

# Core requirements for rapid agricultural growth and poverty reduction in Sub-Saharan Africa<sup>1</sup>

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## 1. Introduction

Sub-Saharan African countries, with their initially large agricultural sectors, reduce poverty and urbanise most rapidly and efficiently when they achieve rapid agricultural growth.<sup>2</sup> The faster agriculture grows, the faster its relative importance declines. The first sections of this paper briefly review the relationship between agricultural growth on the one hand, and poverty reduction and urbanisation on the other. This is followed by an analysis of the core requirements for achieving rapid agricultural growth. The analysis is clear that public sector investment and institutions are the prime drivers of rapid agricultural growth and its favourable impact on overall growth and poverty reduction. Public sector support drives growth in the private sector-dominated agricultural sector.

The core requirements for rapid agricultural growth and poverty reduction are: 1. Leadership from the chief of state; 2. A plan and its means of implementation; 3. Large-scale rural infrastructure investment; two ministry of agriculture functions, namely 4. Research and 5. Extension; 6. Large-scale private-sector provision of inputs and marketing of outputs; and 7. Implementation institutions at the local level.

## 2. Rapid agricultural growth and poverty reduction

Rapid agricultural growth reduces poverty by increasing employment. In a large part of the rural and urban poor, this large-scale increased employment provides increased income and hence poverty reduction.

Throughout this paper, a 6% agricultural growth rate is considered as rapid agricultural growth, and a feasible target. That is the figure in a widely cited, large-scale, African Union study (Comprehensive Africa Agriculture Development Programme, CAADP). Ethiopia exceeded this growth rate throughout the current period dating back to 1993. Rwanda has also exceeded this target for a significant period.

The relationship between rapid agricultural growth and employment in the various economic subsectors is illustrated with Ethiopian data, standardised to a 6% agricultural growth rate (Table 1). The first two columns state the base conditions. Rural households comprise 80% of total households and 58% of total GDP. The rural sector is large, as is typical for Sub-Saharan Africa. Over half of rural households are rural non-farm households. Urban households comprise 20% of total households and 42% of GDP.

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<sup>2</sup> The term Sub-Saharan Africa as used here excludes the highly developed Republic of South Africa.

**Table 1: Sectoral employment and income growth rates at 6.0% agricultural growth rate, Ethiopia**

Sector	Base employment %	Base GDP %	Growth GDP %	Employment elasticity	Employment growth %	Incremental employment %	Incremental GDP %
Small commercial	37	30	6	0.3	1.8	18	28
Rural non-farm	43	24	5.7	0.9	5.1	60	22
Large commercial	< 1	4	6	0.3	1.8	< 1	4
Rural total	80	80	5.5	0.6	3.6	78	54
Urban total	20	20	8	0.5	4.0	22	46
Total/average	100	100	6.4	0.6	3.7	100	100

Source: Mellor (2017)

The 6% growth rate assumed for the agricultural sector stimulates a 5.7% growth rate in the rural nonfarm sector and a 5.5% growth rate in rural household GDP. With an 8% growth rate assumed for the urban sector overall, growth in GDP is 6.4%.

The employment growth rate is only 1.8% for the small commercial farmers, but a rapid 5.1% rate for farmer-driven rural non-farm households. The source of income for the rural non-farm households is expenditure by small commercial farmers. That is the driver of poverty reduction. The shares of overall employment growth from these assumptions is 18% in small commercial farming households, 60% in rural non-farm households and 22% in urban households.

Compared to a 3% agricultural growth rate (taken as the ‘natural growth rate, without government growth policy’), fast growth (6%) provides a 68% faster growth rate in employment (3.7% compared to 2.2%.) The fast growth figure is well above the population growth rate. The low growth figure is well under it.

### 3. Agriculture and urbanisation

Rural non-farm households increasingly live in market towns. In Ethiopian data they are counted as rural and not as urban households. This is sensible, since they are economically driven by small commercial farm expenditure. As they grow they increasingly acquire an economic base from agriculture and become more fully urban. Accelerated agricultural growth stimulates a geographically dispersed pattern of accelerated urbanisation.

Again, illustrating using Ethiopian data (Mellor 2017), agricultural growth of 6% results in rural non-farm growth providing 60% additional employment, which is about three times that compared to the 22% for urban growth.

### 4. Core requirements for rapid agricultural growth

#### 4.1 Leadership from the chief of state

As will be clear throughout this paper, rapid agricultural growth is implemented by the private sector, but driven by public sector investments and policies. Many ministries, as well non-governmental institutions, are involved, and so the chief minister must provide the leadership. That is justified by the large economy-wide benefits of accelerated agricultural growth.

## **4.2 A plan**

Given the complexity of rapid agricultural growth, there must be an explicit plan, delineating the components of that growth, with emphasis on public sector requirements and how they are to be implemented. Agricultural conditions vary greatly over small regions, and so the details of one plan will not fit all of Africa.

The basis for national plans is provided by the African Union-sponsored large-scale effort – the Comprehensive Africa Agriculture Development Programme (CAADP). The successful national plans, e.g. those of Ethiopia and Rwanda, took CAADP as the model and then modified it and expanded it to fit specific national and sub-national conditions.

## **4.3 Public sector investment and expenditure**

The rate of agricultural growth is determined by public sector investment and expenditure. The public sector determines if agriculture will grow rapidly or not. Many branches of government play an important role – not just the Ministry of Agriculture. Therefore, the chief executive (president) must provide explicit leadership for accelerated agriculture growth, mobilising all the relevant public sector institutions. Of course, the benefits are economy wide, further justifying the highest level of support.

## **4.4 Rural infrastructure – roads and information**

Improved technology cannot spread without a complex system of all-weather rural roads and information infrastructure. This is the most expensive and most vital element of accelerated agricultural growth. Of course, this infrastructure will also serve other critical roles – e.g. broad participation in growth, the educational system and women's empowerment. Thus, its cost is spread over much more than agriculture.

Countries that ignore rural infrastructure in effect leave the bulk of their population out of the growth and development process. They are oriented to the small urban sector, and ignore the rural sector – partly in ignorance of the large role it plays. It is up to academics to explain this larger role of agriculture, which affects the urban sector in a substantial manner. Bear in mind the truism that the faster agriculture grows, the faster its relative importance declines.

## **4.5 Ministries of agriculture**

Ministries of agriculture have a broad set of functions that facilitate agricultural growth. But the core drivers of growth are research and extension of the research results to small commercial farmers. The first call on the ministry of agriculture's budget must be the substantial, adequate financing of these two elements.

Accelerated growth in agriculture requires increased productivity. Yields per acre must rise. The reason for this is because agriculture depends substantially on land as an input, and the land area is fixed – normally with little scope for increasing the land input for agriculture. Increased yields per acre must be led by from technological change, which in turn is the product of biological science-based research and the technically sound extension that moves it into farm practice.

In practice, the bulk of agricultural research and extension is provided by the public sector. How serious governments are about accelerated agricultural growth is best measured by the level of support for agriculture, and specifically agricultural research and its associated agricultural extension programmes.

In a carefully directed research effort, CAADP estimated that serious attention to agriculture requires in the order of 10% of public expenditure directed explicitly to agriculture. Research and its extension must be the core of that expenditure.

#### **4.6 Research**

The basis for accelerated agricultural growth is research. Agriculture is characterised by widely varying physical conditions to which the research system must adapt. Research results must be specific to narrowly defined geographical areas. This means that a large country has little advantage over small countries on the level of research expenditure required. It must cover all the variable conditions.

The above will require a central station and many regional stations. Small countries cannot rely significantly on spill-over effects from large neighbouring countries. All these requirements describe an expensive system. Commitment to accelerated agricultural growth requires commitment to a large, geographically and subject matter-diverse system. And, as growth accelerates, the requirements for sustained growth increase and the research extension system must expand apace.

A major side benefit of the required large research system is the importance of the research/extension staff in understanding and lobbying for public action. A large, well-staffed research extension system becomes the major lobbying force for expenditure on and hence growth of the agricultural sector.

Normally, research has two institutional foci – a substantial input from institutions of higher education, and direct action in government programmes for specific geographic areas. Coordinating the two has efficiency advantages.

Effective, practical research requires a full set of research institutions – from abstract theory-based institutions to highly applied institutions. Each reinforces the other.

#### **4.7 Extension**

Extension grows naturally out of the research system. Ideally, there should be a continuum of personnel, from the more abstract aspects of research and the highly applied to outreach or extension efforts. As a continuum, research and extension are closely integrated. These could be housed within subject matter departments, or in a parallel extension institution to the research institution.

A private sector extension system may develop – for example in seed companies. They provide a useful supplement to, but not a substitute for, the public sector effort.

#### **4.8 Private sector input and output marketing**

For several decades, rapid agricultural growth has been characterised as a seed and fertiliser revolution. Both grow rapidly from a low base to dominate the agricultural sector and its growth.

The seed system grows out of the public sector crop-research system, and hence there must be an explicit effort to privatise the seed system. Failure to do so will limit its growth due to the inadequacy of public sector resources for the immense task of a fully expanded system. Failure to privatise will lock in a too small public sector. Because of the large technical component to the sector, privatisation will require large-scale training programmes. The Gates Foundation has played an important role in developing essential Africa-wide training programmes as a basis for the required large-scale privatisation of national systems. Government oversight is important in rapid privatisation.

Government also has an important oversight role with respect to the growth of private sector fertiliser marketing on a large, nationwide scale. It may play a continuing role in the import of fertiliser – ensuring a growing supply-side push for the growth of the sector.

The important role of government in the rapid growth of the private sector may make government domination attractive. The result will constrain the growth of the sector, and hence restrain agricultural growth – altogether a bad outcome.

#### **4.9 Local-level implementation institutions**

Agricultural conditions vary greatly over relatively small areas. This requires strong local governments that have well-staffed institutions focused on ensuring that research output is adapted to local conditions. The staff of national-level institutions must integrate and often must make up for deficiencies in these local institutions.

#### **5. Why is agricultural modernisation not proceeding more broadly?**

Only a few Sub-Saharan African countries, specifically Ethiopia, to some extent Rwanda, and for brief periods Ghana and Angola, have succeeded in broad-based agricultural growth. Sub-Saharan Africa is notable for the absence of that growth. Why? And how will that change?

The simple answer is that African countries tend to have leadership that rises from the urban sector and focuses on that sector. Its political base is not in the rural areas. Sub-Saharan African countries typically have urban-based political systems. The other side of that coin is that the small commercial farmers, the economic backbone of rural areas, are not organised into political bodies.

Ethiopia stands out because the leadership of the dominant party (for many of the formative years, Prime Minister Meles) spent years in rural-based guerrilla activity requiring the support of the rural leadership (the small commercial farmers). That led to an understanding that supporting that rural leadership could provide a major source of support and stability to the national government. Prime Minister Meles thus made policies supportive of rapid agricultural growth central to the broader policy process. This continued beyond his death.

Ethiopia exemplifies each of the points made in the foregoing exposition. Prime Minister Meles stated clearly in numerous public fora the importance he attached to agriculture and the rural sector. That was also true of the number one economic advisor to the President. There was never any doubt as to the strength of the commitment. This greatly strengthened the hand of the Minister of Agriculture, and the result was an agricultural growth rate of well above 6% from 1993 on.

Although direct Ethiopian public expenditure in agriculture fell somewhat short of the 10% CAADP target (a target also embraced in the Ethiopian planning documents), it was always clear that agriculture had a substantial priority in obtaining the funds deemed necessary to succeed. Agriculture was certainly not starved of funds.

Agricultural research in Ethiopia has been staffed and funded at a level that makes it the premier agricultural research institution in Sub-Saharan Africa. The system has turned out a steady stream of new varieties and practices that have been the backbone of the rapid agricultural growth. The most recent is a high-yielding variety of teff that has spread rapidly, along with a major impact.

Ethiopia also has a fully integrated (with research and farmers) extension system. Extension workers are fully integrated with research and farmers. Extension workers have organised farm groups with

which they became fully integrated. As a result, a steady stream of research results were implemented, providing the growth in yields that continues as central to the high growth rate.

There have been other success stories in Africa. Rwanda is very much in the pattern of Ethiopia and based on CAADP. The Chief of State of Rwanda has consistently spoken of the importance of agriculture and supported the agricultural planning and implementation process. As for Ethiopia, that process is soundly grounded in CAADP. The present, stable government in Rwanda has not been in power for as long a period as is the case for Ethiopia, and hence the record is shorter, but the stage is set for continuous rapid growth.

Ghana exemplifies a shorter and geographically more constrained success. The tropical forest area had a ten-year period of rapid growth emphasising tree crops and the export sector. It was a solid period of success based on a national commitment, but did not draw as fully as the other cases on CAADP and our now substantial knowledge of the conditions for success.

For the majority of contemporary African countries, the academic community will have to develop the arguments, as in this paper, and present them to the political leadership. The basis is here for doing that.

Awareness of the need for rapid agricultural growth is spreading to other countries. There are signs that a substantial number of Sub-Saharan African countries are now considering an emphasis on agriculture. The time may be ripe for broad application of the large body of knowledge we now have about how to do it. The basis is in the detailed plan of action in CAADP, and its highly successful and now fully proven favourable impact on growth and poverty reduction.

First, however, must come an explicit commitment to agricultural growth from the heads of state. They must understand the highly favourable impact of agriculture on urbanisation, income growth and poverty reduction. The research community is now also prepared to provide that understanding as the basis for the large resource requirements for obtaining the large economy-wide benefits.

## **6. Future needs**

Only a small fraction of African countries are on the road to rapid agricultural growth and the consequent favourable effects on overall growth and poverty reduction. Two aspects of accelerated agricultural growth deserve emphasis – presumably by the African Union.

The first is the fact that accelerated agricultural growth accelerates overall growth, accelerates the growth of the urban sector, and speeds poverty reduction. Accelerated agricultural growth is the fast route to economic transformation.

Second, while details differ from country to country, the broad outlines of how to achieve accelerated agricultural growth are known, e.g. in CAADP, as well as in my books, and are ready to be implemented.

## **Reference**

Mellor JW, 2017. Agricultural development and economic transformation: Promoting growth with poverty reduction. Cham, Switzerland: Palgrave McMillan.