Agricultural Development in the Democratic Republic of the Congo: Constraints and Opportunities

Thaddée Badibanga

1. Introduction

The Democratic Republic of the Congo (DRC) is experiencing the aftermath of a long period of political turmoil and economic mismanagement followed by a decade of armed conflicts that affected negatively the performance of all sectors of the economy. The agricultural sector in particular has been experiencing a drop in its productivity whether it is assessed by through labor productivity or yield per ha. In terms of labor productivity, the estimate of the value added per worker during 1970 to 1990 was between 60% and 70% of its 1960's levels, and dropped to 50% of its 1960's levels in 2000 (World Bank, 2006). In terms of the yield per crop, the trends are almost the same. Indeed, average yield per ha increased by 16% from 1960 to 1975, and remained stagnant thereafter until 1989. From 1990 to 2008, the average yield per ha decreased by 11%.[1]

The bad performance of the agricultural sector is reflected by alarming indicators of food security and nutrition and poverty. According to the IFPRI's Global Hunger Index (2011), the DRC ranked as the country with the largest number of starving people in the world. Seventy-five percent of the population is malnourished and 16 Million people are exposed to a critical food shortage (World Bank, 2006). In 2008, 72 percent of population was estimated to be food insecure (FAO, 2008). The average dietary energy supply is approximately 1,500 kcal per day, way below the FAO norm of 2,500 kcal per

1. Calculated from the agricultural output data reported in FAOSTAT (2010)

day (FAOSTAT, 2010). This under supply of dietary energy worsens the school performance of children, impairs the cognitive ability of the Congolese in all segments of the population, and results in diseases. As a result of the high incidence of disease, the mortality rate is very high, 5 times the norm of sub-Saharan Africa, according to World Bank (2006). Also, access to basic services such as health, education, and infrastructure is very limited in urban areas and even inexistent in the rural areas.

The extreme poverty and the severe food insecurity in DRC can be considered to some extent as the results of a very weak agricultural productivity which has impeded agricultural development. Agricultural productivity grew on average at a negative rate of -7 percent between 1990 and 2000, at a rate of 2 percent between 2000 and 2005, and at a rate of 3 percent between 2006 and 2010 (World Bank, 2011). During the same period, population grew on average at a rate of 3.3 percent per annum. A rate of growth of agricultural productivity below that of population implies less food for everybody and thus the aggravation of food insecurity. The interaction between agricultural productivity, poverty, and food insecurity can also be assessed through two channels. Since the agricultural sector employs the majority of the population in DRC (more than 70 percent of the population), a weak agricultural productivity implies low agricultural incomes which in turn make access to food very difficult. Further, a weak agricultural productivity makes the domestic agricultural production unable to cover food needs. Unless other sources of incomes exist and thus can be used to cover food imports, this food supply shortfall makes food less available and worsen food insecurity.

Agricultural development in DRC is impeded by many constraints which have caused the productivity of the sector to remain very low. What are these constraints and how do they affect productivity? Further, the country has abundant resources which if efficiently exploited can allow significant improvement in agricultural productivity. What opportunities can these resources create for agricultural development in DRC? This note analyses the constraints to and opportunities for agricultural productivity growth in DRC and devises a long term agricultural strategy for improving agricultural productivity, and reducing poverty and food insecurity.

2. Evidence of weak agricultural productivity in DRC

Agricultural productivity in major crops in DRC is relatively low[1-2] (Table 1). Actual yields in these major crops were 14-22 percent of potential yield. Therefore, yield gaps are very high, ranging from 78 percent for maize and rice and 86 percent for cassava and plantain.

This implies that there exists a huge potential for improving sustainably agricultural productivity (i.e. land producti-

1. The IFAD (2001) documents an average yield 0.91 ton/ha for maize of and that of 8.5 tons/ha for cassava for Western and African countries over the period 1990-1995. During the same period, the corresponding figures for the DRC were below these averages, that is, 0.8 tons/ha for maize and 8.1 tons/ha for cassava. Cameroon had the highest yield as concern maize (1.9 tons/ha) as well as concern cassava (18.3 tons).

2. Oerke and Dehne (2004) report an average yield of rice of 3.76 tons/ha for Western African countries and a yield of 7.8 tons/ha to 8.3 tons/ha for Egypt for the period 1996-1998.

TABLE 1.

Rate of realization of potential yield for selected crop varieties tested at the INERA station of Mvuazi

Crop	Producer Yield (tons/ha)	Potential Yield at INERA-Mvuazi Station (tons/ha)	Rate of Realization of the Potential Yield's (%)
Cassava	8.1	45.0 – 60.0	14.0– 18.0
Maize	0.8	3.5	22.3
Rice	0.8	3.5	22.0
Beans	0.4	2.5	18.0
Plantain	4.3	30.0	14.3

Source: Constructed by the author from the 2008-2010 INERA reports.

vity) provided appropriate policies are implemented to promote those high yields of tested varieties. Such policies can induce for instance the yield of maize to increase at a rate up to 449 percent, and that of plantain up to 700 percent if the associated technologies are pushed to the frontiers.[1] These rates of growth are extremely high and still offer the country several options for fast growth of the yields of its major crops even out of the frontiers.

3. Constraints to agricultural productivity growth in DRC

The very low realization rates of the potential yields for major crops reflect the extent to which agricultural productivity growth has been impeded by a myriad of constraints. Of these constraints, the most complex ones have been:

- Weak investment in the agricultural sector;
- Inefficient functioning of agricultural inputs and agricultural products' markets;
- Weak human, organizational, and institutional capacities;
- Use of rudimentary agricultural technologies;
- Weak and uncoordinated provision of services in support to agricultural activities including research, extension, information, credit, and others.

3.1. Weak investment in the agricultural sector

Investment in the agricultural sector has remained very low, both from the government (less than 1 percent of

1. These rates of growth are calculated using the current yields (column 2 in Table 1) and the potential yields (column 3 in Table1).

the national budget) and private sector. Private investment has been limited due to low profitability of agricultural activities, weak institutions, and absence of enabling environment. For instance, the net investment in agriculture was zero between 1981 and 1991 (FAOSTAT, 2010). This investment increased between 1991 and 2003 to 17.11 million US$ (constant 1995 prices) per year on average (FAOSTAT, 2010). When converted in per capita figure, however, it represented only 0.56 US$ (constant 1995 prices) per head. This weak investment has prevented farmers from accumulating physical capital to the levels necessary for achieving high agricultural productivity. The per capita physical capital in agriculture has been not only very low but also decreasing. From 178.56 US$ (constant 1995 prices) in 1991, it dropped to 103.48 US$ (constant 1995 prices) in 2003[1].

3.2. Inefficient functioning of agricultural inputs and agricultural products' markets

Inefficient input markets

Input markets in DRC have not been formally structured. These markets are predominantly informal and are not associated with clear and efficient information system which participants can rely on to make rationally their expectations on the market prices and the quantities to be traded at those prices. Further, these markets are limited to seeds and fertilizers and are even inexistent for some other inputs.

1. These per capita physical capital figures are calculated from physical capital and rural population data from FAOSTAT (2010).

The seed markets are organized around two types of seeds, that is, improved and degenerated or traditional seeds. Improved seeds and planting materials are demanded by a few large farms and by international organizations for their programs or interventions. The multitude of small farmers (contributing 80 percent to the agricultural output) don't have access to improved planting materials because of their high prices and thus resort to the traditional varieties except for vegetable crops' seeds. Seed multipliers include local NGOs, peasant organizations, rural small firms, and the private sector. The latter is dominated by two large firms (MPOYI and LEDYA) which were the government partners in the previously state-owned seed farms FOMI and LOMBO. MPOYI and LEDYA own 80% of the improved seed market and produce annually between 600 and 700 tons of cereal seeds and others for international organizations and international NGOs' programs. They also supply negligible quantities to local NGOs and a few large agricultural producers. The other segment is filled by small agro-multipliers with very weak demand from small farmers who cannot afford high quality seeds from MPOYI and LEDYA. Difficulties to access credit for financing seed multiplication, bad quality and insufficient seeds, and unreliable seed certification system have been the major constraints preventing market penetration by these small seed multipliers. Some support from the SENASEM (National Seed Service) in partnership with some NGO to the peasant organizations supervising these small seed multipliers have yielded negligible results due to insufficient funding for sustaining such support.

The fertilizer markets on the other hand are less developed than the seed markets. Further, they are less profitable and thus do not attract the private sector. Markets for organic fertilizers are inexistent despite the fact that they are the most recommended for soil fertility replenishment. Chemical fertilizers are costly and less profitable in particular for perennial crops. The only cases where the use of these fertilizers proved profitable to some extent concerned some industrial crops, vegetable crops, and cotton.

Finally, the insecticide and fungicide markets are inexistent.

Inefficient output markets

Efficient markets are the result of competition which requires the best allocation of resources in order to be sustained and leads in turn to productivity growth.

Agricultural output markets are, however, inefficient. The inefficiencies are due to several factors including the deterioration of feeder road, railroads, and waterways; insufficient and inadequate transportation means, absence of market infrastructure including storage spaces and handling equipment, and the inexistent agricultural information system. These difficulties have forced farmers to sell their produce in their fields, villages, along the main road, or in the local markets at low prices. At the same time, intermediaries between producer and consumer have taken advantage of the inexistence of the agricultural information system and have captured most of the profit margins leaving the small-scale farmers at disadvantageous low prices.

With market inefficiencies as paint above, the best inputs will always pool away from the agriculture and into the more profitable sectors. As a result, the agriculture will be left with the marginal resources which cannot, however, contribute to productivity growth.

3.3. Weak human, organizational, and institutional capacities

The DRC agricultural sector has been experiencing capacity weaknesses in all segments of policy design and implementation. According to Ragasa et al. (2011), human capacity in policy research and analysis has been limited in this sector. The three major universities with a strong agronomic department (Université de Kinshasa–UNIKIN, Institut Facultaire Agronomique–IFA/Yangambi, and Institut Supérieur d'Etudes Agronomiques–ISEA/Bengamisa) have in total only about 13 PhDs working on agricultural economics and rural development research for an estimated population of 68 million. This figure is low compared with other African countries, the example of which is Malawi which has an estimate of 50 agro-economists with a PhD each for an estimated 13 million population. With such insignificant number of researchers, the likelihood of intensifying research effort to bring out new yield enhancing technologies is limited. Also, a diagnostic survey conducted by IFPRI in 2010 revealed that policy analysts in the Ministries of Agriculture, Rural Development, Planning, and Land, at the National Institute of Agronomic Research (INERA), and at the Central Bank's Economic Research Department had limited knowledge in statistics and research methods, limited application of statistical techniques, and limited

background in computer applications and software. Therefore, policy analysis which is necessary to inform productivity enhancing policy interventions is limited.

In addition to the weak human capacity, there exist weak institutional and organizational capacities which weaken the linkages between research, extension, and information, and prevent agricultural productivity growth and agricultural development. These weak institutional and organizational capacities have been observed at the INERA (the only agricultural research institution in the country) and at the National Extension Service (SNV). Due to limited logistical means, limited funding, and weak human capacity, the INERA has resorted to conducting minimal agricultural research. Of its six research stations, only two were operational in 2010 so that it has been difficult for INERA to fulfill its role of developing and testing new planting materials and other agricultural packages through applied research. The SNV has also experienced difficulties similar to those of the INERA. Unlike the latter, the SNV has stopped operating. Its personnel are being used in extension activities by some NGOs and church-based organizations that have been trying to fill the gap in the provision of agricultural services. However, weak capacity to organize, coordinate, monitor, and evaluate agricultural activities has limited the scale as well as the impact of their interventions.

3.4. Agricultural technologies

The DRC agricultural sector has experienced the use of advanced and high-yielding technologies developed through agronomic research. However, these advanced technologies have been the do-main of a few modern and large farms which contribute less than 20 percent to agricultural output. The majority of small farmers contributing more than 80 percent to agricultural output have resorted to rudimentary agricultural technologies with very low potential for productivity growth. These technologies have consisted of the combination of elementary tools, unskilled labor (mostly family members), extensive cultivation areas, traditional planting materials, no fertilizers, fungicides, and insecticides, and no mechanization.

The small farmers' limited or no access to high-yielding technologies is explained in part by the financial, logistical, and human resource management difficulties the INERA has been facing for decades. Indeed, this research institution has managed somehow to maintain minimal applied research at two out of six of its research stations despite these difficulties. This research has resulted successfully in the testing of high-yielding technologies which, however, have not been promoted and disseminated to the majority of small farmers because of the weak link between research and extension and the lack of funding and logistics to support the INERA's programs.

3.5. Weak and uncoordinated provision of services in support to agricultural activities

The no availability of appropriate technologies and low adoption of improved technologies are the results of the lack of or uncoordinated support

to the sector in basic services including research, extension, and information. Agricultural research has been limited by several constraints described above. However, the agronomic research institute (INERA) has maintained minimal applied research consisting of testing new and improved planting materials, new technologies, and other agricultural packages. Nonetheless, additional services for disseminating these agricultural innovations and facilitating their adoption have been either missing or poorly linked to the agronomic research.

4. Opportunities for agricultural productivity growth in DRC

Despite the poor performance of the agricultural sector during the last 3 decades, this sector has a lot of opportunities for growth and development provided the constraints mentioned above are reduced or eliminated. These opportunities are justified by the country's huge agricultural potential, the possibilities to push agricultural technology to the frontier, the increasing agricultural demand pressures for agricultural products and their prices, and the composition of the rural population allowing a dynamic labor force in the agricultural sector.

4.1. Huge agricultural potential

DRC is endowed with abundant natural resources that confer it a huge agricultural potential. This potential can allow the country not only to cover its food needs but also to become one of the world largest exporters of agricultural and food products if fully and efficiently exploited. This potential consists of enormous resources including 80 million hectares of arable land, of which 4 million are irrigable; 125 million ha of tropical forest; climatic diversity; favorable ecology; rich hydrology; pasture resources that can support an estimated 40 million cattle or equivalent; and inland fishery resources that can allow an annual supply of some 700,000 tons of fish per year (Ministères de l'Agriculture et du Développment Rural, 2009).

To date, this potential is almost untapped. The agricultural land (23 million ha), which represents 10% of land area (228 million ha), has been inefficiently used over decades. The cultivated area has remained constant and represents 34% of the agricultural land (7.9 million ha). The remainder of the agricultural land (66% or 15.1 million ha) is devoted to pasture. Of this cultivated area, annual staple food crops account for 86%. Only 4.8% of the cultivated land is irrigated. Consumption of fertilizers has remained very low. It has fluctuated around 1kg per ha over decades. Also, the use of mechanical or animal traction is very limited. Less than 10% of farmers use this technology, and the sector has had the lowest number of tractors in the Great Lakes region, that is, an average of 0.36 tractors per 1000 ha since the country's independence (FAOSTAT, 2010).

4.2. Opportunity to reach the production possibility frontier

Agricultural productivity has remained very low in DRC due mostly to the use of low yielding technologies. Howe-

TABLE 2.

Impact of the use of improved crop varieties on crop yield growth

Crop	Province	Site	Yield of a local variety (kg/ha)	Yield of an improved variety (kg/ha)	Impact/Yield growth rate (%)
Peanuts	Province-Orientale	INERA Yangambi	969	1280	32.1
	Bas-Congo	INERA Mvuazi	970	1588	63.7
Rice	Province-Orientale	INERA Yangambi	1534	2236	45.8
	Bas-Congo	INERA Mvuazi	4970	5360	7.9
	Equateur	INERA Boketa	2880	5512	91.4
		Peasant Field	2070	2799	35.2
	Bandundu	INERA Kiyaka	1100	1900	72.7
Maize	Kasai-Oriental	INERA Gandajika	1406	2840	102
Cassava	Sud-Kivu	INERA Mulungu	24800	31640	27.6
		Peasant Field	3300	10010	203.3
	Bandundu	INERA Kiyaka	10870	19072	75.5
Soybeans	Bas-Congo	INERA Mvuazi	699	1975	182.6
	Province-Orientale	INERA Yangambi	975	1180	21
	Bas-Congo	INERA Mvuazi	720	1440	100
Potato	Sud-Kivu	INERA Mulungu	13300	20817	56.6
Sweet Potato	Sud-Kivu	INERA Mulungu	4930	59142	1099.6
Plantain	Sud-Kivu	Peasant Field	8100	12600	55.6
Banana	Sud-Kivu	Peasant Field	8581	17493	103.9
Cowpea	Bas-Congo	INERA Mvuazi	822	900	9.5

Source: 1999, 2000, 2008, and 2009 INERA Annual Reports

ver, the country has several possibilities to push its agricultural productivity up to the frontier of agricultural technology. In fact, the yields of major crops represent very low proportions of their potential yields (see Table 1). For instance, the yield of maize can increase at a rate up to 449 percent and that of plantain at a rate up to 700 percent if the associated technologies are pushed to the frontiers as it is reflected in Table 1. These rates of growth are extremely high and still offer the country several options for fast growth of the yields of its major crops even out of the frontiers.

The sustained increases in the yields of major crops needed to move toward the technology frontier can be achieved through improved access of farmers to improved agricultural inputs and supporting services including improved seeds and fertilizers, extension, information, credit, research, veterinary services, and so on. To date, access to these improved inputs and supporting services has been very difficult in particular for small farmers.

There exists a huge potential for increasing yields of major crops through the use of improved varieties as shown in Table 2. As reflected in this table, a huge productivity gap is observed between low yield local varieties mostly used by small farmers and high yield improved varieties experimented in the INERA stations and peasant fields. In the case of the sweet potato's improved variety tested at the Mulungu station (Sud-Kivu), the yield increased by 10 times. The same results (positive increase in the yield) were observed in the cases of the use of improved varieties of other crops. For instance, an improved cassava variety tested in a peasant field in Sud-Kivu and an improved soybean variety tested at the Mvuazi station (Bas-Congo) increased each the yield by twice. We can also see from the Table 2 that the impact is still very large for the other crops' tested varieties including those of peanuts, rice, maize, banana, and plantain.

As for the improved crop varieties, the use of fertilizers has proved to have a huge impact on yield growth. This impact is displayed in Table 3 for an application of fertilizers in selected provinces. For instance, a combined experimental application of three fertilizers (N, P205, and K20) increased the yield of rice (Rice L29 (13) variety) by twice in Bandundu, that of local maize variety in Kasai Oriental also by twice, that of local beans variety in Kasai Occidental by about twice, that of cotton REBA variety in Province Oriental by 129 percent, that of local Peanuts variety in Katanga by 121 percent, and that of Potato Claudia variety in Bas-Congo by 55 percent.

Besides access to improved agricultural inputs, supporting services are crucial to ensure that yield will increase up to the technology frontier. For instance, the under and weakly coordinated provision of agricultural extension may explain the limited use of these high yielding technologies in spite of the evidence of their huge impact on productivity growth as shown in Tables 2 and 3. Instead, most farmers have resorted to traditional seeds with low potential for productivity growth (see Table 4). Except for a few crops whose yields grew on average at a rate greater than 5 percent between 1991 and 2006, the yield growth of most traditional crop varieties were either very low or negative.

TABLE 3.

Impact of the use of fertilizers on crop yield growth

Province	Crop Variety	Application			Average Yield	Yield Increase	
		N	P205	K20	Kg/ha	Kg/ha	%
Bandundu	Rice L29 (13)	0	0	0	1317		
		12	80	80	4110	2739	212
Bas-Congo	Potato Claudia	0	0	0	2715		
		115	70	0	4210	1495	55
Province Orientale	Cotton REBA	0	0	0	542		
		60	60	0	1240	698	129
Kasai Occidental	Local Beans	0	0	0	239		
		60	60	60	653	414	174
Kasai Oriental	Local Maize	0	0	0	1324		
		90	60	0	3866	2541	192
Katanga	Local Peanuts	0	0	0	720		
		20	45	0	1592	872	121

Source: 1999, 2000, 2008, and 2009 INERA Annual Reports

TABLE 4.

Average growth rate (1991-2006) of selected crops

Crop	Maize	Rice	Wheat	Cassava	Soybeans	Plantain	Banana
Average Growth Rate 1996-2006 (%)	1.0	-1.5	2.2	-1.9	6.5	-8.1	8.1
Crop	**Millet**	**Sorghum**	**Beans**	**Cowpea**	**Pea**	**Voandzou**	**Peanuts**
Average Growth Rate 1996-2006 (%)	8.4	8.1	-2.2	2.9	3.2	2.7	-2.3

Source: Constructed by the author from the 2009 Ministry of Agriculture and Rural Development's report.

4.3. Increasing demand of agricultural products

The demand of agricultural products increased steadily in the last decade and is expected to increase further in the future. Those increases are explained by the demographic pressures in several provinces of the country, the increasing revenues in the mining and construction sectors, and the increasing production of biofuels including ethanol. These increases in the demand of agricultural products as well as the increasing prices of these products offer opportunities for productivity growth given the incentives they create for large agro-firms as well as small farmers to increase their output in order to make profit. Currently, the agricultural sector is unable to reach the production levels required to meet the country demand of food products and of inputs used in the industrial sector. In the case of demand for food items, the local production covers only 75% of the demand so the country has to rely on imports to fill in the gaps. For the year 2010, for instance, the country imported about 200,000.00 tons of wheat, 200,000.00 tons of rice, 100,000.00 tons of maize, 120,000.00 of fish, 60,000.00 tons of vegetable oil, 60,000.00 tons of sugar, 40,000.00 tons of pig meat, 50,000.00 tons of poultry, and important quantities of other food products.

In addition to the local based incentives for productivity growth, the increases in the demand for food items in the newly emerging economies (China, India, Brazil, South Africa, and Russia) as well as the increasing prices of those food items in international markets provide additional incentives and opportunities for expanding agricultural production in DRC.

4.4. Rural population composition

The agricultural sector employs currently more than 70% of the active population in DRC. This agricultural population is mostly young and thus constitutes a dynamic labor force necessary for increasing agricultural productivity. According to results of the baseline survey of the Food Production, Processing, and Marketing (FPPM) project (a USAID funded project for reducing poverty and food insecurity in DRC) conducted by DAI (2012) in the provinces of Bas-Congo, Bandundu, and Kinshasa; 36 percent of households surveyed belonged to the population group

aged 18–39 years, 49 percent belonged to the population group aged 40–55 years, and 16 percent belonged to the population group aged 56 years and over.

5. Conclusion and policy recommendations

The challenges facing the DRC today consist of designing and implementing a long term agricultural and rural development strategy which will address and eliminate the constraints to productivity growth in order to reduce poverty and eliminate food insecurity. Such strategy should target mostly the traditional agriculture given its large impact on income growth and poverty reduction. In fact, this agricultural employs over 6 Million households and contributes more than 80% to agricultural output. Further, it is mostly concerned with food crops and to some extent with livestock and fishing; and less with industrial crops. However, it is practiced for subsistence reasons. Moreover, it resorts to rudimentary technologies consisting of the combination of the less performance-based inputs including elementary tools, unskilled labor (mostly family members), extensive cultivation area, non-improved planting materials (i.e., seeds, cuttings, and releases from degenerated varieties), no fertilizers, fungicides, and insecticides, and no mechanization.

Policy implications for eliminating or reducing those constraints preventing traditional agricultural development are as follows:

- There is a need for government to invest substantially and sustainably in rural infrastructure. It needs also to create incentives for the institutions of micro finance to amplify their activities in the rural area in order to collect small savings by rural households and support the demand of credit for investment in small agricultural activities;
- Government needs to promote rural entrepreneurship through the creation of the rural agricultural fund which will be used to cover financial risks of institutions involved in support to the development of small agricultural activities including investment credit, defaulting risks, harvest loss due to climate change, slump risks, and others;
- Government needs to improve the functioning of input markets. It should promote the private initiative in seed multiplication by facilitating the creation of the network of private seed multipliers and by reinforcing the capacity of peasant organizations, local NGO, and the church based organizations involved in seed multiplication. It needs also to redesign its seed certification policy in order to improve the seed system linkages to research institutions, private seed sector interests, SENASEM, organizations of farmers' supervision, and the regional seed systems. Finally, it will need to revise the laboratory techniques for certification and to strengthen the capacity of SENASEM technicians and other seed producers. Concerning the fertilizer markets, the government needs to promote entrepreneurship in fertilizer production (natural and chemical) given the country's important reserves of natural phosphate near Moanda (Bas-Congo), important reserves of organic fertilizers in grot-

toes in the Mont Hoyo (Nord-Kivu), and important reserves of methane gas in Kivu Lake.

- Government should also improve access to markets by rehabilitating the deteriorated feeder roads, railroads, and waterways. It should also create incentives for higher profit opportunities in transportation of agricultural products and in storage spaces including tax break and multi-risk insurance for transportation means and handling equipment. Finally, it should improve agricultural information system to guide production and marketing decisions more efficiently.
- Government will need to implement institutional reforms aimed at enabling the INERA to improve its research activities including the development and testing of new agricultural technologies. Such reforms will consist of rehabilitating INERA's experimental stations that are no longer operational, training or retraining scientists, technicians and other professionals, and of improving communication with regional research institutions for better access to foreign technology packages relevant to the DRC conditions and constraints. There will also be a need for implementing institutional reforms that will enable the SENAFIC to improve its capacity for testing fertilizers that are environment-friendly, testing the impact of fertilizer use on soil fertility in the long run, and promoting the use of local inputs for fertilizer production. Finally, the agricultural training institutions will need to go through the reforms too (curricula, institutional, and faculty) to enable them to adapt their programs to the sector needs. Based on capacity assessment, both long term and short term training programs will need to be implemented at those training institutions in partnership with the Ministry of Agriculture and Rural Development, Ministry of Education, and the Ministry of Scientific research.
- Finally, Government will need to promote the public-private partnership already operational in the delivery of agricultural services (including agricultural extension). The capacity of peasant organizations, church based organizations, and NGOs involved in the delivery of agricultural services should be strengthened for supporting small farmers in their farming activities, mobilizing financial resources from their members to ensure the delivery of the agricultural services including access to yield enhancing technologies, agricultural advisory, training, input access, agricultural in-formation system, training, marketing, and others.

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