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THE ROLE OF A PLURALISTIC EXTENSION SYSTEM IN ENHANCING AGRICULTURE PRODUCTIVITY IN MOZAMBIQUE

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ABSTRACT

This paper presents an overview of the characteristics and roles of key role-players involved in agricultural development in Mozambique. As in many other countries worldwide, extension service provision is characterised by the multiple service providers responding to the needs and demands of farmers. This is unlike in the recent past when agricultural services were mainly delivered by the public sector.

The 25 years of public extension have been characterised by different degrees of progress. Supporting extension policy was developed and amended as required during this period, which impacted positively on farmer coverage (number of districts operating) as well as the number of farmers served per extensionist. The expansion of public extension services created new challenges for the delivering of extension services. Within the pluralistic extension system of Mozambique, NGO's and private commodity extension organisations play an important role in supporting smallholder farmers.

To be able to learn from the different experiences in offering extension by the various service providers is only possible through effective communication and sharing of experiences between public, NGO's and private extension service providers. Despite some local based initiatives seeking to enhance collaboration between public and NGOs extension, no official extension platform (multi stakeholder) at national level exists which can take care of the coordination and management of the pluralistic extension system.

1. INTRODUCTION

Agriculture extension can be defined as a function of providing needed and demand-driven knowledge and skills to rural men, women and youth in a non-formal, participatory manner, with the objective of improving their quality of life (Qamar, 2005). Pluralistic extension recognizes the inherent differences that exist between farmers and farming systems and the need to address challenges in agriculture development with different approaches.

Investments in knowledge (especially in the form of technology) have featured prominently and consistently in most strategies to promote sustainable agricultural development in Africa. In Africa, the Comprehensive African Agriculture Development Program (CAADP) highlights the role of extension (and research) on technology dissemination and adoption, as one of the critical factors to increase agricultural productivity (CAADP, 2009). However, to develop and sustain agriculture extension services particularly public systems has been a

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challenge in many developing countries, and specifically in Africa (Eicher 2002; Gêmo, Eicher, Teclemarian, 2005). As Eicher (2002) argues, one of the biggest challenges facing the Ministries of Agriculture in Africa is addressing the institutional puzzles surrounding the near collapse of the core (research) and extension institutions that provided services to small scale family farmers.

The economy of Mozambique is much dependent on agriculture (World Bank, 2008), with about 75% of the population relying on agriculture activities for their livelihood (National Statistics Institute (INE), 2011). Agriculture's contribution to the total Gross Domestic Product (GDP) was estimated at an average of approximately 25% from 2007 to 2010 (INE, 2011). Agriculture predominantly comprises small and some medium scale farms. Both comprise around 99.3% of the total 3.8 million farms. Total cultivated land is estimated at 5.6 million hectares (ha) (INE/Agriculture Census (CAP), 2010). Of the total arable land estimated at 36 million ha, about 3 million ha are potentially suitable for irrigation (FAO, 1997; Kundell, 2007; MINAG, 2010). The country is endowed with considerable potential for diverse annual and perennial crops across the ten agro-ecological regions as well as for rearing of various livestock species as well as for forestry and inland fishing, including the development of aquaculture. However, agricultural productivity is low despite the considerable agro-ecological potential and there is a need to increase production due to prevailing gap between domestic food production and demand as well as the need to increase agriculture exports (MINAG/ PEDSA, 2011). Agriculture productivity is constrained by various critical factors which include, among others:

- Limited key support services such as research and extension (Gêmo *et al*., 2005
- Low use of agricultural inputs, including the use of water for irrigation (INE/CAP, 2000; 2010; MINAG/TIA, 2002-2008; MINAG, 2010).
- Limited public and private investment in the agriculture sector as a whole and particularly to support production (World Bank, 2011; USAID, 2008).
- Limited ability of agriculture policies and institutions to contribute effectively to strengthening of inter-sectoral coordination as well as evidence-based policy formulation, strategic planning, and monitoring and evaluation (MINAG/KPMG, 2005; Ministry of Finance (MF)/ Financial General Inspection (IGF), 2010; Mosca, 2011; MINAG, 2010).

In Mozambique, the role of agriculture extension is viewed as crucial by government and other agriculture stakeholders in efforts to increase agricultural productivity and production (MINAG/ (Agriculture Policy and Implementation Strategy) PAEI, 1995: MAP/ (National Agriculture Development Program) PROAGRI I, 1998; MADER/ PROAGRI II, 2004; and MINAG/ (Strategic Plan for Agriculture Sector Development) PEDSA 2011). This paper provides a brief overview of the pluralistic agricultural extension system in Mozambique and elaborates on possible lessons that can be learned.

2. Agricultural extension in MOZAMBIQUE

Mozambique's public agriculture extension is relatively new, in comparison with other Southern African countries such as Zimbabwe, Tanzania, and Malawi (Gêmo *et al*., 2005; Rutatora and Mattee, 2001; Future Agricultures, 2008). Public extension services were created in March 1987 when the Government shifted from priority support for state farms in terms of public investment, to address more attention for the small scale farmers. 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 had started providing extension services in the early 1990s, NGOs extension grew largely after the Peace Accord in October 1992 which ended a 16 year old war, when most of them shifted from emergency activities to agriculture and rural development related efforts. Thus, Mozambique has had a pluralistic extension system since the early 1990s (Gêmo *et al*., 2005).

The role of extension in contributing to improved agriculture performance is well known, particularly in technology transfer, farmers' organizations support, facilitating of market linkages and natural resources management (Hanyani-Mlambo, 2002). In Mozambique extension is particularly important because:

- Agricultural productivity is still generally very low
- Farmers organizations and other agriculture related community-based organizations are still largely underdeveloped
- Agriculture is largely dominated by small scale farms and some medium scale farms that account for 99.3% of the total farms (INE/CAP, 2010), most of them facing a plethora of farming and market related constraints
- Agricultural potential for crop production, livestock and inland fisheries/aquaculture is high to moderate in considerable parts of the ten agro-ecological regions
- Agriculture is the main source of livelihoods for rural people and to some extent for some peri-urban people – therefore crucial in boosting food security and contributing to improved welfare of particularly poor people.

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

Table 1: **Percentage of total farms with access to extension services (public, private and NGOs) from 2002-2008** (**TIA, 2002-2008)**

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**

Access to extension services refers to physical interaction between farmers and extension workers or trained local people that support extension activities. Table 1 illustrates that the maximum estimated coverage (14.8) was attained in 2005 and thereafter there was a consistent decline (8.6) until 2008. This negates the expressed desire to increase extension

services. It is important to note that the declining coverage was happening at a time (2006-2008) when public extension was implementing an accelerated geographic (district) expansion across the country. In part, this can be related to the low increase of total staff in public services, despite the geographic expansion. It can also be related to changes on the level of coverage by NGOs across the country. Unfortunately, more recent data from nationally representative surveys on extension coverage is not available.

3. Agricultural extension service providers

Trends like market development, democratization and communication revolution drive farmers to obtain agricultural information through a wider range of means and from a wider range of sources. For farmers various communication channels exist, of which public extension services is just one source of information, often purely focusing on production issues (Spielman, Kolady, Cavalieri & Chandrasekhara 2011) Agricultural extension in Mozambique is still at a consolidation stage, despite the fact that it has been in existence for nearly 24 years. Currently three categories of agricultural advisory providers provide agricultural extension services namely public, private and non-governmental organizations (NGOs). They use primarily five of the six basic extension approaches identified by Eicher (2007):

- The "national public extension" or generally referred to as public extension has been using mainly the Training and Visit (T&V model) since 1987, and the Farmer Field School (FFS model), since the late 1990s. Eicher (2007) noted that there is a spirited debate among extension specialists whether the FFS is an approach or a model. In Mozambique the "National Public Extension model" has been referred to as the "public extension (services)" while the T&V and FFS approaches have been generally considered as *metodologias de extensão* (extension methodologies).
- The NGO extension model, comprising different types of organizations. Several NGOs have redefined their coverage at provincial and district level, while others have also redirected their intervention focus towards, for example, specialized advocacy on market related issues, HIV/AIDS issues, women empowerment, rather than holistic extension activities, which happened with some international NGOs after the 1993-1998 agricultural revival period (Gêmo *et al.*; 2005).
- Private extension model which has basically been used for cotton and tobacco and some emerging crops such as sesame and soybean throughout-growers schemes.

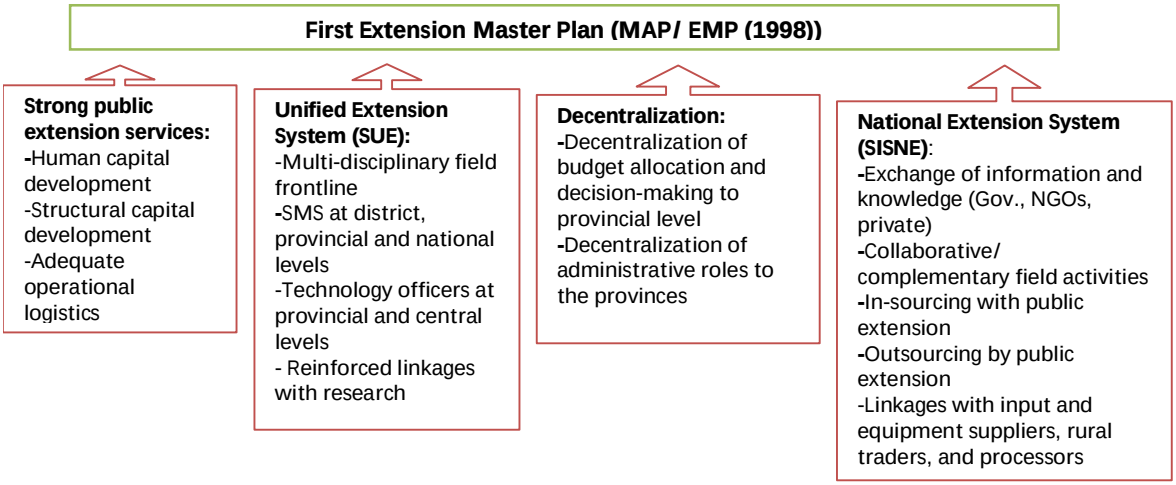
Agricultural education institutions are also potential advisory services providers. However, the role of universities and other agricultural degree education institutions in providing extension services has been limited, including through collaborative activities with MINAG, or with NGOs and private providers. Budget constraints as well as limited quantity and quality of full-time lecturers in existing agronomy and veterinary faculties have been constraining the role of these institutions, particularly in contributing to extension (Gêmo, 2006).

3.1 Public Extension Services

Public extension was established in March 1987 through the then National Directorate of Rural Development (DNDR). Extension services were at the time confined to some rural areas that were reasonably politically safe until 1992 due to the war that was ravaging the country then. Despite the security limitations to the expansion of public extension in rural areas, the 1987-1992 period was vital in terms of establishing the services at both 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 the central level (including foreign professionals); establishing cooperation networks with relevant agencies such as FAO, UN Development Program (UNDP), International fund for Agriculture development (IFAD) as well as with bilateral development partners (DP) that have provided support to public extension from very early stages e.g. Danish International Development Agency (DANIDA) and the Germany International Cooperation Agency (GTZ).

The Peace Accord of October 1992 allowed for an impressive geographic expansion of public extension services, with new extension networks established in at least 22 districts between 1993 and 1998, mainly in northern and southern regions of the country, particularly through World Bank support. The expansion of public extension was part of the joint government and DP efforts towards the reviving of the agriculture sector and rural economy after 16 years of war that had almost paralyzed agriculture production in most of the rural areas (Gêmo *et al*., 2005). In addition to public extension, many NGOs were also shifting from 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 involved in cotton out-grower farming by sub-contracting thousands of smallholders particularly in some areas in the northern region of the country. The growth of the pluralistic extension through the expansion of government, private and NGOs activities as well as limitation of resources in public extension dictated the need for the adoption of more strategic interventions of these services in the agriculture sector. The first MINAG/ Extension Master Plan (Figure 1) was initially planned to be implemented between 1998 and 2003, but was later aligned with the National Agricultural Development Program (PROAGRI I) implementation period, i.e. between 1999 and 2004 and later extended to 2006 (PROAGRI II).

Building strong public extension services was a key goal and both human and structural capital was viewed as crucial, in addition to adequate operational logistics. In 2004, public extension was operating in 66 selected districts rather than the planned 52, with a total staff of about 700 people. However, public extension had started experiencing some logistical constraints, particularly in terms of the means and replacement of worn-out transport for field workers (motorbikes and bicycles) and for provincial technical and supervisory staff (cars), and in providing agriculture inputs and equipment for “on farm” and other relevant field demonstrations (Gêmo *et al*., 2005).



**Structural capital development* here refers mainly to M&E system, data base development, annual reports at provincial and national, publications on public and whole extension systems

Figure 1: Pillars of the first Extension Master Plan for Mozambique (MAP/First EMP, 1998)

Figure 2 shows the number of field extensionists employed by the Ministry of Agriculture from 2005 to 2009. Public extension employed a total of 781 staff members at 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 over time, been limited to less than 700.

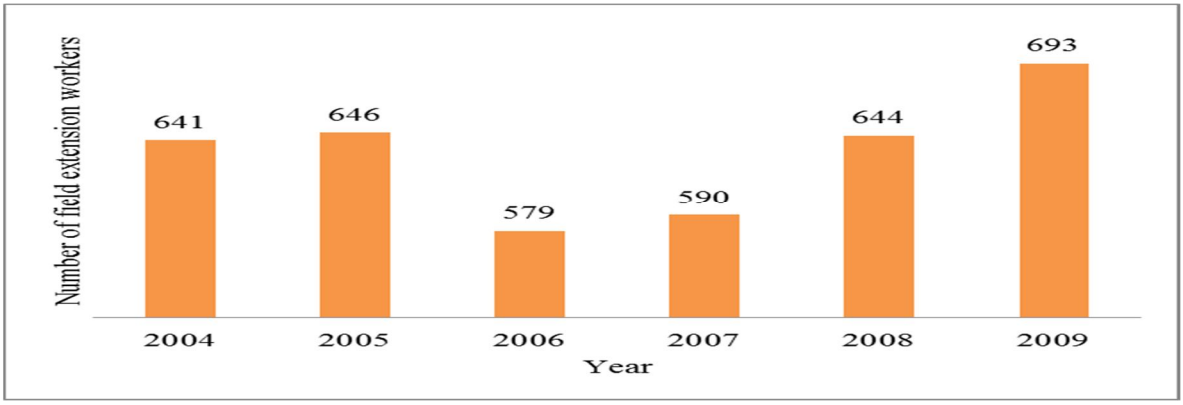


Figure 2: Number of public extension field workers (Gêmo *et al.*, 2005; MINAG/DNEA, 2010)

Figure 2 indicates that between 2005 and 2006 there was a considerable reduction of field staff members (extensionists and supervisors). In 2006, new services were created at district level, the District Services for Economic Activities (SDAEs) (from *Serviços Distritais de Actividades Económicas*). The SDAEs comprises the former District Directorates of Agriculture (DDAs), as well as fisheries, industry, trade, tourism and mining according to the existing economic activities in each district. Some of the extension workers were appointed as SDAE directors or as heads of "agriculture units" within the SDAEs, while some of the extensionists quit their jobs. In 2007, total number of extension workers remained very low. Some of the extensionists were at the time assigned to perform new tasks at district level by

the local governments. The accelerated expansion of DNEA led to the transfer of many extensionists from one district to another, including to some remote rural districts. Some staff did not accept such transfers and opted instead to resign.

Figure 3 shows public extension farmers' coverage from 2005 till 2009. It shows that in 2009, public extension was operating in selected rural areas of 126 districts (MINAG/ DNEA, 2010) against 66 districts in which it was intervening in 2004 (Gêmo *et al.*, 2005). This reflects an impressive expansion of about 60 districts in five to six years. In 2008 public extension covered 354 070 smallholder farmers at national level. Since 2010, public extension has been operating in selected areas of the 128 rural districts of the country covering 378 043 smallholder farmers.

Despite the considerable reduction in field extension staff in 2006 and 2007, the coverage of farmers increased (Figure 3). Interviewed key DNEA informants affirmed that the increase in coverage was attained as a result of the expansion of Farmer field Schools (FFS) mainly in the central and southern regions of the country, specifically in Manica, Sofala as well as in Maputo province. Although this can explain partly the increase in coverage, it is important to note that there are different perceptions as what constitutes farmer coverage. For example, while some extensionists consider coverage as including the entire population in villages under their responsibility, other extension workers consider it to include strictly the farmers that interact regularly with them. This differential perception in what "farmer coverage" means, may have contributed to overestimation of the actual number of covered farmers.

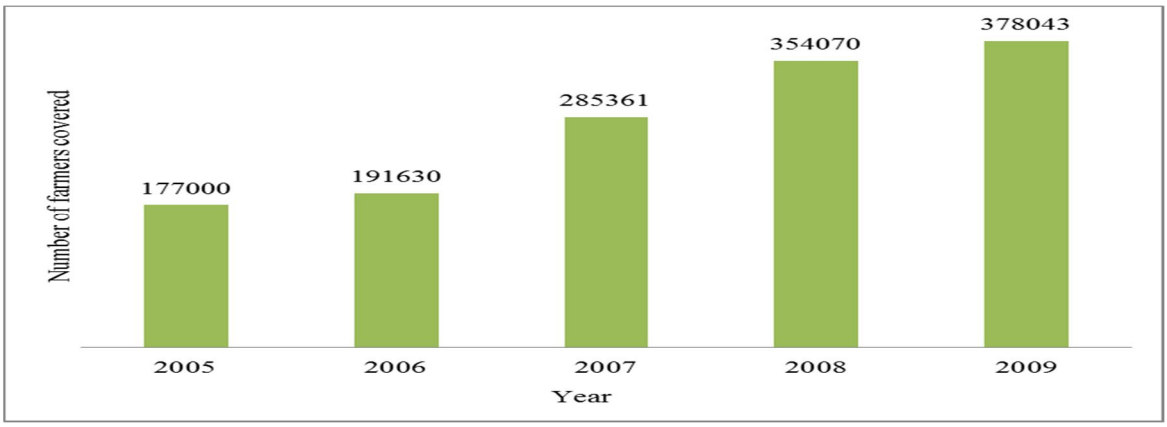


Figure 3: Number of farmers covered by public extension (Gêmo *et al.*, 2005; MINAG/DNEA, 2010)

In 2006 a Second Extension Master Plan was developed to cover the period from 2007 till 2016, following the implementation of the first EMP. As indicated in Figure 4, there are key similarities with the first EMP (1998), for example, in terms of emphasizing human capital development, continuing decentralization and deconcentration, and promoting of the extension national system (*Sistema Nacional de Extensão*, SISNE) through a strong emphasis on contracting other regional and local actors for the provision of local based extension services under close supervision. However, the second EMP highlighted the promotion and support of social capital within the extension system as one of the key goals aimed to contribute to enhancing public extension effectiveness. Assisting farmers' organizations (FOs) in planning and in facilitating linkages with markets (input, output and financial resources) as well as the promotion of partnerships with local actors, like for example, NGOs, relevant local-based organizations and rural traders was stated as crucial. Testing new

extension approaches and methodologies, in particular the need to develop demand-driven extension was also viewed as fundamental. Finally, outsourcing of public extension activities and the need to develop key linkages with research were also strongly encouraged within the scope of developing an effective SISNE which was envisaged since the first EMP. This Second Extension Master Plan paved the way to strengthen the pluralistic extension system in the country.

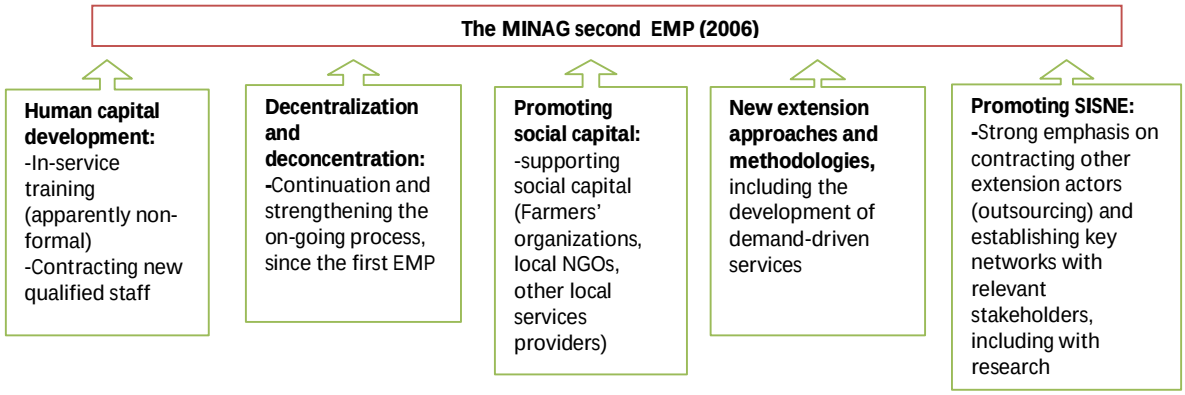


Figure 4: Pillars of the second Extension Master Plan (MINAG/Second EMP, 2006)

The second EMP was planned to be implemented within the scope of the National Agrarian Extension Program (PRONEA) (*Programa Nacional de Extensão Agrária)*. PRONEA was initially designed as an eight-year program (2007-2014) estimated at a total cost of USD 50 million (IFAD, 2005) and it was launched in August 2007. It was planned to be gradually implemented within 40 selected districts throughout the country with the objective to contribute to absolute poverty reduction and an improvement in the quality of life of the rural poor. The PRONEA contribution was aimed to emerge from the greater relevance of agricultural advice and technology dissemination; and adoption by large numbers of famers of more productive, economically rewarding and environmentally sustainable practices. However, in December 2010 PRONEA implementation was halted due to poor performance as a consequence of various policy and institutional reasons (Gêmo, 2011). Fortunately, the Government (MINAG) and IFAD agreed in reviewing and redesign the Program to be resumed in 2012.

In terms of funding, public extension has been mainly supported by donor funded projects (DPs) with some contributions from the government. Since its establishment until the late 1990s, it was funded mostly through specific development projects, at both central and provincial level, involving different donors like International Fund for Agriculture Development (IFAD), Danish International Development Agency (DANIDA), World Bank, Food and Agriculture Organization (FAO) and the German Agency for Development Cooperation (GTZ), in the early stages in Manica and Sofala provinces. An international NGO called Sasakawa Global 2000 (SG 2000) also co-funded public extension from 1995/96 to 2003/04 agriculture season. SG 2000 also strengthened public extension services in technology transfer, particularly through the supplying of technology packages (seeds, fertilizer and pesticides) to farmers.

Since 2001, the public extension services have been funded mainly through National Agricultural Development Program's (PROAGRI) common mechanism for the flow of funds. In fact, since 2001 the public extension services received no significant additional "off-

budget" funding although it received some support through specific small projects such as SG 2000 (1995/96-2003/04), the 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 farmers field schools (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 networks in selected areas of some districts.

The National Directorate of Agrarian Extension (DNEA) implemented a fast geographic expansion process since 2006. This expansion was politically and socially justifiable taking into account the need to increase access to extension as a contribution to enhanced food production and income generation among smallholder farmers. However it seems the accelerated expansion was conducted without necessarily considering some critical factors such as:

- Required additional field staff
- 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 to field and supervisory staff but also to provincial technical staff as well as agricultural inputs for field demonstrations
- Linkages and collaboration with other relevant actors such as suppliers of research knowledge, farming input and equipment among others
- The need to differentiate the main activities and expectations according to agro-ecological conditions, at least between potential and marginal districts.

3.2 Private commodity extension

Private extension has been more active in the northern and to some extent 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 private companies (Sonil and the Mozambique's Leaf Tobacco (MLT)) active in the tobacco industry. A third company has asked for authorization to operate in Nampula provinces but has not yet started operation (MINAG/DNSA, 2011). Cotton extension providers operate within concessionary schemes which consist of government authorizations to enterprises allowing them to operate in certain districts, for a specified period of time (5 to 10 years, or more). Cotton enterprises operate mainly in northern and central regions of the country respectively in Nampula, Cabo-Delgado, Niassa as well as Sofala provinces, and to some extent in Zambezia province. In the central region, the MLT has been the major company promoting tobacco in selected districts of Tete, Zambezia and Manica provinces which operate more or less in the same way as in the case of cotton (MINAG/ IAM,2010; MINAG/DNSA,2010 and MINAG/ CEPAGRI,2010). Figure 5 shows the total smallholder or family farmers involved in cotton and tobacco out-grower farming through sub-contracting schemes.

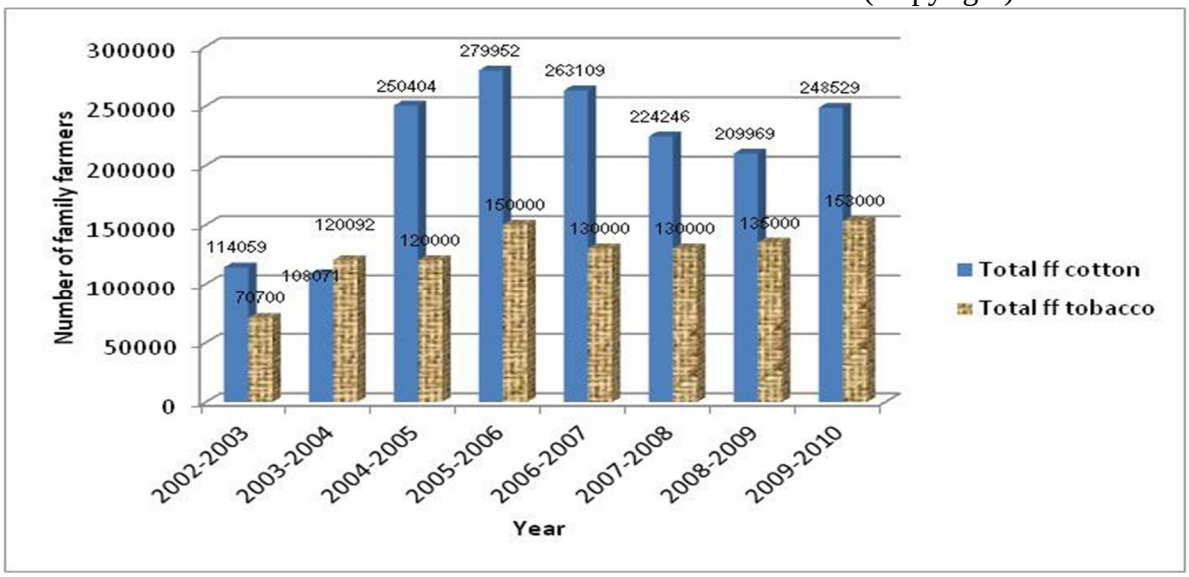


Figure 5: Total smallholder farmers involved in cotton and tobacco subcontracting production through private extension (MINAG/ IAM, 2010; MINAG/DNSA, (2010 and MINAG/ CEPAGRI, 2010).

The private enterprises have the responsibility of ensuring the provision of the main services related to the cotton and tobacco value chains from input supply, field technical assistance, commercialization of the output, to (partial) processing and export. In addition to cotton and tobacco out-grower farming, some initiatives for sesame and soya-bean 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 the Mozambique Leaf Tobacco (MLT), which is the bigger of the two enterprises currently involved in promoting tobacco indicates that the enterprise has a total of 478 extension workers working with an estimated 118 000 smallholder farmers at a national level, mostly in the central region of the country. Tobacco out-growers working with MLT are organized in “smallholder farmer clubs”, each comprising between 15 and 25 members. Currently there are approximately 8 000 smallholder “tobacco farmer clubs” working with MLT. The average area cultivated per tobacco out-grower is approximately 0.59 ha. MLT emphasizes the need for using “good agriculture practices”, particularly crop rotation and local based reforestation initiatives in their extension programs.

In a recent study commissioned by MINAG/ IAM on cotton private extension to smallholder farmers it was revealed that cotton private extension involves more extension staff than public extension. However, it must be emphasized that cotton private extension relies heavy on local extension agents with no formal training as professional extension workers as indicated in Table 2 (Givá, Santos, Cugala, & Popet, M. 2011).

Table 2: Private extension staff employed on seven of the twelve private cotton enterprises currently operating in the country (Givá *et al.*, 2011).

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

The statistics shown in Table 2 were collected from seven of the twelve major private cotton enterprises currently involved in promoting cotton production and marketing namely: *Sociedade Algodeira de Namialo* (SANAM), PLEXUS Mozambiques 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). The use of a high number of local extension agents (foremen) is aimed at reaching as many out-growers as possible without necessarily relying on professional extension expertise. Figure 6 shows the operational hierarchy used in technology dissemination by the private enterprises involved in cotton extension.

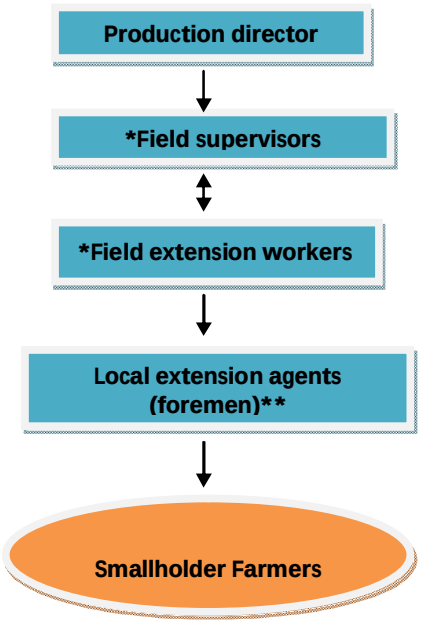


Figure 6: Hierarchy used in the communication of information by private cotton enterprises (Adapted from Givá *et al.*, (2011))

***Notes*:**
(*): Professional/ staff members of the enterprises but sometimes not necessarily with agriculture background, some of them with only secondary school qualification;
(**) Selected on local level based on experience to help ensuring key farming practices (e.g. recommended spraying) under a contractual basis.

Figure 6 illustrates a top-down relationship, with exception of 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) meant to pursue a rigorous accountability from the different levels, there is a need to take into account the bottom-up reporting responsibility by the different levels involved in such a hierarchy, from land preparation to the harvest stage and up to crop commercialization. This implies that there is a bi-directional relationship (top-down and bottom-up) prevailing although the top-down relationship is very important in ensuring the overall "commanding" of the extension provision and control of field operations.

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

- Limitations in extension staff's capacity to ensure more effective registration process of farmers at beginning of each growing season and in providing organizational support to the farmers' organization established by out-growers
- Limited practical knowledge on diseases and pests, especially on the use of pesticides in particular by those extension agents which obtained only secondary school qualifications
- Limited linkages between implementation of knowledge on field (local knowledge) and research in order to update relevant local knowledge
- Limited training on extension methodologies, including in issues related to providing support to farmers' organization
- Challenges in full adoption of the recommended levels and frequency of application of pesticides by out-growers, who often consider it as "expensive" when recommendations should be followed strictly

3.3 NGO Extension

In 2006 it was estimated that NGOs were undertaking extension or extension related activities in selected rural areas of 84 districts (MINAG, 2006) throughout the country and this increased to 87 in 2009 (MINAG/ DNEA, 2010). The size, budget, knowledge, and type and volume of activities as well as the coverage and duration of NGOs extension projects differ widely. There are variations from small NGOs working in one or two districts (mainly the local NGOs), to others working in a number of districts (even in seven to eight) in one or more than one province. Although their levels of resource mobilization and consequently the scope and volume of activities vary, international NGOs such as World Vision, Care International, Africare, etc., have been by far the most robust in terms of budget, human capital and operational capacity.

In terms of human resources, it was estimated that NGOs had a total extension staff of 840 people in 2004 (Gêmo *et al*., 2005). 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, in addition to the fact that different locations have different problems and constraints that need to be addressed (Steven, 2004). In summary, Table 3 shows some of the main characteristics of the three main advisory service providers, namely public extension, private and NGOs extension.

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

Extension Service Providers	Public (DNE	Private (Out-grower	NGOs
Leading/ involved institutions	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 DCP. NGOs vary considerably in terms of size, budget, know-how, type and volume of activities.
Focus of extension	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 market development support)
How?	Offering no cost services through extension networks based at villages/ community/ district levels throughout the country	Offering sub-contracts (input and services credit) for smallholder farmers to grow and sale the harvest to the contractors, in agro-ecologically suitable regions	Offering no-cost services through extension teams or through local extension agents at villages/ communities and district levels throughout the country
Extension approaches and methodologies	Focused on technology transfer, farmers empowerment and social capital development; using mainly modified T&V system and other models such as, FFS" (Gêmo *et al*., 2005)	Focused on developing farmer's crop management skills through rigorous technical assistance aimed to ensure credit return, as profitable/ 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 some in technology transfer (e.g. seeds)
Technical and technology transfer issues	Focus on a combination of good agriculture practices (e.g. sustainable land management, crop management, introduction of improved varieties, livestock vaccinations),	Focused on technology packages for cotton and tobacco. In tobacco the technology package includes fertilizer and pesticides while in cotton it includes mainly seeds and pesticides since farmers use very little fertilizers for cotton production.	Most of the NGOs focused on the promotion of "low cost technologies". Some NGOs have been involved in the promotion of orange fleshed-(sweet) potato. Very few NGO's were involved in livestock production, exception the involvement in vaccinating of poultry against "newcastle".
National Extension System (SISNE): Intended to be an effective system characterized by collaboration and exchange of information among the three actors			

6. CONCLUSION

This paper has presented an overview of the characteristics and roles of key role-players involved in agricultural development in Mozambique. As in many other countries

worldwide, extension service provision is characterised by the multiple service providers responding to the needs and demands of farmers. This is unlike in the recent past when agricultural services were mainly delivered by the public sector.

The 25 years of public extension have been characterised by different degrees of progress. The post-war expansion period (1993-1998) and the implementation of the first EMP (1999-2004/06) were critical years for the reinforcing the role of public extension services. However, the extension period of the implementation of the first EMP and the start of the accelerated expansion (2005-2006) brought major institutional challenges to the service, which continued during the three years of implementation of PRONEA from 2007 until its interruption in 2010 for review and redesign. The number of farmers served per extensionist increased from 260 in 1999 to 645 farmers per extensionist in 2008, and this created new challenges for the public extension service:

- Too few extensionists at field level to serve farmers effectively (farmer: extension too wide)
- Lack of adequate resources at district and field level to carry out effective field demonstrations and other farmers training approaches
- Limited in-service training of public extension staff at field level to address farmer needs and to ensure technical and methodological competence among the extension workers
- Difficulties in ensuring an adequate monitoring and evaluation as well as field supervision of the extension workers due to challenging dispersion under limited resources

Within the pluralistic extension system of Mozambique, NGOs and the private commodity extension organisations play an important role together with the public extension system in supporting smallholder farmers. The private commodity organisations (cotton and tobacco private extension) have a main responsibility to ensure the main services related to cotton and tobacco value chains from input supply, technical assistance at field level, commercialisation of the produce, to processing and export. Inevitably, different extension approaches are followed by the private commodity organisations like the use of “tobacco farmer clubs” and the use of “local extension staff” to support smallholder tobacco and cotton producers respectively. Farmers procure facilitation services (for the farmer group process as well as interaction with input and market actors) through the various NGO’s that are playing a role in agriculture development.

However, to be able to learn from the different experiences in offering extension by the various service providers can only be possible by the regular and effective communication and sharing of experiences between public, NGO’s and private extension service providers. Despite some local based initiatives seeking to enhance collaboration between public and NGOs extension, there is no extension platform at national level which takes care of the coordination and management of the pluralistic extension system. The annual meetings of public extension, involving all the ten provinces (Provincial Directorate of Agriculture (DPAs)/ Provincial Services of Rural Extension (SPERs)) has been including some invited NGOs. But these meetings are mainly focused on discussing public extension planning and M&E issues (with emphasis on services outputs) than issues related to other extension providers. Therefore there is a need to coordinate and link in order to best service the interests of farmers in an effective manner.

The development of a pluralistic extension system should enhance the productivity and contribute to competiveness of local agricultural production within the context of the local economic development. Ideally the outcome is that different client groups in different contexts are satisfied with the access to advisory services they receive. However, without proper coordination and linkage of actors in the provision of agricultural extension:

- Certain geographical areas may be over-patronized at the expense of another equally deserving community.
- Duplication may occur since without knowledge of what other service providers are doing, it is likely that actors may design same interventions in the same areas.
- It is unlikely that one service provider may have adequate capacities in all areas to effectively support agricultural development. Therefore through linkages, resources and capacities required for the effective delivering of extension services to farmers can be pooled together to achieve a common objective.
- Public extension service has a role of policy regulator as well as implementer. It will however be very difficult to monitor quality and the standard of extension service provision in a pluralistic setting if proper linkage structures are not in place.
- Proper linkages will enhance accountability, since extension services must not only meet the requirements of the funders but more importantly must meet the needs and expectations of the clientele. Through proper linkage structures, such accountability mechanisms are ensured and enforced through proper farmer representation.

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