

THE ROLE OF THE PRIVATE SECTOR, GOVERNMENT, AND CIVIL SOCIETY IN RURAL DEVELOPMENT – REALIZING ANGOLA’S IMMENSE POTENTIALS

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Executive Summary

Angola has unusual potential to drastically reduce poverty, add to GDP growth, and ensure broad geographic participation in rising incomes. The key to realizing that potential is rapid commercialization of smallholder agriculture, with an initial focus on the Planalto and maize.

This paper draws upon a now massive experience in achieving high growth rates in smallholder agriculture. Benefiting from that experience allows much higher growth rates and concurrently more rapid reduction in poverty than achieved in the past. One of the key lessons from the success stories is the specific roles of the private sector, government, and civil society and how deleterious it is when one of these agents steps into roles more properly filled by the others.

Although a complex story is charted in this paper and in the executive summary. The main thrusts are: (1) the primacy of the commercial smallholder sector in growth, efficiency, and poverty reduction; (2) the essential role of government in providing large investments in constantly improving physical infrastructure and in agricultural research and fertilizer promotion; (3) the essential role of the private sector in providing critical inputs, with emphasis on fertilizer and the importance of government in facilitating that role; and (4) the key role of civil society in organizing farmers to assist in input supply, financial functions, and marketing. Each of these functions is poorly provided initially in Angola and so requires a massive new effort on the part of each participant, and especially so for government.

Accelerated agricultural growth is the basic engine of poverty reduction. Agriculture drives poverty reduction even as it contributes to acceleration in overall growth. It is critical to the roles of the three partners in this process to understand how agriculture plays the dominant role in poverty reduction.

It is of course rapidly raising farm incomes that drive the process. Farmers who have enough land to provide more than half their income and employment are not poor. They reduce poverty by spending their increased income in the employment intensive, non-tradable, rural non-farm sector. Typically about half the rural population is comprised of farmers and half of rural non-farm people. Those who have tiny plots of land that do not provide an above poverty level of income and rely largely on rural non-farm employment for their income are counted as rural non-farm population. Those with large holdings, often absentee, do not have income expenditure patterns that foster employment intensive rural non-farm production. Their consumption patterns are capital and import intensive. It follows that agricultural investment must be concentrated in areas in which incomes will rise rapidly, that is with responsive physical resources, and on small farmers with adequate land to provide the incentive to increase production and to generate significant income increase.

There are four reasons why Angola has immense potential for rapid agricultural growth: (1) the bulk of the land is in small holdings that the world over have proved more productive and efficient than large holdings; (2) the land, at least in the Planalto, is highly productive, as evidenced by the high rural population densities already supported on that land which in turn is the best indicator of potential to benefit from modern biological based technology; (3) productivity is now low relative to its potential so rapid catch-up growth is possible; (4) the high rural population densities reduce the cost of infrastructure provision per family. The last three of these factors is particularly important in the Planalto, making that the high priority area for demonstrating striking success and thereby reinforcing the case for accelerated agricultural growth.

The size of the most productive and efficient farm is determined by the land/person ratio, which in turn determines important aspects of most efficient technology. In the Planalto that works out to about 10 hectares per farmer. That is large enough to make use of work stock efficient. Government has an important role to play in resettlement to see to it that a move towards this optimal size farm occurs.

For rapid increase in income, small farmers require substantial services from others. Small farmers the world over are the most efficient producers; but their small size makes it impossible for them to provide their own finance, technology, and input supply. In those few cases, mostly in Africa, in which large farmers prove more productive and efficient it is because the essential services for commercialization and technological development are not provided as public goods. Large farmers can provide themselves those services. The advantage is also tipped to large farmers, who are inefficient in managing labor, by institutional structures that force the bulk of the population onto subsistence size farmers, forcing down wage rates and making up for inefficiency in managing labor with low wages. South Africa and Zimbabwe have been classic cases of such behavior.

Agriculture differs from manufacturing in the requirements for rapid growth in three respects: (1) because of the land constraint rapid growth requires rapid technological change; (2) because of its dispersed production system physical infrastructure is essential

and expensive; and (3) because of its small size units it requires others to provide the basic services it requires for technology based commercialization. Of course small farmers have the efficiency to allow them to pay for those services.

Modern, commercial smallholder farming requires large quantities of purchased inputs and produces large quantities of output. Thus, the returns to physical infrastructure are immense. Provision of that physical infrastructure is the most important requirement of government. In Angola, the basic trunk systems need rehabilitation with first priorities to the areas that have the greatest agricultural development potential. That is in the Planalto – including rehabilitation of the railroad from the Coast to Huambo and the main roads from Luanda to Huambo. Nothing will work until that is done. A plan is also needed to place the bulk of farmers on an all weather roads and served by electricity. A high growth rate calls for such a plan to provide that coverage within a ten-year period. Food aid, initially used for relief needs to be turned immediately to covering the half of rural road costs comprised of labor and food consumption.

For agricultural output to grow rapidly requires large increases in crop yields. The necessary technology comes from national research systems that are fully integrated into the international private and public systems. Research is expensive and so narrow commodity priorities must be set so that sufficient financing is available for the key breakthroughs. For a long time to come the national research must be financed by the government, but in close cooperation with private and international systems. Major foreign technical assistance is essential to rapid progress in the technology system.

Improved technology raises yields and hence the requirement for plant food. Massive increases in commercial fertilizer use are essential. The soils of the Planalto are highly responsive and farmers in general know about fertilizer and demand it. It is only private businesses and to some extent farmers associations that can provide the fertilizer in the quantities needed. The rate of return is sufficiently high that in the long run no subsidies are needed, although in the short run some subsidy to tide over until the trunk infrastructure is improved might be useful. Government has an important job to do in promoting fertilizer use by farmers, in monitoring the system to be certain all parts are operating efficiently, and to ensure that no government regulations inhibit rapid expansion of private sector import and distribution of fertilizer. Civil Society can play an important role in developing farmers associations to increase efficiency in delivery of fertilizer, to expand knowledge, and possibly to provide competitive delivery systems.

In the longer run, other input supply systems will be needed as well. But, all must be in the private sector. Much bad experience shows how slowly agricultural growth proceeds when government tries to perform these tasks rather than encouraging the private sector.

Rural financial systems become increasingly necessary as small farmers commercialize. Their incomes will rise sufficiently rapidly that they need institutions to facilitate savings and moving those savings in open markets to their best uses. As demand for purchased inputs soar and as intermediate term investments in irrigation, livestock and horticulture develop finances need to be made available. There is a great dilemma as rapid expansion

is needed and that tends to bring indiscipline and poor repayment. Much has been learned about how to deal with this dilemma. That knowledge needs to be applied in Angola. Government has a key role in diagnosing the problem and monitoring the system. The private sector needs to be a major supplier of credit. In order to ensure a competitive system civil society has an important role to play in organizing farmers into associations that can be a competitive source of financial services.

Farmer's organizations are critical to several aspects of the commercialization of small farmers. Input supplies, extension of technical knowledge, and financial services have been mentioned. Horticultural production is an important source of increased income. Horticulture will increasingly be marketed through supermarkets that demand large volumes and high quality standardized produce. Farmers must be organized into larger groups to meet those requirements. Civil society has a critical role to play in these processes.

One of the most important lessons of the past few decades of successes in agricultural development is that a great success is needed early on. That requires concentrating on a geographic area with high potential. Success in such an area makes the point that agricultural growth can be accelerated and poverty rapidly reduced. Angola is fortunate that the Planalto represents the perfect area for such a success – excellent soils and climate, potential for irrigation, farmers with experience with fertilizer, and high population densities that hold down infrastructure costs per family. Within the Planalto, Huambo represents the extreme in favorable conditions. Thus, there is potential for a major breakthrough in a short time. Further, corn is a commodity with a clear comparative advantage and export potential, that is also an important subsistence crop initially and major technological breakthroughs are possible early on. Thus, there is also a clear commodity priority for driving towards major success. With an initial success, expansion can occur to other commercialization commodities, such as horticulture, perhaps wheat, and perhaps eventually high quality high elevation coffee.

Thus, we can summarize the respective roles of each sector.

Government must ensure that in resettlement the optimal size of farm of ten hectares becomes dominant; that the physical infrastructure, both trunk and farm to market roads are provided and constantly upgraded and that food aid is utilized to forward this effort; that a narrowly prioritized and focused research and a technically competent extension system are in place and constantly expanding and improving; that a plan and sequence of priorities is in place so that the operations each of the partners are monitored and steps taken to take care of shortcomings, with an initial emphasis on fertilizer and seed supplies systems; and that public information systems are established to assist farmers and private businesses in accomplishing their tasks. Most important and overlying each of the preceding, government must ensure a favorable macro policy environment for profitable smallholder agriculture. Critical to that is a sound fiscal policy that maintains low inflation rates and hence low interest rates. Equally important is a competitive foreign exchange rate and other macro policies encouraging to exports. These are an onerous set

of demands on government. Probably not all can be achieved at once and so priorities must be set with respect to the sequence in which they will be provided. Similarly efforts better achieved by others should not interfere with these critical functions of government.

The private sector must provide input supply, financial and marketing systems and gradually move into providing technical advice and adaptive research.

Civil society must play an important role in organizing farmers to facilitate input purchase and marketing, particularly to meet the rising standards of exports and supermarkets and to assist farmers in developing input supply and marketing and financial institutions that can add to the essential competitiveness of those markets.

Each of these tasks is demanding and allows little scope for taking on tasks outside of the priority areas. That is particularly important for government to understand since the world is replete with cases in which government's movement into areas in which it is not effective have resulted in complete failure of the agricultural growth system.

The preceding set of priorities is overwhelming in the short run. What is the first priority for each element of society? Government must ensure physical infrastructure, a few research priorities, and fertilizer demonstrations. Civil society must organize farmers to facilitate fertilizer delivery and seed delivery and prepare to meet a larger set of needs. The private sector must ensure fertilizer supplies and eventually seed supplies. All these activities must initially be concentrated in the Planalto and particularly on maize as the most receptive geographic region and commodity for making a big impact and on small farmers who have enough land to be full time at farming. Just that set of priorities will ensure rapid growth and poverty reduction for at least several years.

Angola has unusual potential to drastically reduce poverty, add to GDP growth, and ensure broad geographic participation in rising incomes. The key to this potential is rapid commercialization of smallholder agriculture. That will require partnership of the government, civil society, and the private sector. Each is complementary to the others with clear institutional comparative advantage. The overall effort will be greatly compromised if the government, or for that matter others, try to fill functions better filled by one of the other partners. That is partly because each has such demanding functions that it may easily be overwhelmed by just its core function. The greatest danger is that government will attempt to fill functions better filled by the private sector and then neglect critical areas that the private sector cannot fulfill.

This paper starts with a vision of objectives to be achieved, proceeds to draw a well-documented set of international lessons of special importance to Angola, and then summarizes the lessons in terms of the respective roles of the government, civil society and the private sector.

Introduction

Angola can achieve very high growth rates in agriculture, to the immense benefit of the overall growth rate, poverty reduction, and national unity. Why is the potential so high?

Of course, agriculture can grow rapidly simply recovering its past levels now that peace has returned. Rapid growth to recover old levels is of course highly desirable and will do much for the country, but I have in mind much more than that.

Moving rapidly to new heights is possible because the resource base is excellent. The bulk of the land is in small, family size holdings, proven the world over to be the most efficient and productive farming production system. The land resource in the part of the country where those farmers are concentrated is highly productive due to favorable climate and soils. Small farmers on productive resources are an unbeatable combination.

But, developing countries in general, and Angola specifically have the opportunity for catch-up growth. They can grow far faster than the developed countries of North America, Europe, and East Asia because of the opportunity for catch-up growth. Catch-up growth occurs because the lessons learned slowly by the early starters over a substantial period of time, with many errors along the way, can be quickly learned and applied by the late starters, with fewer errors. That is an immense advantage, but it must be availed of. India learned not only from North America and Europe, but also from Japan and then Taiwan. Angola now has the additional, more contemporary lessons from throughout Asia. Properly learned, applied, and especially adapted to the specific conditions of Angola growth can move at a pace unheard of in the past.

Of course, no one in India thought India was like Japan – the lessons had to be selected and modified, but the lessons were there. Thus, my primary function at this conference as an outsider is to bring those foreign lessons here for your consideration, discussion, and modification. The lessons I have selected are the ones for which the evidence in their support is so overwhelming from country after country, with widely differing conditions, that we can say they are axioms. There is no question about their relevance to Angola. There are lessons that are more specific and those I will not present. I do know something of Angola and so will try to select lessons that are most likely to be useful and I will make some small attempts at appropriate modification to suit Angola, although that task must necessarily fall largely on you.

I will also emphasize lessons in areas in which there is some indication that Angola is headed for making the same mistakes that have been so costly to rectify in other countries. Not uncommonly those mistakes were made knowing that they were not optimal but followed anyhow because of other objectives. I will emphasize those in which governments found the costs of those mistakes so enormous and so costly that they wished they had known ahead of time. Angola can now know ahead of time. But, first some comments on the objectives of agricultural growth. Those objectives set the frame for priorities and emphases and define the respective roles of government, civil society, and the private sector.

The Objectives of Agricultural Development

Rapid agricultural growth serves many objectives. I will dwell on only a few very important ones. Agricultural objectives derive from two characteristics of agriculture in low and middle-income countries.

As everywhere agriculture is geographically dispersed, covering the bulk of the country. Indeed a dispersed pattern of urbanization arises because of the influence of agriculture in the initial growth of urban centers. Without rapid agricultural growth urbanization tends to concentrate in a single capital and usually port city. There are economies for the export-oriented firms that locate there. But, the diseconomies of providing infrastructure and social services in huge metropolises at an early stage of economic development are immense. This point is dramatically illustrated throughout Africa, where agriculture has generally lagged and huge cities with massive slums and overpowering social problems are now the order of the day. A dispersed pattern of urbanization is far better. Because of the importance of agriculture and its association with urban centers in the colonial period, Angola starts with the core of such dispersion. Luanda is of course too large for this stage of development, but Huambo and many lesser cities are there and can be the centers of vigorous, dispersed future growth.

Agriculture also occupies and supports the bulk of the population. Even when an economy has developed sufficiently that three quarters of its national product is generated in large urban areas, the rural sector, supported by agriculture, will support well over half the population. That is because agriculture and the rural non-farm sector are labor intensive, compared to the capital intensity of urban-based industry.

All governments are concerned with the geographic spread of their influence and in the well being of the mass of people. Both those concerns take governments to a major emphasis on agriculture. Within this context of geographic diffusion and encompassing a high portion of the population, agriculture has a dominant role in poverty reduction.

Poverty Reduction

Understanding agriculture's dominant role in poverty reduction is not only important from the perspective of the importance of emphasizing agricultural growth but also to how agriculture grows and the respective roles of government, civil society, and the private sector in that growth.

Angola has a very high level of poverty by international standards. Sixty percent of its population falls under the very low internationally defined poverty line. As in all low and middle-income countries, the bulk of the poor are in rural areas. At the moment much of the poverty derives from the wartime dislocations. But, unless specific measures are taken for long-term agricultural growth that poverty will remain at very high levels.

Massive international evidence shows that in low and middle-income countries it is agricultural growth and only agricultural growth that reduces poverty. These studies include a very large set of studies carried on at the World Bank by Martin Ravallion and his colleagues, covering a wide set of Asian countries, a series of studies financed by USAID and carried out at Harvard University by Peter Timmer and his colleagues, studies from DIFD by Colin Thirtle, and a wide range of studies based on Indian data by Montek Ahluwalia, Dharm Narian, and John Mellor. These studies all show that rural growth greatly reduces poverty. Urban growth does so little or not at all. Indeed, rural growth reduces urban poverty even more than does urban growth. Agricultural growth reduces poverty and industrial growth does so little or not at all. The only exception to this poverty-reducing role of agriculture occurs when agricultural land is concentrated in the hands of large-scale owners, who are often absentee. It is increased incomes of small farmers that reduce poverty.

Of course, small farmers are in general not poor themselves. They have income from their labor and land. The poor are in the rural non-farm population. Agricultural growth raises incomes of small farmers who spend the bulk of that additional income in the non-farm sector. They add to their houses, buy furniture and local clothing and use a wide range of services. That increases employment and raises the real wage of the poor non-farm population. The key to poverty reduction is to raise incomes of small commercial farmers. Much of the remaining treatment in this paper will deal with lessons learned about how to raise incomes of small commercial farmers. Small commercial farmers are efficient, but require services from government, civil society, and the private sector. Putting these three key players together in the service of small commercializing farms is the key to poverty reduction.

However, before proceeding to that it is useful to see poverty reduction in term of the composition of employment and GDP in Angola. I have put together the following numbers from Angolan data sources with some extrapolation for missing data sets from international norms.

Table 1 provides a notional picture for Angola of the division of the labor force and GDP among sectors. The picture is for post recovery from the disruptions of war. That is it is assumed that the population to be resettled has been resettled and has reached a basic level of productivity that supports a normal sized rural non-farm population.

However, it is not assumed that the roughly one-quarter of the urban population that is now in excess (virtually unemployed) returns to the rural sector. If the wartime disruptions had not occurred that 10 percent of the total population would have remained in the rural areas, raising the rural percent to 70 percent. In fact, with rapid growth in agriculture and its massive employment multipliers to the rural non-farm sector much of that urban population might indeed shift to the prospering market towns of the Planalto and some even back to farming. But, that is not assumed in these numbers.

The 40 percent of GDP due to oil and diamonds is subtracted out, as representing an investment resource for other sectors rather than a directly productive resource. That is not to say they are unimportant –of course they are important, but the issue is how are the proceeds spent to bring about development. The GDP figures show the other sectors as a percent of total without oil and diamonds. That gives a more useful picture of the division of the rest of the economy. The issue then is how the oil and diamond resources will be invested in order to bring economic growth and development and along the way to involve the bulk of the population in the business of development. It should be noted that Indonesia made those investments in economic growth and Nigeria did not. The former experienced not only massive growth but also massive poverty reduction; the latter experienced little growth and substantial increasing poverty. The exposition that follows is more in line with the Indonesian experience than that of Nigeria. The Nigerian experience shows clearly how a country can be worse off as a result of large natural resource endowments, such as oil (Collier, World Bank.)

Table 1. Population/Labor Force and GDP Proportions (excluding oil and diamonds), Angola, Estimated, Post Recovery

Sector	Labor Force/Population Share	GDP Share (without oil and diamonds)
Rural	60	45
Agriculture	(30)	(25)
Rural Non-Farm	(30)	(20)
Urban	40	55
TOTAL	100	100

The following points are noteworthy in Table 1. (1) With normal expenditure patterns by small farmers, the rural non-farm sector provides as much employment as agriculture and 80 percent as much GDP – it is a large sector. (2.) Farmers have income from both labor and land and therefore have incomes at least one-quarter higher than those in the rural non-farm sector. It is the rural non-farm sector that encompasses the bulk of poverty not the farming sector.

We know from numerous studies of similar countries that farmers spend about 60 percent of additions to their income on labor-intensive rural goods and services and two-thirds of that on the rural non-farm sector. With an income multiplier of 2 (consistent with the expenditure pattern) that provides an initial rural non-farm sector with 20 percent of non-oil and diamonds GDP. With rapid agricultural growth the rural non-farm sector will grow substantially faster than agriculture (because of the rapid growth in consumption of rural non-farm goods and services with rising farm incomes.) The rural non-farm sector can be expected to grow to twice the size of the agricultural sector in terms of employment and somewhat larger in terms of share of GDP (see the data for Egypt in Mellor and Gavian 1998, Gavian et. al. 2001)

Keep in mind that in such a healthy rural economy consumption expenditure by small farmers has three times the rural employment impact of input and marketing expenditures. Thus, if small farmers can be made productive, the subject of the next sections, they have a far greater impact on growth in income and GDP and in poverty reduction than large farms.

The key to the growth and poverty reduction impact of small farmers is growth in their per capita income. Thus, growth rates substantially in excess of the population growth are essential to broad participation and poverty reduction. It follows that emphasis must be on areas of high growth potential. That will be reinforced by the high cost of the essential infrastructure of roads and related investments. That investment will be much lower per family and provide higher rates of return where highly productive agricultural resources provide high rural population densities.

Growth Rate of GDP

Of course, agriculture's role is dominant in its impact on poverty reduction. However, in a country like Angola in which agriculture is still substantial, at 25 percent of GDP (excluding oil and diamonds), and the rural non-farm sector, driven only by agricultural growth, is 20 percent of GDP, agriculture makes a difference to GDP. Simple arithmetic shows that with a rapid industrial growth rate of 8 percent and a 3 percent growth rate in agriculture with a negligible multiplier on the rural non-farm sector (because farm incomes are rising hardly at all) accounts for less than one-quarter of a slow GDP growth rate of less than 6 percent. But if the agricultural growth rate picks up to 5 percent, with a strong multiplier to the rural non-farm sector then agriculture and its multipliers account for nearly 40 percent of a rapid over 7 percent growth rate. In a low-income country, neglecting agriculture also has implications to the GDP growth rate.

National Unity

It is not for an outsider to make points about national unity. But, it is clear from Asian experience that when agriculture is neglected powerful divisive tendencies are exacerbated because of the regional importance of agriculture and association with differing cultural groups. Everyone has an interest in a cohesive Angola with broad participation in development.

Lesson 1: From International Experience: Small Commercial Farmers are More Productive and More Efficient Than Large Farmers

The preceding section explains why a commercial small farmer strategy is essential to rapid GDP growth and poverty decline. Here we treat two issues. How efficient are small farmers compared to large ones and what is the appropriate size of farm. It is the efficiency and potential for growth of small farmers that gives importance to the alliance of government, civil society and the private sector in growth. Large farmers largely can look after themselves and need little from government or civil society.

There is an immense literature that analyzes the relationship between size of farm and productivity. That literature always shows in a traditional agriculture that the smaller the farm the higher the land productivity. That is because labor is important in farming and it is difficult to manage in large numbers under the disbursed production conditions of agriculture. The small farmer managing himself is most productive. Small farmers, with their ample labor supplies, tend their fields and their animals carefully, thereby increasing land productivity and efficiency. Most improved technology is management intensive, so the small farmer also has an advantage in getting the most out of new agricultural technology. The land labor ratio on small farms tends to reflect the economy wide ratios. Whereas large farms because of the difficulty in managing labor substitute capital for labor and thus reflect low labor to land ratios.

However, as modernization occurs there may be a divergence in experience. In most of Asia the small farmer continued to be most productive. But, we find many situations in Africa where that is not the case. The explanation is simple. Small farmers are very efficient at farm production, but they cannot provide for themselves services that have large scale economies. In Asia, the private sector in coordination with governments has seen to it that research, education, credit, and purchased inputs were readily available to small farmers. With modernization, the small farmer is efficient if those services are provided. We will examine below the lessons about providing those services.

Unfortunately it is not uncommon in Africa for those services not to be provided to small farmers. The contrary experience in Africa is primarily due to the lack of the institutional structures for small farmers to participate in modern science based agriculture. Large farmers can provide their own adaptive research, access to knowledge and have ready access to capital markets. In Asia (and high income countries generally), those institutions are provided by an alert private sector responding to the commercial small farmer market with gaps filled by an alert government working with the private sector and by civil society..

In Africa, there has also been a tendency to specially favor large farms not only with services directed towards them, but also by artificially holding down wage rates of low income people. That was endemic in South Africa. But in Zimbabwe policies that offered little help to the small farmer sector in effect kept wage rates low for the large farms that used labor inefficiently. That was also the case in colonial Angola. Thus a massive social problem is often associated with a large farming structure under conditions of low cost labor. It must be emphasized that large-scale farms require measures to keep poverty levels high and hence wage rates low if they are to compete with small farms. Thus, it follows that a high growth strategy requires development of institutional structures that service a vigorous dynamic small farmer sector.

What is the right size of farm? The issue is the difficulty of managing large labor forces in agriculture. Thus, the right sizes farm is basically a function of the ratio of agricultural labor to land. In the United States a family size farm with only one hired

person encompasses hundreds, or even thousands of hectares. In Taiwan it encompasses one hectare.

A simple calculation suggests that in the Planalto the optimal size farm is about 10 hectares. That is very large by Asian standards, reflecting high land to labor ratios in Africa and especially Angola. On the one hand that is the size of farm that can be managed by a family size labor force with animal traction. It also fits the person land ratio of the Planalto.

Calculating the total population of the Planalto at a high estimate of 16 million (the current official figure is 12 millions), 6 persons per family, provides 2,700,000 households. Thirty percent of those as small commercial farmers (see table 1) provide 810,000 farm families, and 2/3rds of those in the Planalto provides 542,000. At 10 hectares each that comes to 5.4 million hectares. Allow one hectare each for the rest of the rural population (as subsistence base to complement off- farm employment), and 10 percent of the land in large holdings comes to a total of somewhat over 6 million hectares. That is within the usual range of figures for arable land in the Planalto. Of course these are very rough figures. Some farmers will manage less than 10 hectares very intensively and some more; all the rural non-farm population will not use land.

The point is not the precise division, but that most of the land is needed for small commercial farms. If the number of families is larger, then more land is needed or the average will be somewhat less than 10 hectares. In settlement programs it is important not to lock in inefficient smallholdings from the point of view of the small commercial farmer.

Is there value in large farms? If they exist in any case, as in Angola, advantage can be derived from large farms. They can pioneer on new crops and practices, thereby reducing the risk for small farms. They can serve as nuclei for bringing services to small farms. They can produce critical inputs such as seed that have major economies of scale. It is quite possible that with ten percent of the land in large farms, they could mostly be used effectively in the context of a small commercial farmer strategy. That will take some thought and a recognition that it is not the optimal pattern. It is recognition of an existing reality and making the best of it.

The conclusion is that there is ample scope for mapping out ten-hectare farms. However, there does not seem to be room for increasing the large farm sector much beyond the current ten percent. Land policy would seem to be at a reasonable balance but errors in policy could be damaging. In current settlement schemes it is important that current lack of work stock not result in establishing a pattern of far too small holdings. Current policy must be forward looking.

What does it take to make small commercial farms profitable. The list is relatively small, but each is critical. The lessons from the front runners in agricultural growth are clear.

Lesson Two: All-Weather Roads, Electricity, and Tele-communications **Are The First Essentials of High Agricultural Growth Rates**

High agricultural growth rates require technological innovation that greatly increase crop yields per hectare. High output drains nutrients from the soil at a high rate, requiring large-scale replenishment and hence high input levels. High output requires transport of output to urban markets. Agricultural growth at the required rate for rapid poverty reduction, in the short run, while overall incomes climb, requires faster growth in output than can be absorbed in domestic markets. Thus, agricultural exports will be important. The requirements for transport for inputs and output are massive.

In Brazil, road transport costs about \$0.02 per ton kilometer. At that rate, bringing a ton of fertilizer from the port to Huambo would cost about \$15. Currently it costs about \$0.12 per ton kilometer in Angola or \$90 per ton of fertilizer from the port to Huambo. Recent estimates place that cost at a virtually prohibitive \$140 per ton. The first requisite for a competitive agriculture in the Planalto is restoring the railroad from the coast to Huambo, then the basic grid of trunk highways from Luanda to Huambo and various intermediate points. That is a large-scale capital-intensive effort. It is the critical requirement for rural development, rapid agricultural growth, broad participation of the population in growth, and poverty reduction. The cost of postponing growth, because of poor infrastructure, is incalculable in growth, poverty reduction, and national unity.

But, the central grid is not enough. A full grid of feeder or farm to market roads is needed that connects virtually all villages to the basic central trunk grid and to the major urban centers.

What are the policy issues? First, each Province, and particularly very high potential Huambo, must generate a rural road plan that will provide virtually complete coverage in a ten-year period. Why ten years? As soon as the trunk system is rehabilitated, agricultural growth can occur rapidly for one or two years on villages close to the trunk system and those close to major cities or towns. Gradually adding ten percent of the area each year will allow maintenance of that high growth rate. In such a plan the sequence in which the work is done would be driven by the profitability it will bring to agricultural growth. Areas of highest potential first. More will be said on that below.

Far more important than the effect of roads on transport costs is the effect on the building of critical rural institutions. Rapid growth in the smallholder sector requires trained personnel at the village level for extension, rural finance and helping to organize farmers. Of course, the same is true of the social institutions for health and education. The trained personnel, in general will not live in areas lacking all weather roads. They will tend to live where transport is reliable and with other trained people – and they may not travel to the villages to which they are assigned except on an irregular basis. Farms cannot be modernized without all weather roads.

Lesson Three: Food Aid Can be A Tool of Development Rather than Retrogression if it is Used to Provide Rural Roads

There is an immense opportunity, not now being grasped, for food aid to play a major role in providing the rural road system. Of course, roads are more than food and labor, more than half more! So food aid is not enough to build a road, but it is close to half enough.

Typically labor would comprise 50 percent and the food consumed by that labor 40 percent of the total cost of a rural road (Mellor 2002). That labor will be comprised of very poor people. They will spend on the order of 80 percent of their income on food. Thus, food and labor are the critical costs of rural roads. Placing the required rural road grid will rapidly reduce poverty through employment, while the longer-term processes of agricultural growth reduce it in the long run. For roads to be effective it is essential that the other half (non-food and non-labor) of the costs be covered. That may require monetization, or cooperation with other financiers such as the World Bank.

Agricultural prices need to be carefully monitored. Because the road program is massive, the increased employment may place upward pressure on food prices. That will be deleterious to the poor who spend half to three quarters of their income on food. In the context of a massive rural public works program there will be scope for a substantial food aid program. However, food aid needs to be monitored for its downward pressure on food prices and disincentive effects. As will be noted in the section on science priorities, Angola has potential to return once again to being a net exporter of corn. That will require export parity prices – domestic prices lower than the international price by the amount of shipping and handling in the ports. Thus, price monitoring in the context of food aid and employment growth should be in terms of export parity prices. Critical is quickly getting food aid out of a dead end relief mode and into a growth mode by fostering rural road development (which does of course also fill the relief function.)

Lesson Four: Massive Quantities of Fertilizer are Essential to Rapid Agricultural Growth

The soils of the Planalto have been cropped heavily without replacing the large quantity of nutrients removed. New high yielding crop varieties greatly increase the crop yield and hence the extraction of nutrients. Thus, large dosages of fertilizer are essential to the high intensity agriculture that can bring prosperity to the Planalto and to the economy of Angola more generally. This is an endemic problem in Africa in which nearly every country has low income, low growth agriculture because of the nutrient depletion that has continued for decades. Angola has a huge advantage over most African countries in promoting fertilizer. Most Angolan farmers in the Planalto have a past experience with fertilizer use. They are ready to go when the transportation problems get solved. But, even in Angola a first-rate extension program for fertilizer management practices will speed the process and make it more efficient.

In Angola, fertilizer prices are high due to the deplorable state of the road and railroad infrastructure and there is not as yet a competitive system of fertilizer delivery nor a program of fertilizer demonstrations. When the Planalto moves to a high level of farm income and production, fertilizer annual use will exceed 300,000 tons of nutrients or over 600,000 tons of material. Even in 1992, only 24 thousand tons were used. That quantity is even lower at present. Of course, reaching that high level requires development of high yielding, fertilizer responsive crop varieties, massive on farm demonstrations and associated research on best fertilizer combinations and practices, an efficient, competitive private sector fertilizer distribution system, development of substantial export markets for corn, and meeting rapidly growing domestic and regional demand for vegetables and other high value crops.

Fertilizer supply is a prime example of the need for partnership between government, civil society, and the private sector. The lesson is everywhere clear that government provision of fertilizer does not work – fertilizer import, wholesale distribution and retail distribution must be in the hands of a vigorous private sector. At least initially that private sector will require government efforts to promote fertilizer use through research and extension services. Government also has an important place in monitoring fertilizer supplies and prices and diagnosing deficiencies and working with the private sector and civil society to rectify those deficiencies. (Perhaps eventually the private sector will provide some of those activities, but not at present in Angola.) Civil society as is discussed below has an immense task of organizing farmers to provide scale economies in marketing inputs as well as output and in organizing fertilizer demonstrations.

It may be tempting initially, when use is low, to institute government import and distribution and to subsidize fertilizer use. The huge quantities needed in the long run will certainly be beyond the government's capability to either finance or to manage. Constraints on finance for subsidies usually cause subsidies to be a cause of limiting supply. Government parastatals are virtually always inefficient and push up the price of fertilizer. Of course monopoly private importers are also inefficient and drive up prices. However, the expected volume is sufficient to attract a competitive private sector that will need to be efficient.

The following are required to realize the massive fertilizer use potential of the Planalto.

1. Restore the trunk road and rail system in the Planalto and install a complete grid of feeder roads.
2. Assist the private sector to become a large scale, efficient, competitive fertilizer supply system, by:
3. an explicit policy of no parastatal operations in the fertilizer sector, no taxes on fertilizer, no subsidized fertilizer (with the possible exception of below), no restrictions on entry into import and distribution
4. considering a transport subsidy while the trunk transport system is being rehabilitated. This would be on the order of \$100 per ton to end in three years when the trunk transport system is fully rehabilitated.

5. Providing market analyses of the scope for fertilizer use, and market information on supplies, and promulgating that to prospective private importers and distributors;
6. Promoting fertilizer use through an extensive system of on farm trials, and then demonstrations, with participation of farmers and fertilizer distributors. In the long run fertilizer distributors may provide promotional services but not in the short run. This is a major task for civil society. It will interact with government and the private sector.
7. Developing a first class agricultural research system, starting with corn and gradually expanding to a few other high fertilizer using crops such as potato, vegetables and wheat.
8. Urge the oil industry to undertake a study of the economics of a natural gas based nitrogen plant. A study of development of phosphate reserves and their use would also be useful.

Lesson Five: Agriculture Marches on Technology and Needs large Expenditures on Research –But Narrow Research Priorities are Essential

Rapid agricultural growth can only occur if scientific advances constantly increase yields per hectare and the efficiency of achieving constantly rising yields. Because new crop varieties and management practices are specific to highly variable national conditions, research must be done in country. Globalization requires that a country be at the forefront of knowledge if it is to compete. That is difficult to do initially because of the specialization required. Countries that are not at the forefront of science and technology gradually drop out of commercial agricultural production and regress to subsistence agriculture at lower and lower incomes. Poverty grows, food security declines, and famines become increasingly frequent. That has been the story of Africa relative to Asia – most dramatically in oil palm for which Africa was preeminent in research and production, but increasingly in coffee, cereals, and perhaps even cocoa.

In general, African agricultural research systems have been only modestly productive. Returns to research are high, but lower than in other major geographic areas. That is primarily because priorities are not set and research resources are spread too thinly over a multitude of crops and practices. Thus, Angola must set a small number of research priorities and then pursue them vigorously.

Corn is the dominant crop in Angola generally and in the Planalto in particular. It is several times the importance in both area and value of production of the next most important crop (World Bank 1995.) It is a subsistence crop and was also exported at one time. It appears that at present the cost of production is only modestly higher than in South Africa. It would be useful to have a study of the domestic resource cost of corn production.

Until such a study is available, it appears to have a strong comparative advantage and that assumption should be acted upon. Emphasis on corn has the immense advantage of

starting with a subsistence crop that virtually all farmers must grow and for which efficiency increases are desirable for family food security and then build that into a commercial crop providing substantial cash income. Some farmers may then proceed to the next stage of income increase –specializing in horticulture and livestock for a further boost in income. Corn also makes more sense in Angola where farms should be quite large by low income country standards. A ten hectare farm with the maximum area in high yield corn that good crop rotation would allow would provide a substantial income, far above subsistence.

Thus, the first research effort should be to build a world-class capability in corn at IIA in Huambo. To do so the international agricultural research center that specializes in corn (CYMMT) should be asked to provide a major technical assistance. That would commence with sharing genetic materiel, providing continuing technical assistance, training key Angolan staff, sending a small number of staff for higher education.. The work should carry through to producing foundation seed and developing interactions with private sector producers of seed for sale to farmers. That might well include apex farmer’s organizations and large-scale farmers. On the government side, it is essential to provide fully adequate finance for personnel and operating costs

AAI needs further to develop an extensive system of on farm trials for fertilizer and then link those trials with demonstrations. Again the first emphasis should be on corn, but then fertilizer work could quickly expand to other responsive crops. Interaction with farmer’s organizations would be critical to success. Concurrently AAI should begin development of a small very high quality extension service, again commencing with corn and expanding to fertilizer more generally. This service should link with farmer’s organizations.

Research epitomizes the complementary roles of government, civil society and the private sector. The international private sector does important research on corn varieties, the international public sector (the CGIAR and CYMMT) works closely with the private sector to maximize benefits to small farmers in low and middle income countries. A national government agency is essential to tie the international private and public sectors to the Angolan farmer. Government needs to build extension from the research base. However, it needs to connect with private farmers.

The proliferation of NGO’s in Angola, Civil Society in this context, is playing major role in organizing farmers into efficient groups that can greatly increase efficiency of seed and fertilizer distribution. Much of that effort is in connection with relief, still vital need, but it can be turned to preparing for commercialization of small farmers with immense benefit to poverty reduction, food security and development. Those farmers’ organizations can also play a leading role in pressuring local government for essential physical infrastructure and in marketing the output. Fertilizer is always an essential complement to new crop varieties, especially in the case of corn. As discussed above the private sector must provide that input and in doing so it must interact with civil society organizing farms into efficient units for receiving inputs and with the

government research programs. That relationship will be dynamic. Overtime the private sector may take up a portion of the research and extension tasks.

Does the emphasize on corn as a first priority mean that other crops are neglected. Of course not. Civil Society organizations will respond to farmer's needs, which certainly include improved seed and farming practices on other crops in the rotation. Increased fertilizer availability will spill over to other crops. The point here is to build a world class capability in something, in this case corn is suggested, and as success is achieved to include other commodities, particularly wheat, vegetables, livestock and livestock feed, and even some tropical export commodities.

Lesson Six: The Role of Agricultural Credit – Learning from Mistakes

Wherever agriculture has grown rapidly with increasing commercialization of small farms, institutional forms of agricultural credit have grown rapidly. Credit requirements grow so rapidly that access to national and even international markets is essential. In addition, as farm incomes rise farmers tend to save and need access to national financial markets for effective use of those savings. The lesson of the need for rapid growth in institutional credit is clear. How this should be done is not so clear.

In Asia, rural financial markets were developed very rapidly. As a result of that rapid growth discipline was lost and repayment rates declined drastically. Many financial institutions became insolvent. Thus, there is not a clear lesson as to how to expand rural financial markets rapidly and to keep a high level of discipline in management and repayment. Some subsidiary lessons are clear however.

Convenience is important to rural borrowers, competition is necessary to keep costs down, and farmers borrowing are highly responsive to interest rates. These tend to be conflicting goals. Part of the answer is to have many branches of lending institutions from different types of institutions, and for each branch to offer a full range of services including lending, receiving deposits so as to spread the overheads and keep down costs. Civil Society can play an important role in this context in organizing farmers into groups that can provide an alternative financial system in competition with private banks, and other institutions.

Lesson Seven: A Lesson Not Yet Learned: Farmers Organization

Small farmers have immense advantage over large farms in efficient production. They are at a major disadvantage in accessing critical services that have scale economies such as input distribution, marketing, and finance. The best way to deal with this problem is for farmers to organize into farmers associations. Those associations can then provide substantial markets for inputs, can ensure quantity and quality requirements for marketing, and guarantees for loans.

In the reconstruction process, PVO's have been playing a major role in organizing farmers. Those organizations need to be turned to the requirements of high output high intensity agriculture. Ideally those organizations can be pyramided up into apex organizations that can compete in input supply and marketing. The more such competition the better agriculture will work.

As the reconstruction process concludes attention must be given to how these organizational activities will be continued and further expanded and how they will relate to both the public and private sectors.

Lesson Eight: Geographic Priority

One of the most striking lessons from development experience is that a major success in agricultural growth pays immense dividends in raising spirits of agriculturalists and convincing others that are important to provide resources for agricultural growth so that it can indeed play a major role in the economy. That is the real story of the Green Revolution in, for example, India and Indonesia.

In India in the 1960's, the Punjab, in the north west of the country had much of the institutional infrastructure for rapid agricultural growth but lacked the improved technology. When the breakthrough in wheat and rice varieties came they spread very rapidly in the Punjab with massive increases in production. All of India, from politicians to scientists to the common person suddenly realized that smallholder agriculture could be modern, progressive and contribute to the countries development. That galvanized the research system and the rest of the institutional requirements for rapid agricultural growth. India, and likewise for most of Asia, suddenly went from a stagnant agriculture with little support for the sector, to a highly dynamic one with a lot of support.

In the case of Indonesia, the breakthrough was in rice – which dominated Java, the most densely populated part of Indonesia. Rice production suddenly swung from less than 2 percent growth to 8 percent growth. The country became self sufficient in rice, poverty dropped miraculously, and again the whole country suddenly realized what agriculture could do.

The potential for such a breakthrough in Angola lies in the Planalto. The Planalto is of course an agro-ecological zone that does not follow political boundaries. It is basically the large, high population density, good soil and climate highland region. That is the area with the greatest potential for dynamic science_based smallholder agriculture. The high population densities supported by agriculture attest to its innately productive conditions. In general, areas of already high productivity tend to respond best to modern agricultural science. They are also the areas of lowest cost infrastructure per family because of the high population densities. Most important these are the areas that can demonstrate success thereby reinforcing the case for agriculture led strategy.

Angola has an ideal situation for demonstrating the massive impact rapid agricultural growth can have on overall growth and particularly in poverty reduction. The Planalto has the natural resources that will respond to modern biological technology. Within the Planalto, Huambo has the highest rural population densities, reflecting the traditionally most productive area in the Planalto. That is the place for the initial demonstration of what can be done. The presence of a major city with its large demand for high intensity crops such as vegetables and for livestock products reinforces that situation. The presence of a major agricultural research station in Huambo further reinforces the case. Once the Planalto high agricultural growth rate is well underway it will be reasonable to expand into other geographic areas.

Over 40 percent of the total population and two-thirds of the rural population of Angola are in the Planalto. At present the bulk of those people are below the poverty line and in turn the bulk of the people below the poverty line are in the Planalto. The Planalto is a high elevation area with soils that are often depleted of nutrients, but are highly responsive to fertilizer and high yielding crop varieties. The climate is temperate with ample rainfall for one or more crops and a future potential for substantial irrigation. As a result of the favorable agriculture conditions the rural population density is high and a substantial urban population has been supported by expenditure of agricultural incomes. The high population density leads to low cost of physical infrastructure per family.

Perhaps ten percent of the land is in large holdings of over 100 hectares. Although large holdings are less productive than small farms if the latter have good support services, a small number of them may serve a useful purpose as specialized seed producers or even to take the risk of first use of new technologies. Ten percent of the land in such holdings is far more than is necessary for these potentially useful functions but would not be a major drag on the growth process. Thus, as long as the area in large farms does not expand, the landholding structure is favorable for high growth rates and rapid poverty reduction.

At present, a high proportion of the rural population is settled on farms of two hectares or less. They currently lack animal traction and are even short of basic hand tools, and lack critical inputs such as fertilizer. Thus, they have low yields per hectare and cannot manage more than a hectare or two. The result is a level of living close to or even below basic subsistence with a 60 to 70 percent of rural people with incomes below the basic poverty line (European Commission 2001). Such farmers obviously are not a source of dynamic stimulation of the rural non-farm sector. However, many of those farmers have experience with modern inputs. The need is rapid development of the private and public institutions required to make smallholder agriculture highly productive. In that context the bulk of the land must be farmed in the 10 hectare or so units that is the optimal size under the economic conditions of the next several decades.

Thus, a growth and poverty reduction strategy would give a priority to the Planalto, and within that to Huambo, the most productive, highest population density Province within the Planalto. That priority will provide the highest return to rural development

resources, the largest impact on poverty reduction, and the most dramatic demonstration of what modernization of small farms can do for growth and poverty reduction.

Of course governments cannot neglect any area of the country so efforts will be made other than the Planalto. The point here is that the highest returns, which can demonstrate success and help finance other areas will come where rural populations densities are the highest and the resources most productive. As major efforts branch out from the Planalto priority should be given to other areas with relatively high rural population densities and favorable resource bases.

Lesson Nine: Government Requires Vision, a Strategy, and a Few Priorities And a Basis for Improving Policy

Most contemporary low and middle-income countries have political systems that are strongly urban biased. Thus, the political system is not likely to come up with the needed vision strategy and priorities for agricultural development. Reinforcing that tendency is the fact that modern smallholder commercial agriculture is complex in the requirements it places on government and the private sector. The demands are greater than the resources and the capacity to administer them. Hence, all success stories in agricultural growth have had a clear set of priorities.

Rapid growth in farm production and incomes presents a constantly changing set of policy issues. The government needs a capacity for diagnosing those needs, ensuring provision of high quality analysis, and means of monitoring implementation of policy recommendations. The following need immediate attention.

Develop a long run strategy for rapid growth in agricultural income and production with consequent large multipliers to the rural non-farm sector. The strategy should focus on commercializing and intensifying smallholder agriculture. It must set only a few short-term priorities and then state the sequence of later actions. It should have a monitoring and evaluation capability to ensure that the plan is kept up to date in the face of changing conditions and is progressing adequately to meet growth and poverty reduction targets. Such a plan is most successful if it is developed in a participatory manner with open discussion and active participation of farmer's organizations, private sector business people, the banking sector, and PVO's.

Conclusion

The Necessity of Government/Private/Civil Society Complementarity With Clear Division of Responsibility and Authority

Rapid increase in incomes of small farmers requires commercialization – they buy and sell far more than previously. In agriculture, far more than industry, rising incomes require technological change. Yield increasing varieties in agriculture produce far more, but require large quantities of plant food (fertilizer), other inputs, and consequently

large flows of credit, and more complex marketing services. These services are useless if not provided in the right quality, quantity and most important on time. Experience now shows clearly that those services can only be provided on the massive scale required by a competitive private sector.

Most Asian countries experimented with public sector distribution of basic agricultural inputs, including fertilizer. Although some succeeded in getting the supply chains started none were able to meet the huge demands that were quickly forthcoming. In fertilizer, and even more in seed, government agencies ended up restricting the supply. In the case of Angola there is a massive market for fertilizer that will grow very rapidly. Entrance by the government will ensure that that market grows slowly and that agricultural growth never takes off. Thus it is essential that the government make it absolutely clear that it will not be engaging in fertilizer distribution, credit distribution, seed multiplication and distribution and other areas critical to rapid growth in agriculture. With such reassurance the private sector will enter and expand rapidly.

The government of course has a major and critical role in rapid commercialization of small holder agriculture. It must have a strategy. It must analyze and ensure that all parts of the system are operating – often having to meet with private sector operatives to see that critical bottlenecks are filled. It has an immense task in developing information systems, monitoring supplies and prices to ensure effective and competitive operation of markets. It must play a direct role in agriculture research, provision of foundation seed, and the highest level most technical parts of the extension system. Most important it must ensure that expansion of physical infrastructure is proceeding rapidly at the national and local levels. This issue of the proper role of government is perhaps the most important lesson for development experience.

The Government's critical role can be summarized as follows:

First, the government must have a strategy and set of priorities and then monitor to see how those priorities are going. Fertilizer will always be a high priority. The private sector may lag in expanding supplies. The issue is not displacing the private sector, but why and what needs to be done.

Second, the government needs to monitor fertilizer flows to farmers, from imports to final distribution through spot surveys to know at what rate fertilizer use is growing, and most important what problems are being encountered so that remedial action can be taken. Prices should be monitored to diagnose non- competitive behavior and other bottlenecks. Lack of competition is usually associated with very poor infrastructure and to lack of promotion of fertilizer through effective extension programs. Those two activities expand the market and bring in competition.

Third, in keeping with the preceding the Government should see that adequate statistics are published to inform the trade. In the longer run a strong private fertilizer association may develop and take over many of these activities, but that is not likely to occur at the beginning of the process. In marketing the government needs to see that studies are

done of market opportunities and make these available to the private sector. It is also important to monitor how many private firms are operating to ensure a competitive situation and use market information systems to bring up the number of competitors. The whole area of setting grades and standards is important and assists the private sector. Throughout of course it is essential that the government monitor itself as well to be sure it is assisting the private sector rather than inhibiting it.

A vigorous, competitive private sector is essential to rapid growth in agricultural output and incomes. The private sector is rarely competitive when road infrastructure is poor. Thus, improvement of that infrastructure is essential. The private sector has proven itself, in Africa as well as Asia, ready to invest large sums in input supply and marketing and processing activities. They need certainty that government will not interfere in pricing and access. Where parastatals have been started it has proven very difficult to remove them. Better not start.

The most important area for private sector effort is in fertilizer supply and distribution. However, the seed sector will come up quickly as a private sector area. In the near future fruit and vegetable and livestock marketing will become important. That will be particularly true as super market chains begin to expand rapidly throughout Africa. These private sector activities will benefit from strong farmers organizations.

Finally, the critical importance of organizing small farmers must be recognized and the role of civil society in that complex process. Although supermarkets have not been noted in this paper, they are a reality. They require purchase in large volumes of high quality products. Small farmers will miss out and supermarkets will import rather than buy domestically if small farmers are not organized. The role for civil society will therefore increase greatly overtime.

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