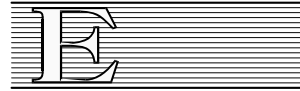




**UNITED NATIONS  
ECONOMIC AND SOCIAL COUNCIL**



**Distr.: General**  
E/ECA/ACSD/5/7  
10 October 2007  
**ORIGINAL: ENGLISH**

---

**ECONOMIC COMMISSION FOR AFRICA**

**Fifth Meeting of the Africa Committee on  
Sustainable Development (ACSD-5)/  
Regional Implementation Meeting (RIM) for CSD-16  
Addis Ababa  
22-25 October 2007**

**Overview of the Sustainable Development Report on Africa (SDRA)**

**Agricultural and rural transformation in Africa**

**October 2007**

---



## **Introduction**

### **Africa in the global environment: Challenges and opportunities**

1. Whereas the economies of East and South East Asia have been taking advantage of the quickening pace of globalisation Africa has been trapped in a north-south pattern of trade wherein it is heavily dependent on exports of raw and semi-processed materials. The direction of this trade was mainly with its former colonial powers. Africa has been slow in transforming its traditional comparative advantages based on raw materials and a large labour force into competitive advantages in higher value adding activities. It goes without saying that this trade policy of African countries was not favourable for the promotion of an agricultural transformation process, as Africa's role was limited to the purveyor of raw materials to the metropolis.

2. With globalisation, firms and enterprises have 'internationalised' rendering the notion that fixed national endowments of natural resources determine competitiveness somewhat obsolete. For instance, multinationals are purchasing their agricultural raw materials from one country, shipping these to another country for intermediate processing, then to another country for semi-product processing and to a third country for producing the final product. The key question now is how African countries can tap into the emerging opportunities in trade through a better use of information, knowledge, technology, and investment in order to give new impetus to their economic transformation processes.

### **Agriculture and the achievement of the MDGs**

3. In 2000, the member States of the United Nations adopted the Millennium Declaration as a renewed commitment to human development. The Declaration includes eight Millennium Development Goals (MDGs), each with quantified targets, to motivate the international community and provide an accountability mechanism for actions taken to enable millions of poor people to improve their livelihoods. Chief among these is the poverty and hunger MDG, (MDG-1), which calls for reducing by half, by 2015, the 1990 proportion of people living on less than a dollar per day and the proportion of people suffering from hunger.

4. Unlike other developing regions of the world where poverty has been on the decline, the proportion of people living below the US\$ 1 poverty line in Sub-Saharan Africa increased from 44.1 per cent in 1990 to 45.7 per cent in 2003. In addition, this poverty is a mostly rural phenomenon. Consequently, an increasing number of Africans have suffered from insufficient income and capacity to access food and other basic amenities such as potable water, minimum health care and education. Estimates from FAO show that although the proportion of total population suffering from hunger fell slightly from 35 per cent in 1990 to 32 per cent in 2003, some 215 million people in Africa are undernourished today, a number up by 26 per cent from 171 million in 1990-92. The above figures underline the need of a substantial and sustainable transformation of the African rural sector.

## **Making a case for agricultural and rural transformation**

### **Can agriculture still play a leading role in Africa's economic growth in a global context<sup>1</sup>**

5. The majority of Sub-Saharan Africa's population lives in rural areas, where poverty and deprivation are most severe. Since almost all rural households depend directly or indirectly on agriculture, and given the large contribution of the sector to the overall economy, one might expect agriculture to be a key component of growth and development. However, whereas agriculture-led growth played an important role in slashing poverty and transforming the economies of many Asian and Latin American countries, the same has not occurred in Africa. Most African countries have not yet met the criteria for a successful agricultural revolution, and factor productivity in African agriculture lags far behind the rest of the world. This failure has led to growing scepticism in the international development community about the relevance of agriculture to growth and poverty reduction.

6. Recently, new non-agricultural growth opportunities, with a high potential to change the development strategies of African countries over the coming decades, have arisen. However, the findings of a recent research (IFPRI, 2007) indicate that it still is agriculture that has enough weight to increase economic growth substantially for many African countries in the near future. The report further points out that in order to reduce poverty, agricultural growth plays a key role, even in countries with potential for sustained industrial development. Only few countries would be able to foster broad-based economic growth without growing food-staple and livestock sub-sectors.

### **Fostering an African agricultural transformation**

7. Agriculture takes roots in and is primarily articulated around farming as a primary sector. But this is just one vital part of a comprehensive and far-reaching economic system we need to consider: the food and agriculture system. This system comprises a set of physical production and transformation stages, which are inter-linked by transactions and include: research, technology generation and technology diffusion; input production and delivery; farm-level production; commodity processing, conditioning, and handling (including storage); and product transport, marketing and trade.

8. Agricultural transformation is the process by which individual farms shift from highly diversified, subsistence-oriented production towards more specialized production oriented towards the market. The process involves a greater reliance on input and output delivery systems and increased integration of agriculture with other sectors of the domestic and international economies. Agricultural transformation is a necessary part of the broader process of overall economic structural transformation, in which an increased proportion of the economic output and employment are generated by sectors other than agriculture. Agricultural transformation notably shifts resources from the production of food and agricultural products to the up- and downstream agro- and agribusiness industries. These industries include agricultural input production and services, processing of agricultural products and their marketing.

---

<sup>1</sup> IFPRI (2007). "The role of agriculture in development: implications for Sub-Saharan Africa". Xinshen Diao, et al., IFPRI Research Report 153.

9. Therefore, developing agriculture for structural economic transformation, broad-based economic growth, food security and poverty reduction requires broadening the analytical and programmatic perspective beyond the narrow confines of farming. We need to take a broader view of the food and agriculture system, which encompasses an integrated approach to investing in improving productivity and efficiency at all the stages of the commodity chains, from research and development to input markets, farm-level production, processing, storage, handling, transport and distribution to the final consumer. The linkages among these stages are key to achieving an optimal contribution of the agriculture and food system to broad-based economic growth and transformation through greater value adding and income-generating employment. Empirical evidence from many African countries shows that increases in agricultural incomes are amplified through growth multipliers of the order of 1.5 to 2.7, resulting from expenditure and consumption linkages among agriculture and other sectors of the economy. Widespread increase in income through broad-based agricultural growth is crucial for achieving the full potential of these multiplier effects. Failure to develop and transform the food and agricultural system constrains growth and employment in overall African economies, as the system is not only a major employer of the poor, but also a key supplier of low-price food (wage good), capital, inputs and demand for the expansion of non-agricultural sectors.

## **State, trends and key issues of agricultural and rural transformation**

### **Status and trends in agriculture**

10. Agriculture in Africa has, over the last four decades, suffered from a lack of consistency in the degree of priority and the course of policy accorded to the development of the sector. In the 1960s and 1970s, agricultural development emphasis was placed on single-purpose projects aiming at developing, in a piecemeal fashion, selected crops, agricultural credit, irrigation, agricultural extension, etc. Although these efforts contributed to increasing the production of some cash and export crops, they failed to yield a structural and sustainable transformation of agriculture, especially the social and environmental aspects of sustainable development and to address rural poverty in all its dimensions.

11. Likewise, comprehensive approaches to integrated rural development, community development and participatory development in the 1970s and 1980s did not meet expectations, as efforts in this regard were frustrated by several factors, including the lack of appropriate pro-poor technology and genuine participation and empowerment of rural communities, and weaknesses in institutional capacity to coordinate and implement the complex components (infrastructure, credit, extension, input supply, output marketing, health, literacy, etc.) of such projects. Frustrations also stemmed from attempts to implement these past initiatives within inappropriate and deteriorating structural and macro-economic environments.

12. In most African countries, the rural sector has received less than 7 per cent of total public spending while accounting for 25-30 per cent of total GDP. Moreover, the proportion of public spending on agriculture has decreased from 6.4 per cent in 1980 to 4.5 per cent in 2002. Despite high payoffs, with median internal rate of return on investment of 37 per cent, public spending on agricultural research as a proportion of agricultural GDP in Africa declined from 0.93 per cent in the 1981 to 0.69 per cent in the 1990s, in sharp contrast with a level of 2.4 per cent in industrial countries.

13. Over the last two decades, the shift of donor priorities mainly to structural adjustment and macroeconomic policy reforms (and to some extent to the social sector) has contributed to erode financial support to development programs and projects in productive sectors in general and agriculture in particular. For instance, official development assistance disbursed to agriculture in the late 1990s was only 35 per cent of its level in the late 1980s. Likewise, the share of agriculture in the World Bank lending portfolio dropped progressively from 39 per cent in 1978, to 12 per cent in 1996 and 7 per cent in 2000.

14. With regard to innovations, African institutions of agricultural higher education, research and extension are poorly staffed, ill equipped and under-funded. To an expansion phase from 1960 to 1985 followed a period of drastic downsizing and restructuring of what has been called the “agricultural knowledge triangle”, i.e. agricultural higher education, agricultural research and agricultural extension. The related cuts associated with the structural adjustment measures affected not only the modest numbers of agricultural scientists and extension workers, but also the budget allocated to vital support activities of training, research and extension. Inadequate institutions and small or ineffective extension services have hampered agricultural transformation in Africa in the past.

15. Because of the lack of consistency in the degree and the direction of priorities, African agriculture is today one of the most undercapitalised in the world. Only 6 per cent of the arable land in Africa is irrigated, compared to 40 per cent in Asia. On average, African farmers use only 20 kg of fertilizer per hectare of arable land (8 kg/ha in sub-Saharan Africa), that is, only 22 per cent (and 9 per cent) of the world average of 93 kg/ha. The number of tractors per 1000 ha of arable land is three times greater in Asia and eight times greater in Latin America than Africa. Similarly, road densities are more than 2.5 times higher in Latin America and 6 times higher in Asia than in Africa. The quantitative deficit in roads is further compounded by inadequate maintenance and, therefore, poor quality of the existing networks of rural and feeder roads to allow effective year-round transport of food and agricultural produce from, and agricultural inputs, services and consumer goods to rural communities.

### **Key issues, challenges and opportunities**

16. Because of the severe under-capitalization depicted above, the rural landscape in Africa is still marked by smallholder subsistence farms, low technology and weak knowledge-based agricultural production systems, owing to the lack of development and widespread use of appropriate technologies and to the extreme paucity in basic support infrastructure. Input and product markets are incomplete, endowed with insufficient quality infrastructure and support services such as information and communication, and poorly integrated at the national, sub-regional and regional levels.

17. The combined effects of these features include stagnating or declining agricultural productivity, weak backward and forward linkages between agriculture and other sectors, loss of competitiveness in world markets, increased food insecurity and natural resource and environmental degradation. At around 1.00 ton/ha, average agricultural yields in Africa represent between 25 and 30 per cent of yields in other comparable regions. Similarly, the productivity of

labour in agriculture in Africa barely reaches 60 per cent of that in Asia and Latin America. As a result, despite the predominantly agrarian nature of African economies, the continent has increasingly failed to feed its growing population. The following are the challenges that have to be addressed swiftly:

- low internal effective demand due to poverty;
- poor and un-remunerative external markets (with declining and unstable world commodity prices and severe competition from the subsidized farm products of industrial countries);
- vagaries of climate and consequent risks that deters investment;
- limited access to technology and low human capacity to adopt new skills;
- low levels of past investments in rural infrastructure (such as roads, markets, storage, rural electrification, etc.) essential for reducing transaction costs in farming and thereby increasing its competitiveness in serving production, processing and trade; and
- institutional weaknesses for service provision to the entire agricultural value chain from farm to market.

### **Fostering strategic agricultural commodity value chains in Africa: A regional approach**

#### **Commodity value chain development: A conceptual framework**

18. A value chain can be defined as the sequence of activities needed to produce and deliver a product or service. Value chain analysis not only pays attention to the different production and transformation stages but also to the interaction between the different actors involved in the production and transformation. This is one of the major differences between value chain analysis and the traditional sectoral and firm-specific analysis. Value chain analysis looks at the efficiency of the system as a whole. This systemic approach enables the identification of bottlenecks within the chain that reduce the overall competitiveness.

Coordination is crucial for the overall competitiveness of a value chain. The activities along a value chain can be coordinated explicitly by one or more actors or implicitly by market forces. Specific products in technical terms or in quality or certification (e.g. organic, faire trade) related terms require much more tracking, coordination and communication between the actors along the chain as for example simple standardized products. These differences have important impacts on how value chains are organized.

19. The process of transforming goods and services from production to final consumption involves linkages among the various sectors involved in that transformation process. Indeed the process occurs within a 'complex, multidimensional systems matrix' with the process involving a chain from the realm of input production and distribution, primary commodity production, processing, handling, transportation, wholesaling and then retailing. Table 1 illustrates such a systems matrix for a commodity sub-sector within the agricultural sector.

**Table 1: Illustrative systems matrix for a commodity sub-sector in agriculture**

PRODUCTION AND EXCHANGE FUNCTIONS	COMMODITY SUBSECTOR							
	Rice	Maize	Wheat	Cassava	Cotton	Cocoa	Livestock and Meat	Dairy Products
Input Production								
Input distribution								
Farm-level production	FARMING SYSTEM (INDUSTRY)							
Primary storage/marketing								
Processing	AGRO-PROCESSING INDUSTRY							
Secondary storage								
Transportation								
Wholesaling								
Retailing								
Consumption	CONSUMPTION							

Source: Adapted by J. Dioné from Boughton, D.; E. Crawford; J. Howard; J. Oehmke; J. Shaffer; and J. Staatz (1995). "A Strategic Approach to Agricultural Research Program Planning in Sub-Saharan Africa." MSU International Development Working Paper No.49. East Lansing: Department of Agricultural Economics, Michigan State University.

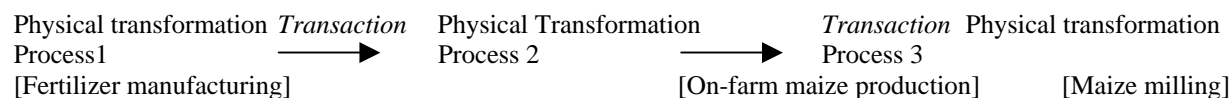
20. The rows represent industries (firms in the same industry, e.g. farming, processing, transportation), while the columns are the chains for commodity sub-sectors (rice, maize, etc). The rice commodity chain runs from the input industry to consumption, linking firms related to inputs, farming, processing, etc. with a view to adding value to rice at each stage for consumption purposes. The further rice moves up the value chain, the greater the aggregated addition to its value, and the smaller the share of the primary-production activity to its total value at the level of the consumer (income multiplier effect).

21. To further illustrate the systems that are needed in a successful transformation, it is important to consider the vertical (commodity sectors) and horizontal (industry and service

sectors) components of the systems matrix of key economic sectors. As shown in Table 1, each sub-sector requires a set of stages or nodes of physical transformation processes. These stages use inputs derived from (prior) upstream transformation processes to generate an output. These nodes of physical transformation are hence inter-linked by transactions that occur either in the same firm or between firms. For instance, the nodes and transactions involved in transformation of the maize sub-sector can be illustrated as shown in

22. Figure 1.

**Figure 1: Nodes and transactions involved in the transformation of maize**



23. A successful transformation in this case requires: a) a functioning fertilizer manufacturing sector, b) successful transactions with regard to fertilizer distribution and marketing, c) efficient and productive on-farm maize producing sector, c) viable marketing and distribution of maize to the millers, and d) a well performing milling industry. Obviously, any failures at the level of physical transformation or the transaction link can lead to a breakdown of the transformation process.

24. Indeed the limited success of the green revolution in Africa provides a good example of how a breakdown in any stage can cause failure in the whole system. While there may have been successful adoption of productivity enhancing technologies at the farm level, especially in high-potential areas, failures emanated from most of the transaction links (distribution, marketing, extension, etc.), and downstream transformation processes such as processing. A successful transformation requires all the stages and transaction links to function, through integrated efforts aimed at providing the right mix of technologies, infrastructure, institutional mechanisms, and policies.

### The strategic commodity approach

25. ECA has been advocating for a strategy that calls for revisiting Africa's commitments to and efforts at broadening and deepening regional integration. This strategy aims primarily at exploiting the special diversity in resource endowments on the basis of the principles of "comparative" and "competitive" advantage at the continental level. The strategy would consist in starting up an integrated regional construct articulated around a limited number of strategic food and agricultural commodity value chains. The strategic qualification of such commodities would relate not only to their relative importance in the African food basket and internal economies, but also to their significance in the interface (trade relations) between African economies and the global economy. Of strategic importance would be such commodities:

- which carry an important weight in the African food basket or the agricultural GDP;
- which hold an important (present or potential) weight in the trade balance of the continent through their contribution to the overall regional export earnings or import bills; and
- for which the region has considerable unexploited production, value-addition and trade potential, owing to internal constraints as well as external impediments such as

agricultural subsidies and support measures of trading partner countries outside of the continent.

26. For such selected strategic commodities, building a common African market that transcends national and sub-regional borders would offer an appropriate economic space to allow for private investments at the level of regional economies of scale that would ensure profitability. Hence, for those strategic food and agricultural commodity chains, market integration needs to be moved beyond the national and sub-regional levels to encompass the regional market – a common and single African market.

27. At the Abuja Food Security Summit, the commitment was taken to support actions to increase Intra-African trade by promoting and protecting the following products: rice, maize, legumes, cotton, oil palm, beef, dairy, poultry and fisheries products as strategic commodities at the continental level, and cassava, sorghum and millet at sub-regional level.

### **Review of NEPAD/ CAADP implementation strategy**

28. The renaissance of the African agricultural agenda is engraved in the NEPAD Comprehensive Africa Agricultural Development Program (CAADP), which provides a framework for consensual policies and priorities for African governments; regional organizations; farmers; private agribusiness; and development partners. With the explicit target of achieving an average annual growth rate of 6 per cent in agriculture, the CAADP objectives are to develop dynamic domestic and regional agricultural markets; to make Africa a net exporter of agricultural products by integrating farmers into the market economy and improving market access; to achieve more equitable distribution of wealth; to make Africa a strategic player in agricultural science and technology development; and to ensure sustainable management of the natural resource base.

The CAADP priority initiatives are articulated around the following four pillars:

1. Extending the area under sustainable land management and reliable water control systems, through improved irrigation and land management to 20 million ha.
2. Improving rural infrastructure and trade-related capacities for market access through the expansion and maintenance of rural road networks; the development of agribusinesses, supply chains and quality controls; the expansion of regional trade; and the facilitation of international market-access.
3. Increasing food supply and reducing hunger through improved policies, services and technology for 15 million small farms and through emergency risk management systems and safety nets.
4. Improving agricultural research and technology dissemination and adoption.

29. Owing to the extreme fragmentation of African agricultural and food systems, there are significant asymmetries in perceptions of market and investment opportunities by the private agro-industry and agribusiness community as one moves from the national to the sub-regional and regional perspectives. From an economic standpoint and within the framework of an increasingly global economy, this landscape is simply not optimal enough to provide for the levels of economies of scale (at all stages of commodity chains), economies of vertical

coordination (among the different stages of commodity chains) and economies of complementary diversification and specialization (among countries and sub-regional groupings) that would allow the realization of full competitiveness gains and intra-regional trade potential for Africa's agriculture.

30. The creation of such an environment, within the framework of NEPAD CAADP, could proceed from the opening of Free Sub-Regional/Regional Investment Zones. For example, major river basin initiatives such as those of the Niger and Nile rivers could lend themselves to a strategy of free regional investment zones for the development of vertically-coordinated chains of production, processing and marketing of strategic food and agricultural commodities. In such zones, the creation of the right policy, institutional and legal frameworks for the development and management of land and water resources and the provision of the necessary supportive public infrastructure and services, and the establishment of African trans-national agribusiness companies would grant further incentives and security for private investment.

### **Policy implications**

#### **Allocating adequate financial resources**

31. It is important to deliver on commitments of CAADP so as to accelerate the implementation of the CAADP and get agriculture moving on an accelerated and sustainable path for food security, economic growth, employment and poverty reduction in Africa. As it stands now, progress in this direction appears to be too slow. Indeed, according to FAO, a first estimate of the investment requirement over the period 2001-2005 for the NEPAD CAADP Pillar 1 shows that only US\$0.5 billion of the projected US\$9.9 billion has so far been invested. This clearly suggests the need for more investment efforts in agriculture by African governments and private sector as well as development partners. More urgently, African governments need to implement their commitment of allocating at least 10 per cent of national budgetary resources to agriculture by 2008 and to create the enabling policy and institutional environments for greater private-sector investment in agriculture.

#### **Promoting public-private partnerships**

32. Developing vertically coordinated regional value chains (of production, processing, trade and marketing) for the strategic commodities would be facilitated through public-private partnerships to create an environment that is conducive to ensuring both profitability and security of regional private investment. More explicitly, the creation of such an environment could proceed from the opening of preferential sub-regional and regional investment zones in those areas where the greatest unexploited production potential for selected strategic agricultural commodities lies. In such zones, the creation of the right policy, institutional and legal frameworks for the development and management of land and water resources, and the provision of the necessary supportive public infrastructure and services would grant further incentives and security to stimulate the mobilization of pooled private investment into agriculture at a regional scale. It would allow the emergence of regional and trans-national agricultural joint ventures capable of mobilizing pooled investment with a view to developing, in a vertically coordinated manner, the different stages – primary production, processing, transport and regional marketing –

of the strategic commodity chains, and thus contribute to the development of the production potential as well as the sectoral growth, trade and employment linkages within a more integrated regional agriculture system.

### **Developing agricultural research and extension services**

33. It is important to address the challenge of increasing the productivity and competitiveness of African agriculture through research and technology dissemination and adoption. Indeed, technological developments in the biological sciences, energy, information, and communications offer Africa great opportunities to harness and make significant headways towards a sustainable agricultural revolution. The public and private sectors in African countries must be encouraged to seek out and exploit these opportunities.

34. Public investments in research and technology generation and diffusion is needed to encourage broad-based adoption of available technologies and to strengthen indigenous capacities to develop, adapt and diffuse the kinds of technologies needed to compete effectively in domestic, regional and global markets. In the face of small national budgets, the establishment and strengthening of sub-regional and regional centres of excellence of higher agricultural education and research would help to build a critical mass of research personnel and financial resources and achieve economies of scale. Such centres of excellence could be created along the lines of agro-ecological zones and strategic food and agricultural commodities, to give special attention not only to farm-level technologies, but also to adaptive research on post-harvest (storage, processing and transport) technologies.

35. The limited adoption of technologies evident in Africa indicates that there is more involved in the adoption decision of a new technology than the simple profit rule of "revenue exceeding costs." For individual end users to adopt a technology, the appropriate decision variable to consider in technology development policies is the concept of "expected" or "anticipated" profits rather than "average" profits, which are based on experiment station parameters and ideal scenarios of input and output markets.

36. Thus, both technological considerations (like yield increments and cost decline) and non-technological considerations (institutions, policies, infrastructure, socio-economic status, etc.) play important roles in the realization of profits and the decision to adopt or not to adopt a technology. Efforts at structural transformation of agriculture should address, in an integrated approach, issues of Technology, Infrastructure, Institutions and Policies (TIIP) with a view to achieving two key objectives:

- Maximize productivity and efficiency, thereby minimizing unit production costs at the level of each physical transformation stage of the commodity sub sectors (value chains); and
- Minimize transactions costs among the different stages of commodity value chains; thereby minimizing total unit costs of products (goods and services) delivered to the final consumer.

**Fostering regional market integration and agribusiness development**

37. It is reasonably argued that market development and linking farmers to the market are key pre-conditions to the structural transformation of agriculture in Africa. For farmers to take the risk of investing in productivity-increasing technologies not only should the related information and inputs be accessible and affordable for them, but also and equally important, should reliable and accessible markets exist for any surplus output resulting from technology-based productivity gains.

38. Hence, connecting the farmers to well developed and functioning markets, backward for input procurement and forward for product outlets, is a crucial element for fostering the agricultural and rural transformation in Africa, therefore successful agricultural transformation process implies that farmers are increasingly connected to markets through the agro-industrial and agribusiness sectors. This points to the crucial importance of what one may call the agriculture-industry-trade nexus in addressing the agricultural transformation challenge in Africa.