. Needed training for relevant staff is supposed to be provided based on identified knowledge gaps. However, M&E continued to be conducted in the same way as it was done before PRONEA's implementation.

Little was done to shift the focus of M&E efforts toward PRONEA's components or to main areas of intervention in an analytical manner and to use such information in a timely way for decision making, either at DNEA level or at MINAG's highest decision-making levels.<sup>17</sup> With a robust and functional M&E system focused on program implementation, some of the problems that undermined PRONEA's implementation could have been immediately identified and addressed at highest levels within MINAG. These debates would have involved key directorates and DPAs in finding pragmatic solutions.

Notably, interviews with key informants and our review of relevant documents revealed that the joint field supervision missions undertaken annually by IFAD teams (comprising local and external team members) and selected DNEA staff members served as an important M&E input to assess PRONEA's implementation – more so than the DNEA M&E system itself. This can be explained by the fact that no technical assistance on M&E aimed at strengthening the DNEA current M&E system was contracted, although this was planned within the scope of PRONEA implementation. Nor were any new procedures and guidelines and needed in-service training for the staff involved introduced in DNEA's overall planning and M&E system to help assess PRONEA's progress.

In addition, the limited team within DNEA responsible for planning and M&E at central level was affected by staff turnover. This was particularly the case in early 2010 when it lost two experienced agronomists. By September 2011, the DNEA department of Planning and Studies (which is also responsible for M&E) was operating with one senior agronomist, one topographer, and one graduate in psychology and pedagogy. The fourth staff member was pursuing a BSc course in agronomy and rural development.

## ENHANCED CAPACITY IN INFORMATION AND KNOWLEDGE MANAGEMENT

DNEA was expected to do more to strengthen information and knowledge about extension, thus developing a kind of “center of expertise and resources in extension interlocution” (IFAD 2005). In other words, public extension was expected to reinforce its approach of “learning by doing” from the interventions. It was supposed to analyze, debate, document and learn

<sup>17</sup> For example input, output, and outcome indicators as well as emerging problems, key constraints and alternative solutions.



from relevant participatory planning and M&E processes. However, little progress was also accomplished on this institutional front.

It is important to note that DNEA's qualified staff remained almost the same at both central and provincial levels during the three years of PRONEA's implementation.<sup>18</sup> Apparently, the technical assistance (TA) that was supposed to support DNEA in implementing PRONEA at central and provincial levels was also expected to enhance public extension capacity for information and knowledge management. However, the TA was not contracted over the three years of implementation for reasons that are not very clear.

Enhancing information and knowledge management is a challenging and time consuming task. It imposes changes in routines and attitudes of qualified staff at central, provincial, and district levels. In particular, changes are needed in the way in which staff members perceive the value of data and information at different levels.<sup>19</sup> Changes are also needed in the way in which the provincial heads of extension (and even the directors of DPAs) and the DNEA central level managers pay attention to documenting and sharing relevant information. This is also the case for the way in which resources are allocated to support this intervention area, given that resources are also critical for enhancing information and knowledge management – including for contracting TA to perform specific tasks for certain periods of time. In summary, the current reality suggests that if information and knowledge management is to be strengthened in future at DNEA, more efforts are needed to train people and to internalize the culture of valuing relevant processes and events through an evidence-based analysis, documentation, internal debate, and sharing with relevant stakeholders.

## NEW RELATIONSHIPS AND ENHANCED NETWORKING WITH PARTNERS

PRONEA placed greater emphasis on collaboration with and development of relevant local-based organizations, the private sector and NGOs. DNEA was expected to reinforce these new relationships and networking efforts with key stakeholders. DNEA was to enhance extension sustainability by sharing tasks and responsibilities and by boosting accountability among relevant stakeholders. DNEA was also supposed to improve extension's impact in the agriculture sector.

In order to be able to build and reinforce new relationships and networks, public extension must, among other actions, develop a reasonably comprehensive and updated database on other extension providers at the district, provincial, and national levels over time. The role of DPA/ SPERs and of SDAEs in this process is of paramount importance. Principally, detailed information on other extension providers and other potential collaborators in extension and agricultural developmental efforts is required in any pluralistic system. Such information allows public extension to be knowledgeable on the current situation relating to potential implementing partners in each district and province. That is, partners with whom to conduct collaborative work, according to their technical, operational and financial strengths and opportunities. Updated and reliable information about other stakeholders makes it possible to identify areas that need interventions, in particular to help relevant local partners develop needed competencies and skills based on identified institutional weaknesses and threats (See for example Swanson and Rajalahti 2010).

However, it is critical to acknowledge that in most low income countries such as Mozambique, public extension is likely to face resource constraints that compromise its ability to foot the heavy and often recurring bills associated with such collaborative extension efforts. Thus, these financial implications need to be considered and resolved in order to develop local non-government actors who can help to enhance extension – particularly farm-led or demand-driven extension. Overcoming these financial constraints could be a collaborative effort between MINAG and participating development partners. In fact, PRONEA provided a good opportunity to implement collaborative actions with relevant extension stakeholders.

Of importance is the need for DNEA to communicate regularly with other extension providers and stakeholders, at both central and provincial levels. In this way, it will be regarded as an interlocutor with comparative advantages for coordinating and promoting extension partnerships. Fundamentally, DNEA must be viewed as a model in its management of extension activities, including through partnerships or outsourcing initiatives. For this to be accomplished, public extension should regularly review its own performance, identify and undertake corrective actions to improve services delivery. However, there is little evidence, if any, that these actions were undertaken over the three years of PRONEA's implementation.

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<sup>18</sup> In fact, the Department of Planning and Studies within DNEA lost two experienced agronomists during 2007–2010 while the Department of Technical Support remained with the same staff. Some staff members at central DNEA and at provincial level (SPERs) upgraded their academic levels, particularly from the Diploma to the BSc level and some pursued MSc level training. However, the extent to which the courses are related to agriculture or relevant extension matters.

<sup>19</sup> Those involved in planning, M&E, communication, technology diffusion, relationships with other extension service providers, and the like.



For example, although MINAG partnerships and networking are viewed as important by MINAG in general, and by public extension in particular, currently is not clear which department is responsible for partnerships and networking at both central DNEA and SPERs levels.<sup>20</sup> In principle, the Farmers' Organization (FOs) Unit within the Technical Department at central level and the FOs unit at the SPERs are responsible for forging and building new relationships and networks, especially with FOs. However, since the beginning of public extension in 1987, the FOs Unit at central DNEA and the technicians working on FOs at SPERs have been more involved in collecting and compiling data on FOs than in promoting partnerships and networking.<sup>21 22</sup> It is important to recall that when public extension conducted the first extension outsourcing experiences from 2002 to 2005 (Gêmo & Rivera 2001; Gêmo et al. 2005) an "outsourcing management unit" was established at central DNEA. The unit was established to help DNEA:

- Interact regularly with contracted services providers
- Control MINAG disbursements to the services providers based on periodic performance assessment reports from services providers
- Ensure M&E of outsourced activities that implement the contracts between MINAG and its services providers
- Coordinate with the DPAs/ SPERs towards the M&E and documentation of relevant processes related to outsourcing contracts; and
- Share relevant information about outsourcing developments with DNEA staff members and other relevant MINAG professionals.

MINAG/ DNER and relevant development partners agreed to establish the "outsourcing coordination unit" based on, first, the consensus that there was no internal capacity to follow up outsourcing on a day-to-day basis at central level; and, second, the need to ensure good management of outsourcing and a "learning by doing" approach.

PRONEA implementation was demanding in terms of building new relationships and networks with key stakeholders. As a result, adequate preparatory actions needed to be undertaken at central DNEA and at the DPA/ SPER to ensure adequate implementation of this area of intervention within PRONEA. But, once again, little was done to strengthening DNEA so that it could adequately undertake this task. In particular, too little was done to identify specific staff members who needed to take clear actions or to provide the required technical and logistical support for those responsible.

## THE NEED FOR DEVELOPING DEMAND-DRIVEN EXTENSION SYSTEMS

Arguably, some of PRONEA's demands were difficult to fully and successfully implement, at least over the period PRONEA was under implementation. For instance, "developing demand-driven extension" is complex, challenging and time consuming. Demand-driven extension involves a shift from supply-driven public extension to a negotiated system through which farmers and rural community members determine and identify their own needs, and have some control over financing extension services that are delivered by the public sector, the private sector, NGOs and FO's (Richardson 2003).<sup>23</sup>

Apart from public extension's strong orientation – ever since its establishment – in providing "supply-driven" extension, "demand-driven" extension does not depend solely on public extension's ability or willingness to develop it.<sup>24</sup> It depends, for example, on whether FO's and other local organizations can also influence public extension's agenda so that it makes their needs and aspirations a priority. Notably, "demand-driven" extension can comprise a wide scope of result-oriented activities. These include activities aimed at empowering FO's, for example, through adult education on agriculture-rural development matters; at boosting household food security at the local level; and at ensuring better use of local natural resources (such as the use of wetlands for vegetables production) and at facilitating linkages of farmers and their organizations into agricultural input and output markets.

In the last case, sustainable development of "demand-driven" extension depends on a number of factors related to the development of agriculture markets. Government and private efforts aimed at developing rural market infrastructure and

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<sup>20</sup> Departments are the main units that compose the national directorate of public extension at central level, while at provincial level there are the units such as M&E, communication, farmers' organizations and the like.

<sup>21</sup> This included one to two professionals (BSc or diploma level holders) with limited experience in building partnerships.

<sup>22</sup> Since 2007, public extension has also been involved in disseminating the 2006 Law related to registration of associations, particularly in rural areas.

<sup>23</sup> Under PRONEA, the "supply-driven" extension was to have been maintained while promoting and putting in place a demand-driven system.

<sup>24</sup> This was, in principle, based on the perceived problems identified with the farmers or based on intended/planned changes.

provision of support services (research, financial, relevant farming operations services, and the like) are crucial because can help build “demand-driven” extension based on market forces, farmers’ interests and farmers’ perceived benefits. In summary, if consistent activities aimed to strengthen farmers’ linkages with agricultural markets are expected, their sustainable development depends on a number of factors. These include a role for agricultural research, whether the private sector is willing to provide input and output marketing services (including financial services and credit markets), and the government’s role in developing rural infrastructure.

## 4.2. Increased Decentralization of Public Extension

Decentralization is generally expected to encourage local financing and ownership of programs, to result in more efficient and equitable allocation of government resources, to provide incentives for production and service delivery, to ensure low-cost service delivery, to build local capacity, and to respond more effectively to local needs (World Bank 2000).

Decentralization of public extension was one of the key goals of the first EMP implemented under PROAGRI I (1999–2006) (MAP 1998; Gêmo et al. 2005) and it was also key in the second EMP (2006–2017) and PRONEA implementation (2007–2011, first phase).

Aligned with the government and the political goal of promoting and strengthening decentralization to foster good governance, decentralization of agriculture public extension aims to:

- Encourage local ownership of the services by the provincial (through DPAs) and district-level (through SDAEs) authorities
- Promote major participation of stakeholders such as FO’s, NGOs, rural traders, and rural schools in extension activities; and
- Enhance extension responsiveness to local needs/priorities under planning and implementing principles harmonized with central level so as to take into account national priorities.

Decentralization processes have been characterized by the transfer of responsibility for resource allocation from central level to the DPAs, and from DPAs to the SDAEs. This meant the transfer of decision making in planning and spending to the 10 provinces, as well as the transfer of administrative responsibility to public extension. The transfer of resources to DPAs was initiated under the first EMP through PROAGRI’s common mechanism for the flow of funds (CMFF). Provincial administrative responsibility for public extension by the DPAs includes management of human capital and operational logistics. PRONEA was implemented under increased decentralization, with the DPAs deciding on key issues such as:

- Allocation of public resources to different subsectors (crops, livestock, forestry) and services (extension, land management, and the like) at provincial level
- Allocation of public resources to support agriculture activities, including extension, at the district level through the SDAEs; and
- Management of public extension, particularly administrative issues, at provincial level. This included redistribution of field staff at provincial level when required, as has been the case in most provinces since 2006. In some instances, extension staff redistribution also was done at the district level.

DPAs’ responsibility for the above mentioned tasks was and is to be encouraged and strengthened within the scope of ongoing decentralization. However, the manner in which the process has been conducted suggests that there are problems with making sure decentralization process is soundly implemented. For example, it is not clear to what extent extension is considered a priority in resource allocation under circumstances of often limited budgets at DPAs. Many of the key informants we interviewed about financial issues affirmed that resources allocated to extension have been limited, particularly during PRONEA’s implementation, even in some of the priority districts.

It is also not clear to what extent human capital development is prioritized in the pursuit of improved service performance. A considerable number of field staff interviewed at district level (extension workers and field supervisors) and at the SDAEs (the head of the agriculture unit) unanimously affirmed that in-service training had been limited during PRONEA implementation.<sup>25</sup> In addition, there is little evidence of or information about how public extension’s expansion at

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<sup>25</sup> In 2008, DNEA implemented a regional level training program involving extension staff from the three regions of the country namely north, central and south region. The training materials consisted of a set of modules for each region, with minor variations in terms of content, aimed to “refresh all staff members in the view of PRONEA implementation”. However, regular in-service training, based on identified gap-knowledge, has since then been weak.

provincial level was managed in terms of the criteria used to decide how expansion proceeded. This is particularly the case with regard to the need to ensure “minimum conditions” for such expansion to succeed.<sup>26</sup>

Moreover, although the directors of the DPAs whom we interviewed emphasized the important role of extension services for Mozambique’s agricultural development, it was difficult to find evidence on how extension performance (both public and non-public) is reviewed, shared, and debated at provincial level among key stakeholders.<sup>27</sup> As other subsectors and services do, the SPERs provide quarterly data and information to the DPAs about extension performance through the Department of Economics in the 10 DPAs. The DPAs compile information from different subsectors and services to produce quarterly, semester and annual reports about agriculture performance at provincial level.<sup>28</sup> Debate on extension performance is done within the overall assessment of province’s agriculture performance, without necessarily deeply analyzing how extension is performing and why. Since the SPERs are more focused on day-to-day issues, little effort has been devoted to documented analysis that could be a source of experience-based knowledge for managing extension at provincial level.<sup>29</sup>

Finally, the integration of agriculture/extension activities within the SDAEs since 2006 is viewed as potentially useful for joining complementary activities at the same level of government, as argued in the second EMP of 2006. Examples of such activities include crop production, livestock husbandry, land management, forestry and fisheries management (in districts with such potential), industry and trade. However, almost 80 percent of the field staff we interviewed (extensionists and field supervisors) mentioned that realizing the benefits from integrating extension into SDAEs remains a challenge. Such integration remains only potentially useful for pursuing synergies among related areas of intervention, they said. Extension has to compete against other district economic services for limited resources. To bring agriculture to the top of the SDAEs’ agenda is a challenge for the future, particularly in light of the PEDSA implementation, which emphasizes stronger inter-sectorial coordination to enhance agriculture performance.

Some technical and methodological issues remain neglected. For example, in almost half of the SDAEs we visited, key informants affirmed that the role of extension supervision is becoming not well understood. Nor is it even considered relevant to the competence and professional rigor of the field extension workers in their dealings with farmers. As a result, there is lack of support to this extension function that has been part of the public extension hierarchy since the services were first introduced. In addition, periodic meetings among field extension staff to discuss work-related issues, particularly technical and methodological issues, were mentioned as increasingly irregular and in some cases were discontinued for several months due to limited resources<sup>30</sup>.

Some of the heads of SDAEs we interviewed said extension remains a priority, although they also recognized a need to ensure balanced support to all economic services provided under the SDAE, even if the respective sector at provincial level is not allocating direct funding to the SDAE.

### 4.3. Institutional Reforms at MINAG at central Level

Between 2005 and 2006, MINAG implemented profound institutional reforms at central level with the aim of improving public services in terms of resource use. Regardless of the gains attained in other areas, the reforms seem to have had negative effects on extension collaboration with key directorates and with the research system within the Ministry.<sup>31</sup> In summary, the institutional reforms consisted of:

- Dissolution of the National Institute of Agronomy Research (INIA, from *Instituto Nacional de Investigação Agronómica*), the Animal Production Institute (IPA, from *Instituto de Produção Animal*), the National Institute of Veterinary Research (INIVE, from *Instituto Nacional de Investigação Veterinária*), the Centre for Agriculture Training

<sup>26</sup> The “minimum conditions” include a rapid rural appraisal in new districts; training for new field staff and refreshment training for those transferred to other areas with different farming systems; participatory planning processes with villages and farmers; technical and methodological support plans for the new extension networks, and the like.

<sup>27</sup> Reviewing extension performance means discussing delivery issues based on up-to-date information. This is necessary to understand the role played and constraints faced by extension in each province.

<sup>28</sup> These reports are sent to the provincial governments and to MINAG at central level. They assess the accomplishment of the annual targets of the Social and Economic Plan (PES, from *Plano Socio-Económico*).

<sup>29</sup> In the five DPAs visited, there were no analytical reports (such as case studies) on extension implementation at provincial level addressing specific issues in the last five years or so.

<sup>30</sup> This is particularly problematic in districts where staff members work in dispersed locations (*Postos Administrativos*).

<sup>31</sup> Since 2005–2006, no institutional analysis has been conducted to assess the effects of the reforms.

(CFA, from *Centro de Formação Agrária*), and the Forestry Experimental Centre (CEF, from *Centro de Experimentação Florestal*) to create the Agricultural Research Institute of Mozambique (IIAM, from *Instituto de Investigação Agrária de Moçambique*);

- Dissolution of the National Directorate of Livestock (DINAP, from *Direcção Nacional de Pecuária*), the National Directorate of Agriculture Hydraulics (DNHA, from *Direcção Nacional de Hidráulica Agrícola*), and the National Directorate of Agriculture (DINA, from *Direcção Nacional da Agricultura*) to establish the National Directorate of Agriculture Services (DNSA, from *Direcção Nacional de Serviços Agrários*); and
- Dissolution of the National Directorate of Forestry and Wildlife (DNFFB, from *Direcção Nacional de Florestas e Fauna Bravia*) and the National Directorate of Land (DNT, from *Direcção Nacional de Terras*) to form the National Directorate of Land and Forestry (DNTF, from *Direcção Nacional de Terras e Florestas*)

Firstly, before 2005–2006, DNEA had tangible collaboration with most of the above-mentioned institutions. For example, thematic working groups with members from extension and research institutions were in place since 2000. These include the farming systems team involving DNEA, the then-INIA, and livestock professionals; the post-harvest group between DNEA and INIA; the poultry production group between DNEA and the former INIVE, with some collaboration with the then-IPA. There were also good collaborative initiatives at local level, as was the case with the then-IPA Ulónguè Research Station in Tete Province. In addition, at least two joint annual research-extension meetings were conducted at the national level in 2003 and 2004 in Niassa and Manica provinces, respectively (Gêmo 2007). Such collaborative initiatives had started to decline in 2004 and 2005, mainly because of growing resource constraints. However, the 2005–2006 reforms resulted in an almost complete discontinuation of these initiatives, at least at central level.

Literature on the reasons for the post-2006 discontinuation of collaborative activities between extension and research entities is scarce (Gêmo 2007). However, key informants suggested the discontinuation could have been partly due to:

- the priority placed by the new IIAM on reorganizing its structure and functioning following its establishment
- weak communication between extension and research entities following the establishment of IIAM; and
- weak focus on extension and research collaboration by the new top extension and research managers.

In addition, resources to implement joint activities were limited. This was particularly true of resources from DNEA, which was the main institution committed to (co)-funding such initiatives, directly or through partner organizations. Given this, the expectations of the second EMP and PRONEA about strengthening extension and research linkages were potentially doomed to fail. The same can be said with regard to extension and input suppliers' linkages. The linkages with input suppliers were unlikely to be consistently developed without implementing technology transfer sub-programs meant to intensify production through use of inorganic fertilizer, pesticides, and improved seeds.

Secondly, since the establishment of SUE in 1999, and particularly since 2000 and 2001, MINAG at central level made an important contribution to collaborative efforts between public extension and key national directorates to enhance SUE. These included coordinated extension activities involving crops, livestock, agro-forestry, and irrigation. The former DINAP (livestock), DNFFB (agro-forestry), and to some extent DINA (food crops) provided subject matter specialists who ensured coordination with public extension at central level. This work included following up on the respective provincial level contributions to establishing and strengthening SUE. The subject matter specialists at central level often attended the annual meeting of public extension at the national level and described how each national directorate was helping SUE, as well as difficulties faced.

With the implementation of the 2005–2006 institutional reforms, collaboration with key national directorates was also discontinued. Apparently, the same reasons mentioned above that caused the discontinuation of extension and research linkages also affected collaboration among public extension and the then-new key national directorates in implementing SUE. It is important to note that, while in the case of research (IIAM) the new leadership comprised managers from the former research institutions, in the case of the new directorates the top managers were new and not necessarily informed about or committed to continuing the collaboration with public extension. However, it is not clear to what extent DNEA tried to continue collaboration with the new directorates in implementing SUE.

Finally, agriculture is still one of the challenging sectors at district level. It requires strong follow-up and support to strengthen production and productivity, ensure good natural resources management, and at the same time enhance stakeholders' collaboration, including the promotion of commercialized smallholder outputs. Literature on how agriculture has

been addressed under the SDAEs since 2006 in terms of government administrative support (financial, human and material resources allocation) is still rare. However, the way in which the SDAEs and district governments will support agriculture, under a decentralized setup, will also affect the capacity and quality of public extension.

#### 4.4. Accelerated District Expansion (Coverage) of Public Extension

The 2007 to 2010 period marked the fastest geographic expansion of public extension since its establishment in March 1987. The political directive from MINAG leadership and from related provincial authorities was to “maximize” the presence and operation of public extension throughout the country.<sup>32</sup> In 2010, DNEA covered parts of all the 128 rural districts, although with only 762 extension workers, including 86 working at the Cashew Promotion Institute (INCAJU) (MINAG 2010f).<sup>33</sup> The decision to expand public extension to all districts seems a good one, especially because it brings services to smallholders, including those in districts with low agro-ecological potential. However, the current situation suggests that three critical factors may not have been properly taken into account in expanding public extension, namely limited staff; inadequate logistical support; and a weak role of DNEA at central level in the expansion process.

##### LIMITED STAFF

The first critical factor has been limited staff. New extension staff joining DNEA has been limited due to related bureaucracy, which often delays recruitment. The frequently alleged lack of resources at provincial level (DPAs) and currently also at the district level (district government and SDAEs) is another factor. Table 8 shows public extension staff numbers for years between 1996 and 2008 at different central national, provincial, and district levels and by academic level.<sup>34</sup>

**Table 8—Progress in total human capital development between 1996 and 2008 at national, provincial, and district levels, by academic levels and year of assessment**

Years	MSc				BSc				Diploma				Certificate				Elementary			
	96	99	04	08	96	99	04	08	96	99	04	08	96	99	04	08	96	99	04	08
<b>Central level</b>	1	1	2	1	9	15	16	10	6	7	3	7	2	0	0	2	1	0	0	0
<b>Provincial</b>	0	0	2	0	11	22	30	25	32	29	31	39	32	28	14	0	22	14	11	0
<b>District</b>	0	0	0	0	1	0	0	0	154	288	388	644	339	209	213	0	66	33	27	0
<b>TOTAL</b>	1	1	4	1	21	37	46	35	192	324	422	690	473	237	227	2	89	47	38	0

Source: Gêmo 2006; MINAG 2010f

Table 8 shows that, generally, there have not been substantial changes in terms of total staff. However, human capital development has been impressive in terms of staff qualifications. While in the past there was a high proportion of staff holding certificate-level qualifications, there is currently more staff holding diplomas. This is due to both formal training of existing staff and recruitment of new qualified staff. From 2004 to 2008, almost all staff with certificate and elementary qualifications have been upgraded or replaced, including by retirement or reorientation to other activities within the DPAs. This was one of the major goals of the first EMP and it continued during the PRONEA implementation period (2007–2010).

Despite the success achieved in upgrading particularly field extension staff, there is a need to be cautious in analyzing how this affects extension performance. For example, some of the upgraded staff may not necessarily hold qualifications in agriculture disciplines. An assessment conducted in 2004–2005 revealed that about 35 percent of staff held general secondary diplomas, although most of them also held certificate level in agriculture disciplines (Gêmo 2006). Additionally, some of the new staff members with diplomas are trained in forestry and wildlife disciplines rather than in crop production, livestock production, and other relevant disciplines.<sup>35</sup> Since extension is more related to crop and livestock production and to helping develop social and market networks among beneficiaries, what becomes paramount for the new diploma staff is in-service training along with technical and methodological supervision.

<sup>32</sup> The new MINAG leadership established in 2005 supported the rapid expansion of the public extension without necessarily taking into account major implications.

<sup>33</sup> INCAJU has been implementing field level collaborative actions with public extension since the late 1990s. Since 2010, DNEA and INCAJU agreed to count INCAJU extension workers as public staff members since they contribute to public extension services as a whole.

<sup>34</sup> The years mentioned are those for which official or published data were available.

<sup>35</sup> While forestry and wildlife disciplines are as important as crop and livestock production, the major demand on extension support/ intervention is in crop and livestock production.



However, as mentioned above, despite some progress in upgrading extension staff, the increase of total staff has been low. Figure 15 shows aggregated total extension staff from 1996 to 2009.

**Figure 15—Total public extension staff at central, provincial and district levels (1996–2009)**



Sources: Gêmo et al. 2005; Gêmo 2006; MINAG 2010f

For example, it was expected that DNEA would have a total of 1024 field extension workers by 2009. This number was estimated in 2004 at the early stages of the preparation of the second EMP, then planned to cover only 66 districts. The approach of continuing to concentrate public extension on the same 66 districts in which the then-DNER was operating in 2004 changed during the formulation of PRONEA and the second EMP. However, the target of having 1024 field extension workers by 2009 remained unchanged. As shown in Figure 15, by 2009 public extension had only about 67 percent of the expected field/district staff (including field supervisors), despite the impressive expansion from 66 rural districts in 2004 to 128 districts in 2010.

This means that while the extension coverage increased by an average of 12 districts per year between 2005 and 2009, extension staff number increased by an average of around 11 to 12 extensionists per year. As a result, in some districts there were only two or three public extension workers to work with thousands of smallholder farmers. In some cases, they performed this work without complementary help from NGO extensionists or private, commodity-oriented extension programs.

### INADEQUATE LOGISTICAL SUPPORT

The second critical factor that has not been adequately taken into account in expanding public extension is logistical support. Available data shows that public extension has been underequipped in terms of transport and field equipment. For example, Table 9 shows vehicle distribution (operational and non-operational) from 2004 to 2008.

**Table 9—Vehicle distribution (operational and non-operational) at DNEA’s central and provincial levels (SPERs) from 2004 to 2008**

Years	Operational, central level	Non-operational, central level	Operational, provinces	Non-operational, provinces	Total
2004	20	1	19	5	45
2005	16	5	12	7	40
2006	16	0	25	11	52
2007	16	2	20	12	50
2008	15	0	14	10	39

Source: MADER 2004a; MINAG 2010f.

Note: 2004 data does not include figures from Maputo, Sofala and Zambezia provinces, while 2005 does not includes data from Maputo province.

Table 9 shows that, with the exception of 2006 and 2007, central level had slightly more working vehicles than provincial level due to the significant level of non-working vehicles at the DPA/SPERs. The high numbers of non-working vehicles at provincial level could be due to, among other factors, the age of many of the vehicles (most were bought during the early stages of PROAGRI I, 1999–2006), their intensive use in rural areas, sometimes on poor roads, and weak maintenance. The weak maintenance was mainly because of limited resources and difficulties in replacing spare parts.



In 2006, there was an impressive increase of vehicles at the SPERs. This was related to the MINAG leadership's decision in mid-2005 to collect many vehicles that were assigned to various central level professionals (working at various Ministry institutions) and sending them to the provinces. The SPERs received some of those vehicles, though many of them were also old and their contribution to field operations was short-lived.

The lack of updated data on the overall quantity of MINAG vehicles at both central and provincial levels makes it impossible to estimate the proportion of vehicles allocated to public extension compared with the Ministry's total available vehicles. However, for a service covering parts of 128 districts, it seems like the number of available vehicles is limited. This shortage seems particularly acute when the fact that around 20 percent have been out of use is taken into account. In the late 1990s, when public extension was funded through large projects funded by World Bank and IFAD, the number of available vehicles to support field extension activities in provinces such as Nampula, Cabo-Delgado, Manica, Inhambane and Gaza was higher than the current figures (Gêmo 2001).

It is important to note that, as often as possible, public extension should pursue approaches to providing services that rationalize resources, including transport options. In fact, the main means of transport used by public extension in Mozambique have been motorcycles and bicycles. Table 10 illustrates the use of motorcycles and bicycles.

**Table 10—Motorcycles and bicycles used by public extension at the provincial/district levels from 2004 to 2008**

Means of transport / Years	Motorcycles			Bicycles		
	Operational	Non-operational	Total	Operational	Non-operational	Total
2004	180	15	195*	219	39	258
2005	135	20	155**	66	117	183
2006	225	121	346	197	25	222
2007	189	167	356	76	128	204
2008	223	173	396	255	95	350

Source: MADER 2004a; MINAG 2010f.

Note: (\*)2004 data does not include figures from Zambezia, Sofala and Maputo provinces; (\*\*)2005 does not include data from Maputo province.

Table 10 shows that between 2006 and 2008 a considerable proportion of the total motorcycles were not operating. The highest level was reached in 2007, with 47 percent of all the motorcycles out of operation. Despite the inclusion of Zambezia and Sofala data in 2005, there was a considerable reduction in the number of operational motorcycles between 2004 and 2005. The reasons for this are not clear, but some key informants mentioned that in 2005 some motorcycles were reallocated to other services while others were considered obsolete. Regarding to bicycles, the worse situation was experienced between 2004 and 2005 and between 2006 and 2007 when the number of operational bicycles declined abruptly. To be noted, the number of total operational motorcycles and bicycles has been below the number of total extension field staff, as shown in Table 11.

**Table 11—Gaps in means of transport available to field extension workers between 2004 and 2008**

Years	Operational motorcycles	Operational bicycles	Total motorcycles and bicycles	Total field extension workers	Transport gap for field extension workers (percent of total staff)
2004	180	219	399	628	229 (36)
2005	135	66	201	646	445 (69)
2006	225	197	422	579	157 (27)
2007	189	76	265	590	325 (55)
2008	223	255	478	644	166 (26)

Source: MADER 2004a; MINAG 2010f.

Note: 2004 data does not include figures from Zambezia, Sofala and Maputo provinces; 2005 does not include data from Maputo province.

Despite the missing 2004 data from three provinces, the highest recorded transport gap for field extension workers was in 2005, the year in which most of the means of transport seems to have been declared obsolete while some others (motorcycles) were reassigned. It should be noted that, according to available data, a high proportion of field extension staff did not have transport between 2004 and 2008, especially in 2005.

Due to intensive use (when money for petrol is available) in rural areas often characterized by poor roads, the motorcycles and bicycles should in principle be replaced every three and two years, respectively. However, resource constraints and competition for resources among different subsectors and services have been hampering timely replacement of such means of transport.

## WEAK ROLE OF DNEA AT CENTRAL LEVEL IN THE EXPANSION PROCESS

The third critical factor that has not been adequately taken into account in expanding public extension is the weak role of the DNEA at central level. In part, this is because of the generally weak communication (bottom-up and vice-versa) that has characterized public extension, particularly over the 2007–2010 period, as reaffirmed during the interviews we conducted at central, provincial and district levels. On many occasions, central DNEA officials would only learn about an expansion from fieldwork in the provinces or provincial M&E reports from the SPERs.

Weak communication contributed to weak follow-up of the expansion efforts by DNEA central level staff. While the provinces are entitled to make decisions about expansion, dialogue and coordination with central level would certainly have benefitted the operations at both levels. Even with decentralization, central DNEA plays an important role in supporting the expansion of public services by ensuring training, making subject matter specialists available (including by hiring or in collaboration with other public institutions), producing training materials, providing effective M&E at national level, and formulating strategy (World Bank 2000). Central DNEA's role in following-up and providing institutional support has been limited even as a source of relevant analysis and documentation of lessons to be learnt on the accelerated expansion of public extension across the country.

## 4.5. Limited Resources to DNEA

The level of disaggregation of MINAG expenditure data does not allow for an easy comparison of different subsectors and services at central and provincial levels (Chilonda et al., 2011). However, interviews at provincial and district levels and available documents, including annual reports, reveal that public extension has been facing resource limitations, particularly at the SPERs and district levels.

PRONEA implementation required commitment from different MINAG institutions and from development partners to ensure adequate and sustainable funding in terms of required resources and consistency in resource allocation over time. At MINAG, DNEA, the Directorate of Economics (DE), the Directorate of Administration and Finance (DAF) and the DPAs had key roles to play in funding the extension program sustainably. As the host and implementing directorate, DNEA had a major direct interest in ensuring that PRONEA had adequate and consistent funding. DE is responsible for planning and communicating with the DPAs about the need to give priority, in budget allocation, to programs approved at the national level. DAF's role in following budget execution at the DPAs is important, as it can encourage spending in priority programs as PRONEA is. The DPAs had major and direct responsibility in the allocation of resources for the program's implementation. Outside MINAG, the National Treasury and other development partners that provide budget support to MINAG were responsible for ensuring additional funding through PROAGRI's common mechanism for the flow of funds (CMFF) to complement IFAD's efforts to support PRONEA's implementation.

However, there were difficulties in ensuring adequate resource allocation. Among others, the following reasons were given by key informants at DPAs, particularly from the Departments of Economics and Provincial Directors of Agriculture whom we interviewed:

- The annual budget needed for PRONEA was high. If allocated according to needs, it could absorb a significant portion of the DPA budget at the expense of other components
- Limited resources and erratic disbursements made it difficult to allocate significant resources to extension over the period under review. The disbursements to the DPAs were made in a way that made it difficult to predict when exactly the next disbursement would happen. Under these circumstances, each disbursement had to benefit all subsectors and services
- Prioritization of PRONEA was difficult to ensure given the many priorities within the DPAs and district levels that were not necessarily focused on extension

- In addition, key informants at MINAG's central level (DAF and DE) mentioned that the co-funding arrangement for PRONEA implementation had been challenging to MINAG.<sup>36</sup>

Although different MINAG institutions had important roles to play in assuring adequate funding for PRONEA implementation, there is little documented evidence of discussions among those institutions to address funding issues. Our interviews with key informants at DE, DAF and DPAs suggested that dialogue on funding issues was weak. DNEA should play a key role in promoting periodic discussions about funding issues for agricultural extension services based on follow-up information from the DPAS/SPERs. With the limited resources that characterized public extension operations, it was unlikely that DNEA would develop an effective interaction at the provincial and district levels with other key stakeholders (NGOs, farmers' organizations, rural traders) through regular dialogue, joint field activities, including field days, and outsourcing initiatives. Among other goals, PRONEA implementation was expected to involve different stakeholders.

The Green Revolution Strategy and the Action Plan for Food Production (PAPA) provide an example on how limited institutional support to DNEA may result in the failure of these high priority initiatives of MINAG.

**Estratégia de Revolução Verde (Green Revolution Strategy – GRS):** GRS was developed within MINAG and approved in 2007 to provide a long-term overarching strategy for a Green Revolution in agriculture that sets out the current government's vision for the future transformation of agriculture. The main objective of the GRS is to contribute to reducing poverty and hunger in Mozambique by promoting competitiveness of the agricultural sector and consistent growth in agricultural production and productivity. The implementation of the GRS is expected to expand access and use of improved agricultural inputs such as improved seeds, fertilizers, pesticide, mechanization, animal traction, and irrigation and subsequently increase agricultural production and productivity (MINAG 2007b).

**Plano de Acção de Produção de Alimentos (PAPA – Action Plan for Food Production):** PAPA was approved in 2008 to be implemented from 2008 to 2011, in part to allow the operationalization of GRS (MINAG 2008a). Its preparation was fast-tracked due to the looming global food crisis at the time, which generated serious interest and prioritization from the government. It represented an interventionist approach by MINAG at different levels – in some cases without necessarily taking into account the potential role of other actors within the agriculture sector. There was a recognition that its implementation needed further thought to address identified weaknesses, especially in terms of greater inclusiveness of key agriculture sector stakeholders in its planning, implementation, and evaluation. However, PAPA objectives of increasing domestic food production and reducing food imports were recognized as relevant.

In principle, both GRS and PAPA should have the public extension as one of their main instruments of implementation. However, despite the expectations of involving DNEA, the role of public extension on PAPA implementation was, in practical terms, limited.<sup>37</sup> The lack of technology packages to be transferred and weaknesses in defining clear tasks and responsibilities, particularly for public extension in implementing the initiative (such as planned training and demonstrations to farmers across different agro-ecological regions within the context of PAPA) seem to be the main reasons behind the limited involvement of DNEA.

Of particular significance, is that over the PRONEA implementation (2007–2010), PAPA was one of the main priorities, if not the main priority at MINAG in terms of budget allocation and efforts to acquire and distribute inputs and equipment to participating farmers. In all these efforts, the preparation of public extension to implement PAPA was not necessarily translated into adequate financial, human, and material resources to strengthen DNEA's role in contributing to PAPA implementation.

## 4.6. Limited Awareness, Participation, and Ownership in Implementing PRONEA

Awareness, by definition, is the state or ability to perceive, or to be conscious of, events. More broadly, it is the state or quality of being aware of something. Awareness is not only important in terms of doing a certain event or process with stakeholders. Awareness is also needed to interact successfully with potential stakeholders – particularly after exposing them to a planned event or process – and then identifying the beneficial outcomes that their involvement brings to them or to those they represent or intend to help (Griffiths et al. 2008).

<sup>36</sup> The PRONEA budget consisted of 40 percent of the budget from IFAD and other 60 percent from government and other development partners involved in funding directly MINAG.

<sup>37</sup> DNEA bought some motorcycles and other extension workers' field equipment, particularly in 2009 and 2010, and distributed in at least five provinces (DPAs), apparently within the scope of PAPA implementation.

Thus, awareness can be considered a starting point for boosting participation by and ownership from potential stakeholders in PRONEA implementation. However, our interviews with key informants at central, provincial, and district levels have shown that awareness of PRONEA was limited even at MINAG, the key institution promoting sustainable implementation of the program.

There is evidence showing that PRONEA formulation and dissemination immediately after its approval included meetings at central and regional levels, with provincial representatives (selected SPER staff members) invited to attend the regional sharing or dissemination events. Preparatory actions for implementation also included the design of an action plan for the first two preparatory years (Royal Tropical Institute 2011). In addition, the official launching of PRONEA in July 2007 at central level by MINAG leadership involved various stakeholders, namely MINAG representatives, some farmers' organizations, development partners, and some private sector and NGOs' representatives. PRONEA was also discussed at MINAG technical and consultative councils at central level, particularly during its formulation.

However, these efforts can be considered as the minimum that should be undertaken in a process like PRONEA's formulation and launching. There is little evidence post-PRONEA approval of sharing and debate among key stakeholders – even within MINAG – about its initial stage of implementation. Nor is there evidence of such sharing and debate outside MINAG. Questions to be asked in this regard include:

- To what extent were key MINAG stakeholders such as DE, DAF, IIAM, DNSA, DNSV, and even DNTF informed about and committed toward the successful implementation of PRONEA?
- To what extent were the DPAs in general, and specifically key agricultural provincial services and departments, informed about PRONEA and committed to its successful implementation?
- To what extent have potential government stakeholders, namely MPD, Ministry of Finance, and Ministry of Domestic Affairs, been effectively informed about and committed to ensuring their expected roles in implementing PRONEA?
- To what extent have potential non-government stakeholders outside MINAG at both central and principally at provincial levels shared the PRONEA document (IFAD 2005)?

Interaction with potential stakeholders outside MINAG, particularly with non-government stakeholders, is important. It allows for discussion of the rationale for their engagement, the potential roles to be played by them, and the competencies needed or to be developed to enhance their participation in the pluralistic extension system (Griffiths et al. 2008).

In summary, although important within MINAG and within the agriculture sector, PRONEA awareness among key stakeholders was limited. Consequently, potential stakeholders' participation in implementing PRONEA was, to a certain extent, undermined from the start.

## 5. CONCLUSIONS

This study aims to identify critical factors that hindered the successful implementation of the national extension program, PRONEA, from 2007 to 2010. The decision to stop PRONEA is a good example of how crucial it is to pay attention to critical factors from the onset and to act promptly to ensure sound implementation. This is particularly crucial with a complex programmatic strategy such as PRONEA, whose implementation was affected by internal (MINAG) and external (agriculture sector) factors in a pluralistic extension system.

In conducting this assessment, we reviewed the literature, interviewed key informants and extension experts as we undertook field visits. We used Swanson and Rajalahti's (2010) Conceptual Framework for Planning and Implementing Programs and Strengthening Pluralistic Agricultural Extension and Advisory Systems to identify and analyze the different steps or factors that should ideally have been taken into consideration in implementing PRONEA.

Six policy and institutional factors were identified as having affected the implementation of PRONEA, namely:

- Weak preparedness of the National Directorate of Agrarian Extension, DNEA, to implement PRONEA
- Increased decentralization of public extension
- Institutional reforms at MINAG at central level
- Accelerated district expansion (coverage) of public extension

- Limited resources allocated to DNEA; and
- Limited key stakeholder awareness, participation, and ownership in PRONEA implementation.

The problems faced in implementing PRONEA suggest that there were over-optimistic expectations about the institutional (MINAG/ DNEA) preparedness needed to ensure that key preparatory actions are undertaken at both central and provincial levels. In addition, it was unfortunate that some problems emerged from the decentralization process and from other top priorities at MINAG that in principle should and could have helped boost and sustain PRONEA implementation. As decentralization is to be continued and strengthened, and as MINAG will continue having other top priorities apart from public extension, these are important issues that should be carefully addressed.

The problems that have hindered PRONEA's success show that, although DNEA is the directorate directly in charge of public extension, the responsibility for ensuring successful public extension at MINAG goes beyond DNEA. It involves such key directorates as DE and DAF, and relevant technical national directorates and some institutes (such as IIAM, for example) at central level, but principal responsibility lies at provincial level (DPAs). The intention of having the PROAGRI coordination unit secure the overall coordination of the program at central level was apparently meant to address the coordination problem. However, despite the efforts and commitment of the PROAGRI coordination unit in helping with implementation, its role in effectively coordinating and resolving key problems involving different MINAG key stakeholders was limited and beyond its capacity. While PROAGRI's coordination unit could play a follow up role, the sound implementation of PRONEA needed a stronger overall leadership at MINAG, capable of commanding needed commitment and accountability from MINAG's relevant institutions at both central and provincial levels.

First, there is evidence that public extension has been working with minimum staff requirements, especially in terms of quantity. Problems also exist in securing logistical support and methodologies meant to reduce the direct physical efforts of the extension workers in trying to reach as many farmers as possible where they live. Given that contracting new staff and integrating them as civil servants depends on the availability of vacancies and resources at provincial and district levels, assembling a critical mass of public extension workers seems to be beyond DNEA control.

Second, although there is no comprehensive documented evidence of public extension expenditure over time, the annual DNEA performance reports and direct observation of how public extension operates suggest logistical limitations. Assigning extension a low priority in resource allocation at the DPAs, and limited resources at district level affects the provision of agricultural inputs and equipment. These are needed for field demonstrations, in-service training, and operational capacity. Low resources meant difficulties in replacing transport promptly and in ensuring maintenance and petrol for motorcycles. Since decision making on resource and budget allocation is decentralized, the prioritization of extension in the budget allocation at MINAG (at central and local levels) is out of direct DNEA control.

Third, establishing horizontal and vertical linkages among DNEA and other relevant MINAG institutions has been a challenge. Contributing to the weakness of the links and even to the discontinuation of horizontal linkages that once existed with the scope of SUE were: a), the profound MINAG institutional reforms in 2005–2006 involving all research institutions and the national directorates that were collaborating with DNEA at the time; b), changes in leadership at the then-newly formed institutions and turnover of the technical staff; and c), limited resources. More challenging has been the need to ensure that effective vertical coordination and harmonization exists with the provinces (DPA/ SPERs) and the need to ensure that good practices are followed on technical and methodological issues. These important issues need to be addressed if public extension is to be developed into effectively unified, harmonized and coordinated services and meet its set objectives at central and provincial levels.

Fourth, the promotion of the national extension system (SISNE) requires some DNEA proactive actions and communication efforts aimed at boosting relevant relationships between different extension providers, where possible. Arguably, this is a difficult task as often private and even many NGOs extension providers have their own agendas and they are not necessarily interested in collaborating with public extension. However, in the case of Mozambique there have been some initiatives that have shown that it is possible to develop a SISNE, especially through the exchange of relevant information and collaborative actions between different service providers, including through in-sourcing and out-sourcing initiatives. DNEA's role in effectively promoting SISNE has been limited in part due to some of the above-mentioned institutional limitations. In addition, promoting SISNE cannot be seen as a DNEA challenge alone, as it is of interest to MINAG as a whole. Demand-driven extension is needed, but its development is also beyond DNEA capabilities alone. It should be viewed as an important challenge that requires the involvement of different stakeholders, including extension,



concerned with farmer-led extension toward enhanced household food security and major participation by smallholders in agriculture markets.

Finally, the case of public extension confirms that, whatever progress is achieved in building a complex organization like DNEA, it may crumble if critical factors are not carefully taken into account when introducing drastic reforms. Decentralization of both resources allocation and decision making to provincial and district levels is needed and should be encouraged. However, decentralization processes should carefully consider taking the following steps:

- Ensure minimum required operational capacity of extension services
- Support human capital development to strengthen extension competence and credibility in the perception of the farmers and other extension services providers. This is important for promoting strong interaction between public extension and other services providers, particularly through outsourcing, as was expected from PRONEA implementation
- Balance the distribution of the extension workers when expanding in order to contribute to the desired effectiveness of the public services
- Ensure that in each province the public extension has a number of technologies and messages that contribute to tangible changes in productivity, farm output, output conservation, farm income or improvements in natural resource management. Public extension has past experiences in building relationships with inputs suppliers and, for example, local or rural traders. The experience of disseminating semi-intensive technology packages for maize and rice from 1996–2003 in selected areas of 52 districts – in collaboration with Sasakawa Global 2000 – can be revisited as a basis to conceptualize and implement medium-term and sustainable technology dissemination initiatives. Collaborative work on livestock extension is also crucial, as most smallholder farmers are involved in both crop production and livestock activities (MADER/TIA, 2002; 2003; MINAG/TIA 2005; 2006; 2007;-2008; INE/CAP 2000; 2010). This is critical in light of PEDSA's implementation under the CAADP framework, which emphasizes the need for boosting technology development and adoption, especially in food production
- Strengthen the generation and use of evidence-based performance information on public extension in particular and on the whole extension in general, focusing on the factors determining its success or failure. Documenting success stories is important because it allow scaling up potentially replicable initiatives.

## 6. WAY FORWARD

The new PRONEA, now called PRONEA Support Project, seems to have addressed some of the weaknesses faced in the first phase (2007–2010). The first phase was discontinued in order to conduct an overall program (re)analysis and redesign. For example, the PRONEA Support Project went back to the intervention approach of the first EMP, that of prioritizing extension resources for selected districts within a reasonable period of time, often defined as five years. The PRONEA Support Project will likely prioritize 42 districts already identified by MINAG over five years starting in 2012. Other districts will continue benefiting from extension services but not necessarily under the PRONEA Support Project.

The overall management of PRONEA will be done by a specific management team to be based at DNEA at central level within MINAG. The team will consist of a national coordinator, M&E officer, procurement and financial officers, and rely on temporary technical assistance over time, according to the identified needs. The flux of funds to support PRONEA operations at central and local levels will be mainly controlled by project managers and project implementers (public extension) rather than by the overall MINAG annual budget managers at the Directorate of Administration and Finance (MINAG/ DAF). As was the case with the original PRONEA (2007–2010), IFAD will continue to be a key supporter of the program. Its financial contribution is estimated at around USD 21 million for the next five years. Other development partners, such as the European Commission, may also co-fund the PRONEA Support Project.

However, despite the above-mentioned changes to the intervention approach (concentration instead of districts' expanded intervention) and on the management approach (a specific team rather than leaving it to various MINAG officers at central and local levels), the foregoing analysis suggests that the way forward requires learning from past experiences. Moreover, based on that learning, our analysis points to conducting result-oriented institutional analysis and making changes that will support implementation of future public extension activities within and outside MINAG.

Public extension support at MINAG needs more than DNEA efforts; it is also important to ensure complementary actions from related MINAG institutions. The extent over time to which relevant MINAG institutions will be committed to



responding promptly to extension collaboration demands will be of paramount importance for the future success of public extension programs. Relevant institutions to support public extension include:

- MINAG/DE: responsible for coordination of planning and budget allocation to the different subsectors and services
- MINAG/DAF: responsible for budget execution
- MINAG Research (IIAM): responsible for research activities (including applied research) and joint activities with public extension
- MINAG relevant national directorates such as Agriculture Services (DNSA), Livestock (DNSV), and Land and Forestry (DNFTF): responsible for providing relevant subject matter specialists at central and at provincial level.

DNEA should lead a careful functional analysis under current circumstances, particularly with regard to the need to first, respond to the political “pressure” to maintain services to all districts, even prioritizing selected districts; second, ensure an adequate organizational structure to enhance services provision; third, ensure technical and methodological coherence from central to the local level within the service; and fourth, pursue functional linkages and collaborative efforts with other extension providers and relevant services. In summary, there is a need to consider how the interface of district coverage, organizational structure, technical and methodological issues, and development of key linkages should be pursued in order to develop a balanced approach to implement public extension programs.

Among other considerations, the above exercise must take into account the expectations of farmers, other extension actors, local governments, MINAG and politicians on the role of public extension in contributing to increased agriculture productivity, improved food security, and poverty reduction. In this context, public extension should invest time and resources in assessing:

- Its institutional trajectory in terms of progress, critical internal and external factors faced over time, and lessons learnt
- How and to what extent DNEA has managed critical success factors at central and local levels. In particular, the following questions need to be considered and answered:
  - What are the current bottlenecks?
  - What can be resolved internally and what needs more than DNEA intervention and capacity within MINAG?
  - Who within and outside of MINAG can provide sustainable solutions for identified bottlenecks?

In responding to these questions, the following issues would need to be taken into account: human capital development and stability; required operational capacity, including the need to come up with alternative field operation approaches; effective linkages with key stakeholders, especially for technology transfer and adoption; and extension local governance and an effective M&E system.


- How DNEA is prepared and how it should be institutionally prepared at central and local levels to deal with current and future challenges, including new goals and targets that may arise from the redesigned PRONEA that need to be aligned with PEDSA goals and expectations.

Due to the wide intervention scope of public extension under the unified approach (crops, livestock, and agro-forestry activities) and the on-going decentralization, strategic rethinking on public extension, if it takes place, must be an inclusive process, involving key MINAG institutions and relevant stakeholders.

Additional informational needs point to a need for specific data collection and studies. DNEA has been getting support from UN agencies such as FAO and even from IFAD. These agencies can produce relevant evidence and information to fill extension knowledge gaps, preferably in collaboration with local institutions, such as the agriculture degree education institutions or private research organizations.

Since public extension is viewed as crucial for MINAG to fulfill its core functions, DNEA should be able to mobilize much-needed support from other development partners. The current stage of preparations toward PEDSA implementation (under the CAADP framework) can be an opportunity to strategically rethink the role and institutional capacity of the public extension services towards creating a stronger DNEA within Mozambique’s pluralistic extension system.

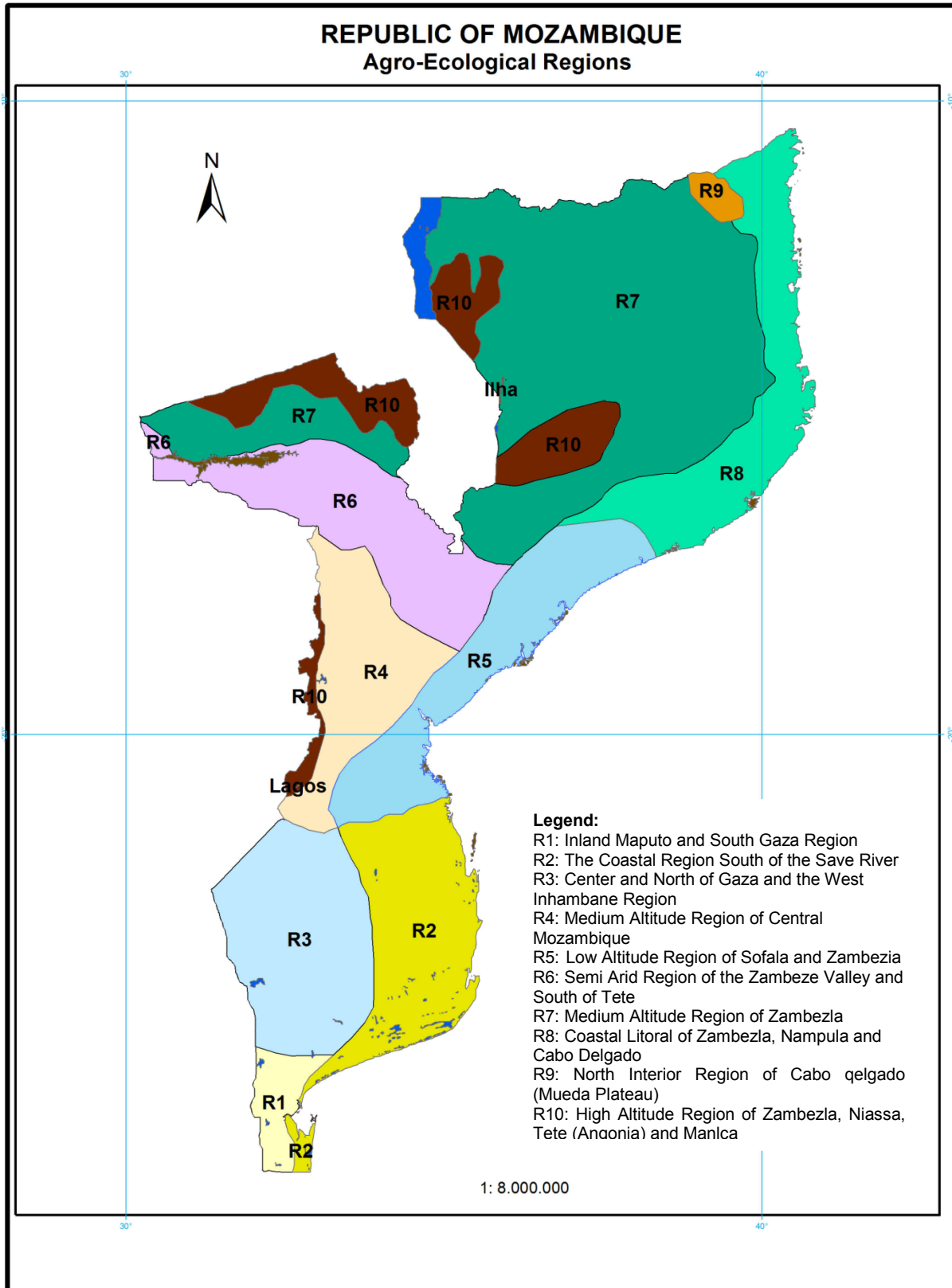
Support from MINAG leadership in rethinking the role, needs, and institutional capacity of public extension is fundamental. As discussed above, there are critical factors outside of DNEA’s direct control, even within MINAG. MINAG



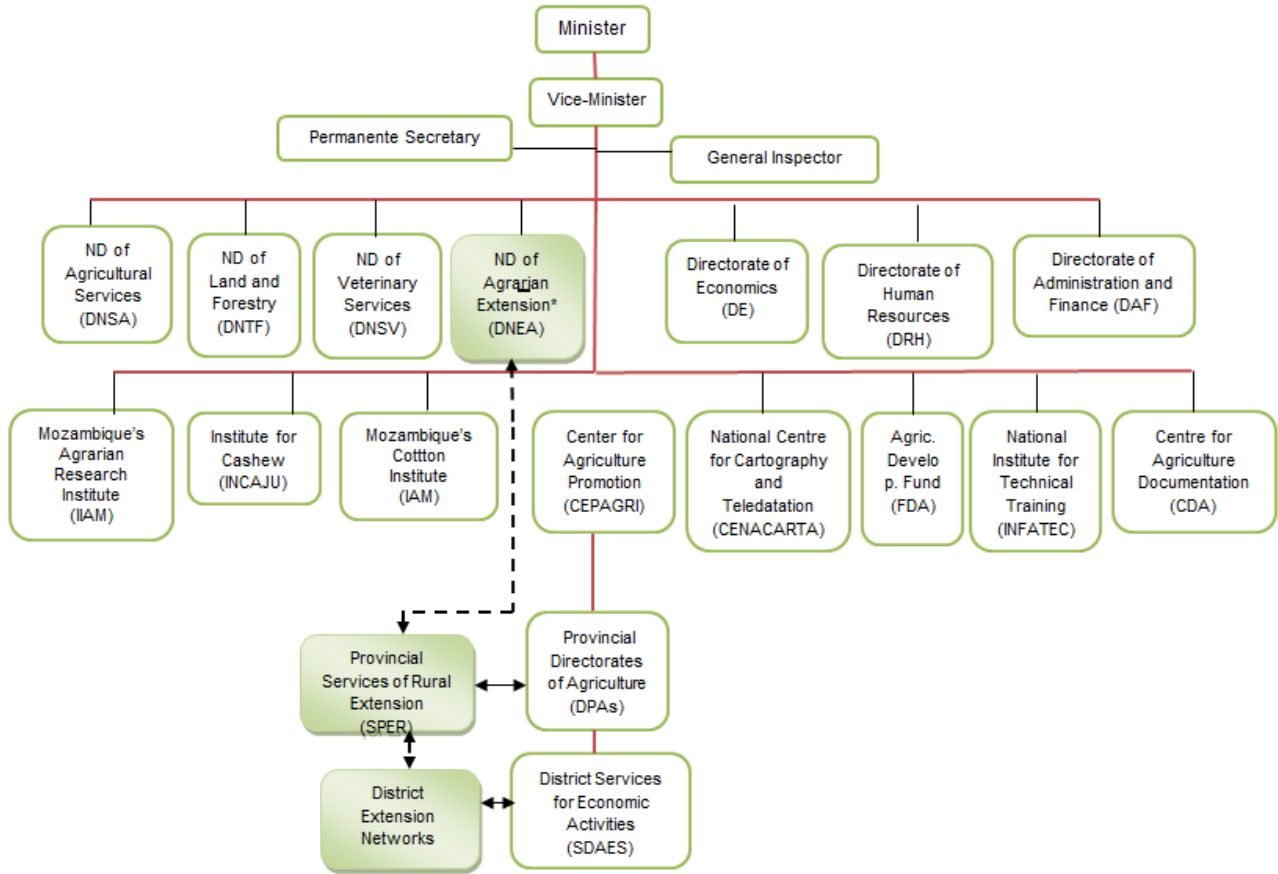
leadership can help clarify and promote stakeholders' roles and responsibilities as a way to enhance their participation and mutual accountability in extension and agricultural development efforts, particularly at the local level.

# ANNEXES

## Annex I: Agro-ecological regions of Mozambique



**Annex 2: Illustrative location and functioning relationship of public extension services (DNEA).**



Source: INIA, MINAG

Notes: Direct functional relationship and administrative subordination ←→

Planning, M&E, technical and methodological relationship (coordination and harmonization) - - - ->

Key: ND means National Directorate

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