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INVESTING IN AGRICULTURE FOR ECONOMIC GROWTH AND FOOD SECURITY

SYNTHESIS PAPER

Prepared

By FAO for AU/NEPAD

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ACRONYMS

AfDB	African Development Bank
AMU	Arab MaghrebUnion
ASGP	Agriculture Sector Govrenance Programme
AU	African Union
CAADP	Comprehensive Africa Agricultural Development Programme
CEN-SAD	Community of Sahel-Saharan States
CGIAR	Consultative Group for International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
ECA	Economic Commission for Africa (UN)
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
EU	European Union
FARA	Forum for Agricultural Research in Africa
SSA	Sub-Saharan Africa
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
IFDC	International Center for Fertilizer Development, An International Center for for Soil Fertility and Agricultural Development,
IPPC	International Plant Protection Convention
IPR	Intellectual Property Rights
ISNAR	International Service for National Agricultural Research
Mai	mean annual increment
MFN	Multi-Favoured Nation
MDG1	Millennium Development Goal, 1st: halving hunger and poverty
NEPAD	New Partnership for Africa's Development
NTB	Non-tariff Barrier
ODA	Official Development Assistance
PAAT	Programme against African Trypanosomiasis (FAO)
PATTEC	Pan-African Tsetse and trypanosomiasis eradication campaign (AU)
PRSP	Poverty Reduction Strategy Papers
REC	Regional Economic Community
RESAKSS	Regional Strategic Analysis and Knowledge Support System
SADC	Southern African Development Community
SOFI	State of Food Insecurity
UNCTAD	United Nations Conference on Trade and Development
WB	World Bank
WDI	World Development Indicators
WTO	World Trade Organization

I. INTRODUCTION: SETTING THE SCENE

1.1 Place and role of agriculture in African economies

1. Agriculture contributes on average 27% to national GDPs in Sub-Sahara Africa (SSA) and about 14% in North Africa. However this gives an incomplete picture of the critical role of agriculture in many African countries. South Africa alone contributes one third to African GDP and agriculture accounts for only 3-4% of it. Out of the world's 40 most agriculture-dependent countries 30 are located in SSA (The Economist, 2008) and their agricultural value added ranges from 22% in GDP in Côte d´Ivoire to 64% in Liberia.

2. Overall, outside South Africa more than 60% of the population in SSA are rural and some 80% of all African poor live in rural areas. In these countries primary agriculture is a source for two thirds of rural incomes while the remaining is generated by activities that are loosely linked to and supporting the agricultural sector. The proportion of urban population will not overtake the rural in Africa before 2030 (UN Population Division, 2007) although there is a chance that economic hardships arising from climate change may accelerate urbanization. Still, agriculture will remain the backbone of African economies, especially in SSA, for the foreseeable future and agricultural development remains crucial for economic growth and poverty reduction in the continent.

1.2 Agricultural development and food security: recent trends

3. ***Growth trends***. Africa's population growth of 2.5%, though declining, is still high by standards of other developing regions. Population increased from 282 million in 1960 to 922 million in 2005 and is forecast to grow to just under one billion people by 2015, 1.5 billion by 2030 and 2 billion by 2050. This growth is a serious reminder to perform better than so far if African is to make headway towards meeting the MDG1 target of halving hunger and poverty.

4. However, African *agricultural* output has had relatively slow average growth over the last decades. At most times it was below population growth, occasionally negative but showed improvement during the first half of the current decade. On the whole, Africa's agricultural performance during the last 25 years were marked by two distinct phases: one, from about 1980 to the mid 1990s, characterized by very low or negative growth and one, during the decade of 1996-2005 by average growth rates ranging between 3% and 6%. The challenge facing African agriculture in the years ahead is to sustain the momentum of the decade before 2005 in the face of mounting challenges of climate change, rising input prices, the international financial crisis, and economic slowdown in developed and some emerging countries.

5. ***Trade trends*** (FAOSTAT*)*: Nearly all African countries are net food importers, North Africa to the extent of over 50% and SSA between 25 and 50% of their food requirements. Africa's food import dependency has essentially developed over the last half century as agriculture failed to keep pace with population growth and as low cost food supplies from world markets, especially rice and wheat supplanted local produce in urban centres. Africa on average presently imports some 30% of its food grain needs, or about 50 million tons valued at US$ 11 billion. Most are commercial imports but some 2-3 million tons recently (against 5-6 million in the period 1985-1990), were imported in the form of food aid. Africa, especially Northern Africa, is also highly import-dependent on sugar (import 7.5 million tons), pulses and meat (each 1.4 million tons).

6. The export value of Africa's traditional agricultural exports have been stagnant (cotton, rubber, bananas) or declined (coffee, palm kernel, groundnuts) over the last 40 years as competitors from other developing regions have gained ground. Cocoa and cashewnut exports from the continent have, respectively, doubled and trebled in the last 40 years. Yet the commodities lost their previous position in world markets. The relative export success stories, in a limited number of countries, are tea, tropical fruit, citrus (Northern Africa and South Africa) and off-season vegetables. Some countries have also accessed the ethnic food market in developed countries. Overall, SSA´s share in world agricultural exports has dropped from 3.8% % to 1.7% since 1965. Its net trade in agricultural products moved from an annual surplus of US$ 2 billion in 1961 (US$ 14 billion in 2007 dollars) to a deficit of US$ 22 billion in 2006.

7. ***Food security trends*** (SOFI 2008): Agricultural performance is the most important factor that determines food security in SSA. The continent's growing import dependency for basic foodstuff has exposed its vulnerability to volatile world markets and to uncertain food aid availability for the poorest segments of the population.

8. Food security trends vary widely from one country to another. The MDG1, proclaimed in year 2000, targeted at halving the proportion of the hungry people relative to a 1990 baseline. Since then out of 39 SSA countries monitored, 11 countries showed a deterioration of their food security status (FAO SOFI, 2008). This was often due to a conflict situation and/or poor policy environment and governance. Thirteen other countries appear to be on track towards reaching the MDG1, even though some of them started from a low base that will leave disturbingly many people hungry even after achieving the target. In the remaining countries the situation is improving but not fast enough to reach the MDG1 target in time. In the North Africa region, the numbers of undernourished people seem to have little changed since 1990, which translates into relative improvements given the population growth. The net effect of the, rather mixed, progress towards MDG1is that the absolute number of hungry people in SSA since 2000 has increased from 169 to 212 million. It might appear comforting that, even though the absolute number of the hungry increased by 43 million, there has been a decline in the proportion from 34 to 30% of the total population. This seeming inconsistency is explained by population growth. The World Bank and FAO estimate that the surge in food prices that occurred in 2008 has plunged another 70 million into hunger out of whom 30 million in Africa.

9. A few countries have made a remarkable progress in agricultural growth and poverty reduction. These countries include Ethiopia, Sudan, Ghana, Nigeria, Uganda, and Mozambique. However, this progress is counterbalanced by much poorer performance in other African countries such as the Democratic Republic of Congo where 76% of the population are considered undernourished. The very poorly performing agricultural sector, the dismal food security situation and the large population of the country are pulling the average performance of the continent heavily downwards.

10. ***Food prices/financial crisis.*** The escalation of food prices in the global market observed during the second half of 2007 and the first half of 2008 as well as financial and economic crisis in developed countries have undermined poverty-reduction efforts in low income food deficit countries in general and Africa in particular. The steep increase of food and agriculture input prices led to an increase in poverty, social tensions and food riots in some countries. Since the peak in July 2008 world agricultural prices have fallen back to some extent but are still higher than before the crisis. However, food prices in many African countries are much higher than a year ago. Retail price of rice in Malawi was recently quoted at Kwacha 210 (US$1.50) a Kilogram almost double that of a year ago. In Zambia, white maize, the country's main staple food cost Kwacha 28,185 up

from Kw17,500; in Kenya wholesale maize price was US$367/ton up from US$222. This situation is explained by a number of factors that include poor harvest in developing countries, lack of trade finance for agricultural imports, economic and financial crises in developed countries. Decreasing remittances from African Diaspora have further aggravated he plight of the poor and vulnerable.

11. ***The need for growth....:***. The challenge Africa faces between now and 2015 is to accelerate growth of food availability in order to (i) meet the food demand of a population that is growing at 2.5% annually and (ii) reduce the number of undernourished people to the MDG1 target level, which is a reduction from currently 212 million to 118 million[1]. Additional food supplies must therefore be sought for 18 million additional people every year, and to improve the nutrition status of the 94 million currently undernourished if Africa is to meet MDG1 by 2015. This would be equivalent to achieving an average of 4.6% annual growth rate of food supply from 2009 to 2015, both from domestic production and imports.[2]. Otherwise, Africa's annual agricultural growth targets to attain the MDG1 may need to be revised upwards as the 2015 deadline approaches or else, a new target date needs to be set. In any event, the high required growth calls for creating a conducive policy environment, and increased public and stepping up private sector investment in the agricultural value chain at very short notice.

12. ***....and for productivity***. Sustainable agricultural growth in the context of Africa must primarily aim to increase both, land and labour productivity. Raising agricultural output by expanding into new areas, but remaining at current level of labour and land productivity, will not *improve* the actual situation of hunger and poverty in the continent, and any gain made in production growth will be at the expense of the environment and agricultural long-term sustainability.

13. Currently land and labour productivity in SSA lag behind other developing regions to a varying degree. Value added per ha of agricultural land and worker is estimated at US$ 428 and US$ 466 respectively. This compares to[3] :

- *land* productivity of US$ 2,457 per ha in East Asia and US$ 570 in South Asia and
- *labour* productivity of US$ 767 in East Asia and US$ 495 in South Asia
- cereal yields being twice as high in South Asia and 2.5 times as high in East Asia than in SSA.

1.3 The response by African governments

14. Conscious of the lag in poverty and hunger reduction, in 2003 African Leaders launched the NEPAD Comprehensive Africa Agriculture Development Programme (CAADP) as a framework to give a new impetus to food security and agriculture development in the continent. The rationale underlying the initiative was to make African countries more responsible for their own destiny, to contain the overbearance of donor-driven development prescriptions and to forge new partnerships. In dealing with agriculture, an important consideration was that over the years agriculture has been neglected as domestic and Overseas Development Assistance (ODA) resources had increasingly been shifted towards social sectors in the context of the Poverty Reduction Strategy Papers (PRSPs).

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[1] Northern Africa is not particularly examined in this context as economies are more diversified. Agricultural improvement plays a less crucial role in food security.

[2] This would be equivalent to accommodating population growth assuming a full diet of 2,700Kcal per day and person, and a daily diet supplement to the presently undernourished of 900 Kcal and the time remaining to 2015 as 6 years. The growth rate stipulated under the CAADP of 6%, if achieved, would in addition leave a margin for improving per caput incomes

[3] Estimates based on data from WDI and FAOSTAT

15. While not denying the importance of social sector investments, governments felt that investments in these sectors can only be sustained by achieving domestic economic growth for which agriculture remains still the main opportunity in many African countries. The CAADP strategy to revive agriculture rests therefore on the four pillars of (i) land and water management, (ii) market access, (iii) food supply increase and hunger reduction and (iv) Research and Development. Its strategic target was a long-term growth rate of 6% of agricultural production (up from a historical average of 2.5-3%) in order to cope with population growth, reduce hunger and increase rural incomes.

16. African Leaders have also adopted a number of resolutions towards strengthening the food and agriculture development initiative of 2003 in the context of CAADP. Some of these resolutions include:

- Sirte 2004; which recommended, inter alia, expediting the implementation of the 10% commitment, establishment of African Investment Bank and assessing the feasibility of establishing an African Agriculture Development Fund, promote livestock and fisheries production, develop water for agriculture by including establishment of river basins, etc.
- Fertilizer Summit, Abuja June 2006 proposed measures for reducing cost of fertilizer to farmers through, inter alia, harmonization of policies, infrastructure development, etc.
- Food Security Summit Abuja December 2006; with particular focus on promoting intra-African trade based on selected strategic food commodities, achieving food and nutrition security and scaling up and scaling out of African success stories; etc.

17. In addition, most bilateral and multilateral development partners have adopted CAADP as the framework for guiding their cooperation in food security and agriculture development in Africa. However, despite such political commitment from African governments and buy-ins from development partners, implementation on the ground has not been commensurate with declared commitments. In this context the adoption of "Investing in Agriculture for Economic Growth and Food Security", as the Theme for the July 2009 African Union Summit will hopefully result in boosting accelerated CAADP implementation. As part of the preparation for the Summit, NEPAD and AU commissioned preparation of four sub-themes[4] for the Summit. This paper is a synthesis of these contributions, other supplementary information notes prepared by AU and NEPAD and FAO's own experience.

II. CLIMATE CHANGE: Challenges and Opportunities

2.1 Issues and Challenges of climate change

18. In addressing the challenge of higher agricultural growth, African governments need to address, singularly and collectively, several natural, institutional and financial drawbacks that are specific to the continent. Africa need to build and expand on the positive agriculture performance observed during the decade of 1995 to 2005. Whereas Asian agriculture has benefited from green

[4] The Theme will be supported by four sub-themes:(a) climate change, (b) Regional Agriculture trade and market systems, (c) investment financing and (d) stimulating participation of the poor and vulnerable.

revolution technology and Latin American agriculture from a high degree of commercialization and captive urban and export markets, African agriculture has remained essentially smallholder- and subsistence-oriented, rainfed-based and suffering from lack of market integration and economies of scale. Climate change and climate variability compounds the continent's challenge of achieving long-term food security from domestic resources given overdependence on rainfed agriculture.

19. ***What is the specific Impact of Climate change on African agriculture***? Climate change is likely to express itself through higher frequency of weather extremes, on average higher temperatures (even though the increase is expected to be higher at higher latitudes) and rising sea levels. The forecasts for Africa are increased droughts outside, and more rainfall and flooding within the tropical belt. The geographical range where rainfed agriculture remains risk-free is narrowing. Land degradation is not confined to semi-arid areas but has entered into the medium and high potential agricultural areas. Climate change could exacerbate land degradation as nutrient recycling and water infiltration in the soil could be hindered. In most agricultural regions increased efforts are needed to make agriculture more resilient to the vagaries of weather through higher investments in irrigation, water management and storage, drainage and flood control.

20. ***Food Prices***: The reversal of the secular decline of prices for agricultural commodities is expected to continue for at least a decade, driven by slowdowns in supply due to climatic stress, rapidly rising demand in East Asia and the Middle East and conversion and loss of farmland to biofuels and urbanization. Prices of agricultural inputs, especially fertilizer and phytosanitary products have increased even more than food prices due to high energy cost. As a result the output/input value relationship in food production is being adversely affected and in some cases has broken through a critical lower barrier that is often taken for a minimum to continue conventional foodcrop farming operations.

21. While higher food prices offer opportunities to net producers of agricultural commodities they will always be looked at in relation to input prices. In many cases farming will be rather less than more profitable. Furthermore, as the rural and urban poor are generally net consumers of food there will be a net increase in the number of food insecure that must be addressed through extending social safety nets and promoting employment generation outside agriculture.

2.2 Addressing climate change

22. *High/low potential areas.* Climate change is likely to favour relatively stronger development of high potential agro-ecological zones, especially areas with irrigation already available or having scope for its generation. The focus on high potential areas is not only for reasons of higher productivity of invested capital but also because populations will tend to converge into such, as well as urban, areas. Strong seasonal migrations between countries and agricultural regions have been occurring for a long time, such as movements of workers from Sahelian countries to West African coastal tree-crops plantations and to Northern African irrigation schemes. This is in addition to agricultural labour migration to mining areas.

23. Movements of people from low potential to medium and high potential areas are likely to increase under the impact of climate change. Spontaneous permanent relocations of populations will multiply as some areas become more arid and their population carrying capacity declines. Governments will be called upon to provide social services and infrastructure for a larger population in high potential areas.

24. High and low potential areas have different agricultural investment implications. High potential areas, especially irrigated ones and areas receiving abundant rainfall are more receptive to traditional green revolution technologies (hybrid seeds, fertilizer, water control) driving particular crops, whilst low and medium potential areas are more amenable to a farming-systems approach that promotes resilience, risk management through diversification and improved survival and coping strategies. The FAO farming systems survey report (2002) identified some 15 distinct farming systems, and recommended development strategies for the main ones. The cereal-root crops mixed farming system of the dry sub-humid Guinea savannah zone, for instance, could become a new frontier for future agricultural development if the effects of climate change can be mitigated. The control of oncocerciasis has already opened substantial areas for additional agricultural activities.

25. A similar, even larger potential could be generated through tsetse eradication as initiated through the anti-tsetse programmes PAAT and PATTEC[5]. It would allow denser human settlement and draught animal cultivation on a larger scale with great productivity increase and poverty reduction potential. On the other extreme, pastoralist societies in the Sahel have fewer options. To escape poverty and food insecurity, exit from agriculture or securing access to remittances may be preferred coping strategies.

26. Nevertheless, some improvements seem possible in resource-poor areas dominated by pastoral agriculture: improved veterinary and livestock marketing services and, where crop farming has entered, millet and sorghum seed improvement. Consideration should also be given to agro-ecological zoning reserving certain areas that are unsuitable to crop farming for livestock production[6], participatory rangeland management in pastoral areas, careful planning of livestock watering points to avoid soil degradation in the vicinity and reviving rotational grazing practices by establishing seasonal grazing reserves and in selected areas pasture improvements through seeding with exotic varieties and fertilization. Pre-conditions to better rangeland management improvements are clear user rights, devolution of grazing management to the pastoralists themselves and, in some cases, a change of mentality of pastoralists who may still value livestock numbers over productivity.

27. ***Fertilizer***: Insufficient fertilizer application in situations of shrinking fallows and quasi-permanent cropping has led to fertility mining and soil depletion on a large scale. Out of 168 million tons fertilizer consumed in the world, less than 4 million tons are consumed in Africa, of which not more than one million tons outside South Africa and Northern Africa. Africa, endowed with 16% of the world's arable land uses only 2% of the world's fertilizer. Fertilizer application is around 16 kg of per ha (incl. permanent crops) in Africa against 170 kg in Asia. In SSA (outside South Africa) average fertilizer application rates are typically well below 8 kg per hectare (FAOSTAT). The reasons for the low fertilizer use include poor road infrastructure, low fertilizer response of yields in situations of irregular rainfall, few irrigation facilities, and dispersed and fragmented input and produce markets, leading to high input and low output prices, thus an unfavourable price relationship between fertilizer and agricultural output. While fertilizer prices are experiencing a worldwide surge at the moment, landlocked countries without own fertilizer production are particularly affected as a result of high transport costs for imports.

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[5] Programme against African Trypanosomiasis (FAO) and Pan-African Tsetse and trypanosomiasis eradication campaign (AU)

[6] In the past a 300 mm rainfall isohyete formed the border between agriculture and livestock in he Sahel

28. The Abuja declaration of 2006 adopted several measures to increase African food security, among which to push average fertilizer use in Africa to 50 kg per ha. These measures include harmonization of trade and quality regulations and reduction of import tariffs on fertilizer; establishment of agro-dealer networks; capacity building at all levels; targeted fertilizer subsidies; storage and road infrastructure; establishment of national fertilizer financing facilities; procurement and distribution at regional level; local fertilizer production from local ingredients; helping farmers to access complementary inputs including irrigation and improved seeds; setting-up an African Fertilizer financing Mechanism in AfDB and; a progress monitoring mechanism through NEPAD and the AU. An integrated approach would also be followed in implementation involving national governments the RECs, the AfDB, FAO and other international partners including the Gates Foundation (African Union, 2006).

29. ***Key fertilizer issues***: A number of critical issues need to be closely monitored and addressed to ensure the success of the fertilizer initiative. One is the targeting of fertilizer subsidies of which the rationale must be that they finance public goods. Capacity should be in place in subsidy-administering institutions to assess the impact and outcome of fertilizer use in terms of rectifying domestic competition with subsidized commercial food imports, better income distribution, poverty reduction, avoided land degradation and other national-level benefits. Connected with this issue is the sustainability of fertilizer subsidies. The Abuja declaration implies an increase of fertilizer consumption in SSA, outside South Africa, in the order of 10 million tons (nutrients), valued conservatively at US$ 10 billion annually. Fertilizer subsidies could therefore absorb a large portion of the public expenditure on agriculture[7] after fulfilment of the Maputo declaration.

30. Subsidies also need to be harmonized across countries and regions to avoid leakages. The dealer network needs close supervision or certification to avoid adulteration of fertilizers before farm level or illicit appropriation of subsidies. Capacity building on all levels is required to teach farmers correct application doses, composition and timing.

31. ***SLM/conservation farming***: Extra fertilizer application is unlikely to resolve the long-term problem of declining soil fertility in SSA. Sustainable land management (SLM) and conservation agriculture should be the other responses to address the twin problems of climate change and real price increases for food and agricultural inputs.

32. SLM/conservation farming includes well known and proven technology that has found some application in all developing regions and several developed countries as well. Brazil is among the forerunners of these technologies in the developing world. ´´The key principles of conservation agriculture are ensuring the recycling and restoration of soil nutrients and organic matter and optimal use of rainfall through retention and better use of biomass, moisture and nutrients. Means to improve land and agricultural productivity may involve changes in tillage and soil cover to improve rainfall penetration, improved management of crop residues and soil organic matter, water harvesting, drainage, liming and rock phosphate applications to remedy chemical imbalances, as well as mechanical measures such as land levelling, terracing and bunding for runoff and erosion control (World Bank, 2002, FAO, 2003).

33. A widespread move towards this technology has in the past been hampered by low prices of agrochemicals, lack of technical knowledge and initially higher labour inputs. SLM/conservation

[7] Total public expenditure in SSA outside South Africa may be estimated at about US$ 100 billion p.a.; public expenditure on agriculture is presently US$ 5-6 billion and, after Maputo, US$ 10 billion (Estimates based on data from WDI).

farming includes a wide array of techniques aimed at minimizing application of purchased inputs, preserving soil structure, fertility and water retention, hindering water run-off and increasing food safety through low agro-chemical use. Technologies include minimum or no tillage, composting, terracing and bunding, mulching, cover crops, sloping agricultural land technologies (SALT), contour ploughing, alley cropping, ´demi-lunes´ and ´tassas´´ for water harvesting and soil improvement, IPM and others. Some of the technologies have spontaneously evolved as Boserup effects[8]. SLM/conservation farming does not avoid conventional inputs altogether. Renouncing all mineral fertilizer, for instance, would either depress yields unacceptably or be unfeasible due to lack of enough organic fertilizer or sufficient labour. The challenge is finding the right balance that would improve the output/input price relationship quite considerably.

34. Common to many conservation technologies are, initially, higher labour input, lower yield and some loss of farmland taken up by structures or hedges, that is, additional investments. It has been abundantly shown that the benefits of such investment are recovered relatively quickly. On the upside are further, limitation of cash expenditures and achievement of long-term sustainability. Favouring factors to promote SLM/conservation farming on a wider scale are a capacity of the state extension service or of often highly motivated NGO for introducing the different techniques to farmers, secure land rights, on-farm labour availability, absence of ready and remunerative alternative employment possibilities that might divert labour away from farming. Access to urban markets and consumers that appreciate organic produce would be of additional help.

35. ***Sustainable water management and Irrigation development***: Only about 7% of agricultural land in Africa is irrigated (4%, or 3.7 million ha, when leaving aside North and South Africa), compared to 39% in South Asia and 29% in East Asia (FAOSTAT). Irrigation expansion offers the best and only hope to reach food self-reliance in Africa. Irrigation development becomes more urgent with climate change as rainfed agriculture is increasingly becoming more risky due to frequent failures and undesired distribution within a given planting season.

36. The irrigation potential in Africa is estimated in the order of 35 and 42 million ha, based more on physical than economic parameters. A wide variation of estimates exists for necessary investments to tap the potential for food security over the coming decades. NEPAD estimated a figure of US$ 37 billion for land and water management to be spent between 2002 and 2015 for achieving MDG1. A recent FAO/IFAD estimate proposed US$ 85 billion for water infrastructure over eight to ten years. The Sirte (2008) conference on African irrigation and clean energy needs came up with a detailed water development plan for Africa, comprising investments of US$ 64 billion over 20 years. The preparatory work to the Sirte Conference also drew up a detailed portfolio of about 1000 projects and programmes of investment in water control for agriculture and energy in the 53 African countries. (FAO/NEPAD-Sirte, 2008 (1))

37. While, overall, irrigation development will have to be accelerated to mitigate inherent risks in rainfed farming, irrigation scheme design also needs to be reconsidered from a view of climate change. Planners of irrigated agriculture will need to address possibly future water scarcity by designing larger water storage facilities and increased flooding risk through better drainage systems. Both require adjustments in scheme design that can make them more costly. Some schemes planned in the past may have to be abandoned as overly risky. All pundits agree that irrigation planning, as with fertilizer, needs to follow an integrated approach, encompassing, apart from constructing the schemes, provisions for long-term maintenance, access to input and output markets, technology transfer to water users, resolution of tenure and conflicts over land ownership.

[8] Author Ester Boserup; who studied spontaneous innovations prompted by population pressure

38. ***Scale of irrigation***. Higher initial investment costs in Africa than elsewhere in the world make sustainable agriculture water resource management and irrigation less attractive. This is due to low cropping intensities, market limitations for high-value crops, competition from low-cost imported rice, high transport costs due to poor road infrastructure to domestic and export markets, and the lack of an irrigation tradition. The huge untapped water resources available in the continent, especially in Southern and Central Africa, suggest scope for investment in large irrigation schemes. These have typically long lead times for the planning, design and commissioning and particularly high investment cost per ha (US$ 12,000 and more). Basic foodstuffs such as paddy grown in such perimeters as monocrops are seldom economically viable (FAO/TCI, 1997). However, cross subsidization from associated hydropower development may be a way out in such cases.

39. While development of large irrigation schemes should not, by all means, be discounted where they make economic sense, small private irrigation schemes, improved water harvesting and storage, rehabilitation of irrigation schemes set-up in the past and closing the yield gap in existing irrigation schemes would seem to have the best scope for rapid improvement of food supply in Africa. Smaller schemes have especially the advantages of better territorial coverage by using ecological niches, spreading of investment risks, quick response to food needs, ease of management at communal level or water users´ associations and high local labour input in construction. They have also the added value of improving the sense of ownership.

40. ***Protecting the invisible.*** In all cases of major development projects there is a risk of harnessing natural resources that the poor and vulnerable have been using free for their survival. Access to streams and shallow groundwater resources may be impeded by organized irrigation development based on deep tubewells and river damming or diversion and access to free forest and grazing reserves by plantation development and logging concessions. Getting to know ancestral and customary rights of poor and vulnerable people and extending fair compensation to them for the eventual loss of such rights or ensuring their protection or restoration requires extensive investigation. Government should pay particular attention to these issues, if need be in collaboration with their development partners, in planning any land and water-using projects. Of recent concern in this context are initiatives by East Asian and Middle Eastern investors in land development in Africa aimed to grow food for their home markets. Although these enterprises promise to inject welcome investment and to provide infrastructure benefiting the local population there is a real risk of marginalizing the less articulate poor and vulnerable population groups.

41. ***Research.*** The future type and direction of research that is able to promote food security may best be looked at from the perspective of agro-ecological regions and high and low potential areas. In high potential areas, especially in existing irrigation schemes, research on green revolution technologies seems appropriate. While in irrigated areas in South and East Asia (e.g. Punjab, Central Luzon) yield plateaus in rice are observed, the yield gap in African schemes would indicate a productivity reserve that can still be exploited. The relatively neglected West African tree crops sector is another research opportunity for a commodity-based research approach.

42. In other, low potential or resource-poor areas, research needs to emphasize a systems approach and a move towards resource management that optimize land, labour and water resources. This would help in particular those regions that do not offer the right conditions for repeating the Asian green revolution model in Africa. However, given the long lead time between research and arrival of the results on farmers' fields, basic technology must be available from elsewhere and local research be of an adaptive nature. In this context research will mostly take place on farmers´ fields than in laboratories or research stations and should follow identification of research issues of

practical importance to small farmers in a participatory manner and, where possible, in collaboration with the relevant CGIAR institutions.

43. Agricultural research often needs a critical mass of researchers and facilities to be effective and these costs are mostly unaffordable to smaller African countries. A target of 2 percent of agricultural gross domestic product (AGDP) was suggested by the World Bank in 1981 and 4% by FARA for desirable national research expenditure in developing countries. This percentage would be similar as in developed countries and would bring the cost of agricultural research in SSA to about US$ 2 billion annually according to the World Bank and US$4 according to FARA[9]. Pooling of research across national boundaries within similar agro-ecological regions as well as agreements with foreign research institutions and universities will help to contain the cost. Most research in SSA will be in the public domain, as private research in agriculture that is relatively important in developed countries is likely to remain limited in SSA due to lack of markets for research results and Intellectual Property Rights (IPR) issues.

44. ***Accessing the greenhouse gas trade.*** Carbon storage and sequestration have become key topics as the world gets more concerned about climate change. Cap and trade systems are likely to spread in the future, going beyond the limited scheme under the Kyoto protocol. Africa has an opportunity to contribute to, and draw benefits from, future international agreements as a result of the Copenhagen and successor meetings. This would involve the capacity to identify a greenhouse gas footprint in agriculture, forestry and animal husbandry and to use the information as a negotiating instrument in future carbon capping and trading conferences. Capacity building to generate knowledge on African renewable energy resources, on carbon sinks created through forest and land management practices and on livestock breed composition and feeding habits impacting on methane gas emissions will turn out to be ultimately a profitable investment.

45. Agriculture has large potential to mitigate greenhouse gases and, in Africa constitutes the most important opportunity to obtain credits in the upcoming trading system. A relative change from annual to tree crops and from conventional to conservation agriculture can increase the amount of carbon stored. The tree crop sector in SSA (rubber, cocoa, oil palm, cocoa, coconut) has relatively declined in the last half century in favour of food crops and residential uses of land. In suitable regions these crops have comparative advantages over annual crops and their higher carbon storage value may give them the financial edge that is needed for a resurrection of the sector.

46. Avoiding deforestation (Africa lost 9% of its forests between 1997 and 2007) and reforestation are other ways in which SSA could benefit from the carbon trade. A tree plantation, *while growing*, draws CO2 in the amount of 1.5 times its mean annual increment (m.a.i). in dry wood weight from the atmosphere and stores carbon, releasing oxygen. The value of CO2 in the still limited, but growing, carbon trading market that followed the Kyoto protocol under the Clean Development Mechanism (CDM) has varied from US$ 5 to US$ 35 per ton. Agriculture and forestry have not yet been included in carbon trading because of a series of unresolved issues on monitoring, measurement and methodology. Nevertheless, they are Africa's main opportunity to participate in the forthcoming expansion of carbon trading. African countries should therefore prepare themselves to strongly advocate inclusion of agriculture and forestry into any future carbon trading schemes, elaborate a common position and develop the professional capacity to argue it at future negotiations.

[9] Based on AGDP of about US$ 100 billion in SSA, based on World Bank, 2007 and 2008

2.3 Priority Areas of public investment:

47. The two outstanding investment categories, by volume, to deal with climate change in African agriculture are irrigation and Sustainable Land Management.

48. ***Water management and irrigation***. The public-private cost sharing depends largely on the scale of investment and their public goods nature. Large irrigation infrastructure investment will largely remain in the public sector domain. It is expected that most of the large irrigation schemes, including rehabilitation, identified in Sirte will be publicly funded to a high degree. This would concern the bulk of investment opportunities in irrigation and water management and be in the order of US$ 50 billion over some 10-15 years (FAO, 2008 (1)). Cost recovery from farmers for major structures (dams, major canals) will rarely be possible.

49. However, on-farm investment and tertiary canal construction and maintenance should be handed over to farmer organizations and individual farmers. Associated public expenditures would include capacity building for technology transfer, support to farmer organizations and water user groups, water rights legislation, international agreements on water sharing in transboundary river systems. The development of small water management and irrigation development (small stream diversion, seasonal storage impoundments, well construction and treadle pumps, mechanical pump irrigation from shallow wells and streams), and other small investments are best devolved to local communities, who would share the cost with private investors and the farming community and would receive planning assistance and partial funding from central government.

50. ***Fertilizer and conservation farming***. The Abuja Fertilizer Summit agreed on subsidies to make fertilizer use more financially profitable to farmers than it is at full cost (IFDC 2009). In addition, public investment is needed in capacity building for technology transfer, mother seed distribution to commercial seed bulking firms or farmer organizations, extension advice, seed and fertilizer legislation, fertilizer quality control, control and certification of *bona fide* fertilizer dealers.

51. As previously noted, although the successful experiences of conservation agriculture in the continent need to be deepened and replicated, this will not be sufficient to address effectively food insecurity in the continent. It has to be used in conjunction with fertilizer. Furthermore, this will not normally absorb high public investment. However, as the benefits will accrue to the country, as a whole, incentive payments to farmers should be considered who undertake the often labour-intensive initial investments. This transition needs to be backed up by improved legislation in land tenure and natural resources management and by competent technical advice and intensive interaction with the farming community during the initial introductory phases of conservation agriculture. In this regard, cooperation from experienced countries should be sought under a South-South collaboration programme.

III REGIONAL AGRICULTURAL TRADE AND MARKET SYSTEM DEVELOPMENT

3.1 Issues and challenges in developing trade and markets

52. *State of regional trade in Africa.* Viewing the highly dynamic commercialized portion of US$ 50 billion of the African food market, to a considerable degree supplied from overseas, it is natural to imagine a large scope for import substitution or at least participation in market growth through more local supplies. It was in this context that African leaders have decided to promote regional market integration, in the past through RECs, and more recently, through the creation of a common African market for food and agriculture across the RECs.

53. However, as the creation of trading blocks can cause both, trade creation (efficient) and trade diversion (inefficient) effects it is clear that only creative trade is envisaged that exploits comparative advantages, leads to lower prices, hence real income increases to consumers, and increases overall welfare.

54. Despite the dominant position of agriculture in the economies Africa's agricultural imports have been steadily increasing. They presently stand at US$ 33 billion annually (2000-2005 figures) and are above agricultural exports (US$ 21 billion) (ECA, 2009). This should point to substantial scope for import substitution and expansion of intra-African trade which has strong political support of all African leaders. Although official, recorded intra-African trade in food and agriculture remains moderate it is growing. Intra-trade (exports) has increased from US$ 2.7 billion to US$ 3.8 billion between 1996-99 and 2002-05 and intra-trade (imports) from US$ 2.5 to US$ 2.8. At present intra-trade in agricultural produce among Africans themselves concerns nearly 20% of African exports and to 14% of imports. Though growing, intra-trade has had a tendency to decline during recent years as African agricultural trade with the rest of the world has grown even faster due to economic expansion during the decade of 1995-2005 (FAO, 2006 (2)).

55. The intra-trade pattern in agriculture varies from region to region and from commodity to commodity. This is due to geographical vicinity of trade partners and the relatively high external tariff barrier on agricultural produce of 20% on average of RECs. Intra-trade (exports) on an average over 2002-05 was most developed in COMESA at 34% and least in ECCAS (27%). The latter share appears however to have fallen from a relatively high level of 56% in 1996-99, possibly reflecting the deteriorated security situation in the region.

56. In respect of intra-trade (imports), AMU countries have been most succesful in importing from within their REC at 24% while the EAC drew 14% of its agricultural imports from inside the community. Intra-trade across REC boundaries is generally rather limited, except for a dominant position of SADC in imports by other RECs, reflecting a high degree of competitiveness of South Africa in agricultural trade.

57. Although data on intra-trade in commodities are not complete, cereals appear to dominate the intra trade (exports) at 65%, this is in marked contrast to the cereal share in intra-trade (imports) which is symptomatic for the long way still to go until significant cereal surpluses will become available in Africa for export. The low volumes of cereals that *are* exported from African countries in fact go mostly to neighbours. Dominant in this trade are South African maize exports. At the

other, low, extreme of intra-trade (exports) are fruits, vegetables and spices that account for 7-8%, as the bulk of exports are shipped overseas.

Table 1: Intra-African Trade of Major Food Groups, 2002-05 averages

	Africa's export to:			Africa's import to:		
Products	World	Africa (.....million US$.....)	% of Intra-trade	World	Africa (.....million US$.....)	% of Intra-trade
Cereals	868	558	64.3	7477	451	6.0
Oils and Fats	622	190	30.5	2176	213	9.8
Oilseeds	282	75	26.6	374	63	16.9
Dairy Products	197	115	58.3	1437	112	7.8
Meat and Meat Products	245	122	49.8	871	55	6.4
Sugar [1/]	993	313	31.5	1274	233	18.3
Vegetables and Fruits [2/]	3557	266	7.5	1294	278	21.5
Beverages	844	271	32.1	502	134	26.7
Live Animals	315	163	51.6	150	39	26.0
Coffee, Cocoa, Tea	4363	321	7.4	717	304	42.5
Spices	237	18	7.6	84	23	27.2
Other food products	4380	869	19.8	3743	897	24.0
Total	16904	3280	19.4	20099	2803	13.9

Notes:
[1/] Includes sugar confectionary; [2/] Includes roots and tubers
Source: COMTRADE

58. Coffee, cocoa, tea dominate intra-trade (imports) with 42%. At the bottom end of intra-trade (import) are, as mentioned, cereals as well as dairy products and meat with 6-8% of African imports originating in Africa itself. The modest share of intra-African trade in total African trade is due to a variety of factors, most on the supply and some on the demand side. Low incomes mean low purchasing power which dampens demand for imports and hinders the trade in high value produce that might be able to bear the high cost of marketing and transport. There is also a lack of diversity and complementarity of agricultural outputs in different countries that could stimulate commercial exchanges. Africa is in fact still dependent on few export commodities of relatively low value added, suffers from dispersal of supply sources, inadequate legal and regulatory frameworks and insufficient transport, storage and marketing infrastructure.

59. Historically, urban agglomerations have evolved mainly along the coast and maritime supplies were cheaper to procure food than supplies from the hinterland could, suffering as it did from poor infrastructure and fragmentation of supply sources from smallholders. Policies are often characterized by an anti-agricultural and anti-rural bias, which is difficult to overcome when the number of urban poor is growing and demanding cheap food. Subsidized exports from developed countries have hindered market development for local produce. Such distortions are gradually being removed but their legacy will still be felt for some time. After structural adjustment and government withdrawal from direct intervention, the African private business sector has not been able and willing to replace the void left by previous, though often unsustainable, government marketing and procurement services. This has adversely affected all agricultural trade, not only intra-trade.

3.2 Constraints and opportunities in domestic and regional trade

60. . Intra-trade benefits from a strong and credible political will of African leaders. The Abuja resolutions aim at creating a common market for a number of strategic food commodities including rice, legumes, maize, cotton, palmoil, beef, dairy products, poultry and fisheries. Other commodities, comprising cassava, millet, sorghum are to benefit from sub-regional removal of trade barriers.

61. There are two types of major constraints to the expansion of intra-trade. One is the existence of internal administrative obstacles to free trade of tariffs and non-tariff barriers (NTB), as well as the so-called non-core NTB - illegal roadblocks, fees and bribes. The other type is connected to the agricultural supply and marketing system itself that is segmented, underequipped, underfinanced and poorly organized to cope with a dynamic urban food demand.

62. As to the first type of hindrance, RECs have already largely removed internal tariff barriers on their way towards free trade areas. Trade within each of the RECs should soon flow completely unimpeded from duties. As duties make up a considerable portion of 10-30% of government revenues the loss may be felt at some point by countries that rely heavily on them. At the moment, the intra-REC trade is still relatively small and the revenue loss tolerable, but the shortfall might bite once RECs move towards a customs union or if, at a future date RECs are merged into a common African market and common external tariffs are agreed to.

63. In respect of the strategic commodities, it is noteworthy that all African (and non-African developing countries) tax agricultural products higher, to differing degrees, than non-agricultural products (FAO, 2006 (2)). A number of non-tariff barriers remain, such as internal taxes on some agricultural produce, but their incidence is rapidly disappearing. The imposition of technical standards in cross-border trade remains a problem as it is often perceived as arbitrarily impeding trade. Excessive food safety standards imposed by the EU should not be literally copied by African countries for intra-trade but be made to fit local conditions. In addition, the tendency towards privatization of food standards and the difficulty of official enforcement are other reasons for governments to refrain from pursuance of such regulations beyond the strictly necessary. Experience shows that effective food safety involves cooperation between industry and Government, that is, a combination of private actions and public regulation. Where, instead, food safety policy is built predominantly on official prescriptions and inspections, the results are likely to be poor, both from a public health and from a trade perspective.

64. A significant looming issue is the role of GMO in Africa that will need to be addressed politically and technically. Countries should step up efforts to harmonize technical standards. For food standards the Codex Alimentarius is a guide and FAO a source of practical assistance. For plants, the International Plant Protection Convention (IPPC) is applicable. The movement of live animals that are raised in the open under little controlled conditions requires harmonization and enforcement of veterinary regulations. Rules of Origin, referring to treatment by customs of products in transit and those with ingredients from different origins still need to be harmonized. Generally, however, the intra-REC trade is now relatively free of administratively-imposed obstacles.

65. Non-core NTB continue to pose problems. According to anecdotal evidence there is a marked increase of illegal road blocks, arbitrary fees and taxes imposed on interregional trade that needs to be closely watched. Like in any trade liberalization the development of intra-African trade has winners and losers during an adjustment period. Producers who are well endowed by nature and

competitive will tend to dominate the trade in commodities until those left behind have found a new niche to develop their comparative advantage. For this reason those responsible for trade integration have introduced the escape clause of sensitive products. Net producers and net consumers of food can have diametrically opposed views on price changes.

66. Depending on which group is more numerous and vocal, extra exports or imports of staple food may be either welcomed or resented. The challenge is for governments to adopt a balanced approach and use the sensitive product argument sparingly. Public-private dialogue between government and the agricultural trade sector are a way to mitigate excessive price fluctuations and avoid a political backlash against free trade. It is also critical that policies for trade expansion are combined with measures that protect any losers through safety nets and promotion of alternative employment in- and outside agriculture.

67. The prospects for increasing intra-African trade in respect of particular commodities may be summarized as follows.

68. ***Cereals***. Given the large import dependence of most countries there is good scope for raising intra-African trade in rice, maize and some other grains. Trade in rice and maize is already well established in some RECs, though for rice at low volumes. Trade expansion would mostly have to compete with imported wheat and rice from outside Africa. The main limiting factor to intra-trade is however African supply capacity.

69. ***Meat***. Intra-trade (export) is well established, both for live animals and bovine meat. SADC is the main exporter of beef, and live animals have traditionally been exported from the Sahel to slaughterhouses in West African coastal consumption centres. In addition, in the past, dried fish have been regionally exported from Lake Chad and other inland water bodies. Most poultry is bought from extra-African sources (EU, US, China). The prospects for increasing the poultry trade, again, depend on supply, especially availability of low cost feedstuff in African producer countries. Africa has lost its previous position in Europe for chilled and frozen beef as it could not meet the stringent safety regulations. The African market itself offers however good prospects for intra-trade in meat.

70. ***Sugar:*** Intra-African trade is already quite high and there is a positive trade balance with the rest of the world. Most of the current export to the rest of the world is traded under preferential trade arrangements. As long as these are in force, trade is not going to be easily diverted to Africa where prices are bound to be lower, but there is still enough scope to raise intra-trade for any quantities produced in excess of the preferential quotas.

71. ***Oils and fat.*** Africa is highly deficient in vegetable oils and fats and intra-trade in these commodities is low. Most imported oil is soybean oil. Africa has lost most of its self-sufficiency and export outlets for groundnut and palm and palm kernel oil long ago. The main problem of the sector is insufficient production. A revival of the African tree crops sector, possibly assisted by carbon trading could help to encourage replanting schemes for oilpalm.

72. ***Vegetables and Fruits.*** Intra-trade in vegetables and fruits is relatively low in terms of exports and moderate in terms of imports. Legumes (pulses) are highly traded within the region and account for around 16 percent of intra-trade (imports). There is more trade complementarity in vegetables and fruits than in other agricultural commodities and the scope for increased intra-trade seems good. Fresh vegetables are mostly exported outside Africa, processed vegetables and fruits

are much imported from overseas. Due to perishability and processing requirements trade prospects depend much on vertical integration of marketing chains.

73. ***Need for value added to primary commodities.*** There is clearly a need in Africa to go beyond exporting primary agricultural commodities for further processing abroad. In SSA the value added to the primary agricultural product up to consumption stage may double the cost of raw material value but this share has a tendency to quickly become a multiple of the raw material value as incomes rise. In Latin America the value added is three to four times the value of the raw material and in developed countries ten times and more[10].

74. Efforts to add value to primary agricultural commodities in Africa are frustrated by import duties in major overseas export destinations, increasing progressively with added value, high cost and the need to import of processing equipment and packaging materials, and the quality and safety standards imposed by importing countries. Countries that have developed value added and agro-processing activities have usually proceeded in stages, starting with simple semi-processing activities towards more sophisticated production of final products. This has helped to contain processing cost and market risk, while getting familiarity with external market requirements. Examples are veneer sheets and furniture parts rather than whole furniture, bulk frozen pulps rather than packaged jams.

3.3 Priority areas for action

75. ***Regional market integration***. As discussed above, regional market integration is well on its way, driven by strong political will of African leaders. The next steps - the creation of a common African market for strategic commodities and a pan-African customs union - need to be carefully prepared. In particular, the setting of a common external tariff might collide with preferential trade agreements that some African countries already have with non-African trade partners, especially the EU. It is clearly not in the interest of African countries to lose preferential access to markets in developed countries, at least in the short-term. However, there is no cause for complacency. International competitiveness in agricultural trade must be high on the African agenda, as other developing regions press for MFN status with preference-granting importers.

76. ***Local market and marketing facilities***. Among the two types of hindrances evoked earlier, the insufficiency of marketable surpluses and the poor marketing, processing and transport systems are much greater obstacles to intra-African trade than the fast disappearing administrative trade barriers. In the first part of this discussion the issues of investment in agricultural production have been highlighted and the needs and potential outlined, aiming in particular at increasing agricultural productivity.

77. Investment in domestic marketing is as essential as investment in primary production, and it gets increasingly important as incomes rise and markets evolve. The cost of road transport of food from internal agricultural surplus areas to coastal consumers are often higher than the cost of maritime freight from overseas origins. This is caused by the small quantities available from geographically dispersed sources combined with a poor road network, lack of markets, cold storage, and processing and fragmented trade channels in general. Competition is lacking because small

[10] There are signs of a backlash in some developed countries against food with overly sophisticated processing, excessively long marketing channels and ingredients from multiple sources in the final product as consumers get sceptical about the nutritional value and the ecological impact of globalized agri-business practices

quantities do not allow profitable business for many operators, and there are numerous barriers to entry into trade, favouring local monopolies.

78. Vertical business integration suffers from lack and high cost of operational capital and from high price risk and risk of physical loss at any one stage of marketing. Investments into first-stage post-production operations (assembly and initial marketing, treshing, shelling, parboiling, gari production, milling, storage) as well as rural farm-to-market roads can require as much as two thirds again of the investment volume deemed necessary for primary production (FAO, 1996).

79. As to rural roads, the arguably greatest need in African agricultural development, experience shows that it is essential to create a sense of ownership by the beneficiaries and communities concerned, and for them to assume responsibility for post-investment operation and maintenance. Rural roads construction should be devolved to local government and local communities who usually require central government funds to implement and maintain the works. Similarly, construction of local markets, operation and setting of market regulations can be entrusted to local governments and farmers organizations.

80. ***Agro-processing and value addition.*** Farmer-business linkages are key to successful market integration of farmers. There are many models of vertical linkages in the agricultural value chain, among which figure contract farming, outgrower schemes, nucleus estates, suppliers and buyers credit, and others. All of them have in common that they reduce risks by establishing durable, mutually beneficial relationships between production, marketing and processing that stimulate and allow to amortize the investments in value added chains. Markets for value added services in food marketing, processing, handling and storage expand with incomes and urbanisation. Agri-food systems are critical for general agricultural growth, but attention is needed to identify markets for value added services. It is consumer demand that adds value, not the enterprise. Unless higher level food processing is in demand processing enterprises will fail.

81. Agri-business enterprises generally prefer to deal with commercial farmers and farmer groups rather than with smallholders at the threshold of the subsistence economy. Experience shows however that commercial farmers can attract groups of smallholders around them who imitate their production patterns and can benefit from their marketing facilities and organization. Higher level processing tends to be located in the major cities for reasons of access to utilities, market vicinity, government officials and financing sources.

82. Credit is a main bottleneck for agi-business enterprises, especially small firms. Such firms present a high credit risk because of limited management and technical skills. Capital and technology are essential to comply with food safety standards and rising consumer expectations. Better access to financing can be secured by the promotion of local-based rural banks and by training of rural bank staff in agri-business project appraisal.

83. Technology transfer to small enterprises (marketing skills, preparation of business plans and market surveys, establishing accountancy systems) is sometimes undertaken by semi-public institutions supported by foreign donors. The long-term sustainability of such institutions needs to be assured by appropriate cost covering mechanisms. Agribusiness incubators can be seen as a precursor to venture capital markets and would need similar prerequisites such as willingness of family enterprises to accept outside partners, spreading the financing risk among different enterprise types, exit strategy for the equity holder and a generally supportive policy environment.

84. Even though the agri-business sector thrives best without government interference, public services are needed to leverage private capital. These include post-harvest technology generation and extension aimed at small farmers; rural infrastructure and utilities, especially, roads, electricity and telecommunications; market information; marketing training and extension for commercial farmers; rural financial intermediaries; technical service providers to agribusiness enterprises; legislation and law enforcement in favour of competition, removal of administrative entry barriers, break-up of monopolies, prevention of cartels; protection of contracts and ownership rights; industrial zoning and provision of related basic infrastructure in urban and rural areas.

85. ***Agricultural investment zones.*** Agricultural investment zoning is a concept that envisions defining agro-ecological areas for strategic food commodities, facilitating investments and providing services to make them competitive. In such zones enabling policy, institutional and legal frameworks would be created for the development and management of land and water resources, and public infrastructure and services provided in order to attract trans-national agribusiness companies. This would help mobilizing investment to develop a vertically coordinated production, processing, transport and marketing system for the strategic commodities. In addition, the agricultural investment zones should be given priority in national higher agricultural education and research orientation (ECA, 2009).

IV. FINANCING AFRICAN AGRICULTURE

4.1 Issues and Challenges

86. ***Investment needs.*** African agriculture needs massive additional investment to improve food security and economic growth in the continent. Raising agricultural productivity through economically feasible infrastructure development and use of improved technology and input is the only way forward to escape from the poverty trap and to raise the people's income and nutritional standards. The long-term historical growth rates of SSAn agriculture of the order of 2.5-3.0% need to be at least doubled as stipulated under CAADP. This suggests, accordingly, a doubling of investment in agriculture.

87. ***Methodological issues***. Identifying investments needed to bring about a specific agricultural growth target is not a straightforward undertaking. The relationship of investment and growth in agriculture is complex and seldom linear. As agricultural growth depends on a variety of factors, some of which are beyond human control, the productivity of invested capital[11] in agriculture varies considerably between countries and agro-ecological regions. Production response to investment is high where natural resource endowment, policy framework, existing infrastructure and market access are favourable and is low where such conditions are absent. As suggested earlier it would be prudent for a country to concentrate scarce investment funds on the more receptive agro-ecological areas and investment types in order to improve the chances of rapid growth[12]. An important reason

[11] In macro-economic terms the reverse incremental capital-output ratio

[12] This refers in particular to productive agricultural investments required to produce extra food and incomes. Social sector investment, especially in health and education, must be evenly spread on a per caput basis, no matter if the population lives in high or low potential areas. This is required by social justice and will allow the beneficiaries to lead an active, healthy life whether or not in agriculture and, in low potential areas, allow them to exit agriculture, including electing to migrate.

for favouring high potential environments, where the productivity of investments is high, is to attract the normally fungible financial resources for which agriculture must compete with other sectors. Governments have a critical role to play in financing public goods and services that help to draw fleeting investment funds[13].

88. ***Investment estimates***. Attempts have been made through the CAADP framework to estimate the investment volume to attain the growth rate needed to reach the MDG1. Estimates from different sources converge around an order of cumulative amount of US$ 250 billion needed between 2002 and 2015, or about US$ 18 billion annually[14]. The MDG Africa Steering Group believes that some US$ 8 billion of this have to be made available as external aid and that the target growth rate should be increased to 7.5%.

89. ***Recent events.*** The financial and food crisis have repercussions for the MDG process and CAADP strategies. The financial crisis will reduce overall investment funds, due to budget crisis in donor countries, reduction of remittances and private capital repatriation. The food prices crisis offers opportunities to net food producers to benefit from higher prices but deteriorates the food security of the larger numbers of net food consumers, including the poorest and most vulnerable. These events have not yet been incorporated into the investment estimates, nor the fact that the deadline for MDG attainment is steadily moving closer with investments still lagging behind schedule.

4.2 Priority actions to attract more investments into agriculture

90. ***Sources and trends of*** **agricultural** ***investments***. Three categories of sources for agricultural investments are commonly considered: domestic public resources, ODA and domestic private resources.

91. ***Increasing public spending***. According to the Maputo declaration public expenditure on agriculture ought to reach 10% of government budgets over a five-year period starting 2006. The percentage is high by historic standards. In 1980 African public expenditure on agriculture amounted to 6.2%, to 4.5% in 2002 and to 5.6% in 2006(IFPRI, 2009 (2); this differs somewhat from RESAKSS, 2009). The decline since 1980 reflects a reduction of subsidies and phasing out of loss-making parastatals in the agricultural sector and a relative neglect of agriculture as other sectors gained prominence in national accounts. According to IFPRI and RESAKKS only a few countries (Ghana, Burkina Faso, Ethiopia, Seneal, Guinea, Chad, Ethiopia, Mali, Malawi and Niger) have reached the share of 10%. If the Maputo declaration materializes public spending on

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Governments need to ensure that a possible urban bias in social sector investments is fully identified and removed.

[13] At macro-economic level investment planners distinguish between gross and net investments. The latter are statistically less readily identified but are relevant for growth. Investments that merely substitute for assets that are ending their useful life or breaking down from neglected maintenance (including rehabilitation projects), do not produce growth but maintain the *status quo.*

[14] This compares with some US$ 11 billion annually estimated by FAO on the occasion of the WFS in 1996 (FAO, 1996).

agriculture would surge to US$ 6.7 billion[15]. Governments should make every effort to fulfil the pledge made at Maputo. A new deadline may have to be fixed for compliance throughout SSA.

92. ***Strengthening pro-agriculture advocacy.*** The divergence between the Maputo commitment and reality is not surprising, considering that to increase the share of agricultural spending in the budget other ministries have to accept to reduce theirs. A key requirement to fulfil the Maputo declaration is to strengthen the agricultural constituency in African countries(AfDB, 2009). Decisions on budget allocations are generally made by ministries of finance and planning. It is therefore proposed to establish an Agricultural Sector Governance Programme (ASGP) under the CAADP whose task would be to harmonize national efforts towards CAADP objectives and pull together all players to create a common front of pro-agricultural advocacy. In particular, ASGP would assist with capacity building of national agricultural constituencies, including ministries of agriculture and related sectors, agriculture-related institutions and relevant NGO, in order to increase their lobbying power. They should be able to raise relevant agriculture and food security development issues, achieve higher visibility of the sector in public opinion and the media, prepare and present feasible financing proposals and communicate achievements to an often sceptical public that regards agriculture as a backwards sector.

93. ***Increasing spending efficiency***. Beyond the nominal allocation of additional funds to agriculture in government budgets, the efficiency and effectiveness of spending need to be monitored and assessed. A useful tool to improve the quality of the budgeting process is the consideration of output/results-based budgets. Such budgets might have to be agreed throughout all government institutions, not only confined to ministries of agriculture. Output/results-based budgets would define annual or rolling multi-annual, performance indicators and they would target expenditure proposals towards achieving these, preferably based on a log-frame approach to define desirable outputs of services and investments in the agricultural sector.

94. Output/results-based budgeting would be more convincing to decision makers in the ministries of finance than conventional input-oriented, administrative or routine budgets and would introduce an element of quality competition for central funds among ministries and public institutions. Another proposal to increase spending efficiency is to use programme approaches under which greater spending flexibility is given to the ministry of agriculture within a broad expenditure framework set-up in cooperation with the finance and planning authorities. Of concern is the high share of personnel cost which can absorb the majority of ministerial budgets, limiting its flexibility to pursue alternative, especially performance-oriented budgeting approaches. Programmable expenditures, the portion that is allocated to the implementation of specific projects or tasks, are therefore often mainly funded from external sources. Capacity building of ministerial staff is needed to improve economic management of the ministry and prepare budget proposals focused on outputs and outcomes.

95. ***Obstacles to attracting ODA into agriculture***. ODA is relatively well reported. It is a minor but critical contributor to agricultural investment in Africa, responsible for most project financing. Over the last few decades ODA to African agriculture in the narrow sense (production and related input and services financing) has been declining as a share of total ODA (FAO, 2009). It has declined from 22% in 1981 to 6% recently. Current annual commitments to African agriculture

[15] An alternative estimate based on the World Bank, 2007, 2008 would suggest US$ 10 billion: GDP of SSA without South Africa in 2007 US$ 383 billion, government expenditure 27% of GDP, requested public agriculture expenditure 2.7%

through grants and concessional loans to agriculture are one half or less of what is deemed necessary by UN and related international agencies (US$ 3 billion vs US$ 6-8 billion).

96. Among the reasons for the declining relative share of ODA funding in agriculture have been that (i) the sector is considered complex and project results were not always satisfactory, (ii) specialized staff in aid agencies have became scarce, and (iii) governments found aid channels difficult to access - too fragmented and bureaucratic increasing cost of aid delivery and of government staff time to deal with multiple donors. Also worrying is that ODA to agriculture over the years has tended to become increasingly short-term in nature, as necessary and urgent emergency operations have crowded out long-term investment programmes from the development budgets of donor institutions. Another concern is the large gap between commitments and disbursements which points to a dearth in project planning and management.

97. ***Success of social sector financing.*** Considerably more ODA than to agriculture, namely about US$ 15-17 billion annually in recent years, has been committed to social sectors, including health, education, water supply and sanitation of which an unknown, but typically disproportionately modest portion ends up in rural areas. This is often due to aid being more cheaply and easily to deliver to dense population agglomerations. Apart from stepping up direct financial assistance to agriculture in the narrow sense, there is also a need to monitor social sector aid flows by internal destination and ensure that the rural sector that comprises the majority of poor people in SSA is not left behind. Governments have a role to play in pointing out to donors the need to overcome urban bias.

98. ***Improving the CAADP focus of ODA***. Donor agencies and recipient countries are concerned about ensuring African ownership of their projects and programmes. CAADP provides such assurance. A proposal worth considering is the establishment of a CAADP Fund by upgrading the existing Multi-Donor-Trust Fund for CAADP, actually hosted by the World Bank (AfDB, 2009). The Fund´s philosophy would follow the CAADP principles, especially channelling to African countries all aid finance directed at the four pillars and would have abbreviated project preparation and disbursement procedures. Two alternatives to a special CAADP Fund could be (i) a virtual CAADP Fund by which donor policy harmonization and coordination would occur through a virtual network without setting-up a special fund and (ii) establishing a Financial Coordination Mechanism (FCM) in the amount of initially US$ 1 billion, to be gradually increased to US$ 6 billion. FCM would draw together all food security funding from different donors and point it at food insecure ´´hot spots´´ in Africa. Whatever the form that the alignment of donor financing with CAADP principles might take, it would be essential to design aid packages in a way to maximize leverage from private funding sources.

99. ***Strengthening pre-investment work capacity***. Investment figures proposed for African total and country-level investment in agriculture are broadly indicative. To make macro-economic planning data operational they have to be broken down into feasible programmes and projects suitable to attract international and local financing. A good start has been made under the preparatory work to the Sirte Conference by preparing a portfolio of about 1000 water control and hydro-power projects and programmes for 53 African countries. The preparation of feasible and ´´bankable´´ agricultural and rural development projects, is a special skill that can absorb anything between 1% and 10% of the final investment cost. International agencies and IFIs are increasingly relying on local programme and project preparation not only to contain preparation costs but also to improve country ownership of externally funded investments. An important contribution to attract international financing for CAADP is therefore the development of national skills to prepare and present viable projects and programmes for international and local financing.

100. ***Mobilizing the private sector***. The extent of private external financing to agriculture is relatively unknown and has probably been not very significant in recent history, apart from extractive trades such as forestry and fisheries and possibly some agro-processing. According to UNCTAD, FDI to Africa increased from US$ 17.2 billion to US$ 38.8 billion in just three years from 2004-2006 but the share that went to agriculture is unknown. Private foundations have considerably increased investment in mainly social services. Interest is growing from public agencies in Asian and Middle eastern countries anxious to improve and secure their own food supply through large-scale investment in agriculture in developing countries, including Africa.

101. ***Investments at farm level***. The bulk of investments in agriculture is undertaken by the farmers themselves. Most investments on the family farm are in the form of own labour and from own savings. Such investment is hugely facilitated by incentives such as secure tenure, equitable access to natural resources like water, communal grazing land, access to markets, inputs and credit, competition among buyers of produce and suppliers of inputs and services and the absence of unwarranted government interference with prices and markets. Lacking these ingredients to increase productivity and market integration, production expansion will remain subsistence-oriented expanding into more fragile areas and drawing down natural resources and environmental capital.

102. Government policy and legislation can greatly enhance incentives to farmers to invest in land improvement, development of water resources, and livestock and similar asset creation. Rural credit is an important complement to farmers´ own investment efforts. The development, preferably through NGO, of local level savings institutions and micro-finance has shown great success in South Asia and is believed to have considerable potential in Africa.

103. ***Tapping remittances.*** Remittances from the African Diaspora have the potential to contribute very substantially to agricultural investments if properly channelled. Annual transfers are in the order of US$ 17 billion, higher than FDI in some years (AFDB, 2009), although both are likely to suffer from the economic slowdown. Not much is known about the use of remittances. Much is likely to be needed for survival of family members left behind. Remittances may also allow farmers to invest their time in improving their own farm rather than seeking off-farm employment as hired workers, and in this sense increases private agricultural investment. A theoretical potential seems to lie in using such funds for leveraging loans from local banks for investment and input finance. More research should be carried out on this topic.

104. ***Enabling environment***. Governments should ensure: protection of property and other rights, transparency of administrative acts and of policies, secure land tenure, and sound monetary and fiscal policies. In addition, they must step up investments into infrastructure (roads, market facilities, utilities[16]). These ingredients can create an enabling environment that promotes private investments, both at farm level and in post-production operations.

105. Special scope also exists for government intervention to remedy certain market failures that militate against small farmer integration in the business world, such as guaranteeing long-term finance, pooling of risks in credit and insurance services, facilitating through subsidies the formation of critical masses of produce, buyers and sellers in order to improve competition and reduce cost of marketing and procurement. Investment in agriculture (and other sectors) are greatly hampered by conflict and lawlessness that tragically afflict parts of Africa. The AU is the most

[16] Rural electricity has shown to have dramatic potential for productivity increases

suitable body to lean on conflicting parties in order to establish the right conditions for, among other resulting benefits, increased investment flows into the rural sector.

106. ***Strengthening the role of CAADP.*** The ongoing review of CAADP has observed that its credibility, and thus sustainability, is at risk unless significant resources are mobilised to fund investments arising from the Round Table process. This implies setting up a pool of funds which countries that have reached Compact stage could tap into. Thus far CAADP has a financing stream of at about US$700 million. There is also US$900 million in leveraged funds from the US$150 million under the NEPAD-TerrAfrica. These are not yet at a level to allow CAADP to play an aggressive role in taking its agenda forward. CAADP is however in good position to:

- Arrange conferences and meetings of NEPAD members to publicly reconfirm and strengthen their commitments to agriculture
- Arrange a South-South Forum with important emerging economies (Brazil China, India) to draw hem into the CAADP process
- Arrange a forum with the aim to increase remittances and technical and professional skills of the Diaspora for agricultural development.

V. INCLUSION OF THE POOREST AND MOST VULNERABLE

107. African leaders and their development partners have expressed their commitment to address food security and agricultural development constraints in the continent within the framework of CAADP. This drive however bears the risk of forgetting the poor and the most vulnerable, and their needs deserve special attention.

5.1 Who are the poorest and most vulnerable?

108. The poorest and most vulnerable are groups that are highly heterogeneous. They have in common that they must survive on less than US$ 1 per day at local PPP equivalent[17]. The rural poor are not only poorer, but also less healthy and have a shorter lifespan than the urban poor due to lower hygiene and greater disease incidence. Malaria-carrying mosquitoes and the hosts of certain life-threatening viruses are more commonly found in the countryside than in towns.

109. The poorest and most vulnerable rural dwellers commonly comprise

- Landless and near-landless farmers,
- Farmers affected by civil strife,
- HIV/AIDS affected persons
- Women headed households
- People living in very remote and fragile, often pastoral areas
- Small children, especially orphans

5.2 Strategies to assist the ultra-poor

[17] This distinguishes them from the near-poor for whom the limit is US$ 2 per day, according to the World Bank. There are in the world 1.3 billion poor with ≤ US$ 1 and 2.8 billion with ≤US$ 2.

110. The ultra-poor may be distinguished according to whether they are able, with some support, to help themselves or not and within what time span. Sick persons, small orphaned children and victims of civil strife no doubt require in the medium-term direct food and health assistance. The other groups can be helped with an array of means aimed to increase their capacity to earn a livelihood. As a principle, sustained, pro-poor economic growth, based on robust private sector activity and investment, must be the keystone of any rural poverty reduction strategy. The capacity of agriculture to advance livelihoods of the ultra-poor and vulnerable depends on their access to productive assets, mainly land. In such cases food security is best attained by helping the food insecure to increase food production by providing inputs and technical advice. However, having access to land is rarely a distinctive feature of the ultra-poor. The poor and ultra-poor are mostly landless and always net food consumers. They have an interest in earning cash and in low food prices. The issue for them is not so much agricultural production as such but enabling them to earn food entitlements (Amartya Sen). This points to the critical role of the non-farm economy.

111. ***Non-farm economy.*** Pro-poor agricultural growth has important spillover and multiplier effects that affect non-agricultural rural sectors. It is estimated that in Africa for every 1% agricultural growth the non-agricultural sector grows by 0.5 % (IFPRI, 2009 (2)). Non-farm rural sector incomes represents 34% of the rural economy in SSA and a large part is made up by rural non-farm employment (another part by remittances). The non-farm sector is highly varied, including, trade, communications and transport, construction, handicraft and small industry as well as public services and, where resources are available, food-for work programmes. This sector is likely to increase considerably in SSA in absolute terms and as a proportion of the rural economy as has happened in other developing regions. It cannot only serve as a source of livelihood for the ultra-poor but also absorb the growing number of farmers who find their survival is impossible in resource-poor and fragile areas. The non-farm rural sector can be greatly assisted by government through provision of utilities, especially electricity, water supply, and access to credit.

112. ***Targeting the ultra-poor***. Examples in other regions and Africa itself show that agricultural growth is not enough to eradicate extreme poverty. For this reason FAO during the follow-up to the World Food Summit in 2002 advocated a two-track approach towards rural poverty reduction, growth *and* targeted assistance. Agricultural and non-agricultural rural growth is clearly the long-term solution to reduce rural poverty, however, in the short-term and in emergency situations targeted assistance is indispensable (WFP, 2009).

113. The challenge to governments and development agencies is to identify the poor and vulnerable, their requirements and provide them with the necessary resources. Considerable experience exists in international agencies such as FAO, the World Bank, IFAD, WFP and others in the preparation of targeted assistance programmes. Such programmes promise better results than relying on spillover and multiplier effects alone.

114. Women are particularly vulnerable. In much of Africa agriculture, especially crop production has become feminized, as active men have moved to more profitable employment or limited themselves to large livestock rearing. Targeted assistance to women farmers must take their special needs into account, including land titling in their own name, access to credit as well as physical and psychological preferences and aptitudes for agricultural work. A significant proportion of ultra-poor may be ethnic minorities and people living in very remote and little accessible areas. These groups often tend to be overlooked by aid agencies and public services and a conscious effort must be made to seek them out. Carefully targeted safety nets and social protection programs are necessary to ensure that everyone is able to access the food they need for a healthy life.

115. 'Productive safety nets' not only smooth consumption but provide productive investment through conditional transfers that provide linkages and pathways out of poverty through improved agricultural productivity, education and health care. In parallel, the focus should be on helping producers, especially small-scale farmers, to boost food production, mainly by facilitating their access to seeds, fertilizers, animal feed, and other inputs, and by introducing 'market smart' subsidies where: (a) there is a clear prospect of significant productivity gains, (b) they are cheaper form of income transfer than alternatives (such as food aid), and (c) they do not affect market mechanisms adversely. This should be accompanied by medium-to-long term measures to enhance agricultural productivity and increase food production (see The State of Food Insecurity in the World 2008).

5.3 Scope for action.

116. In summary, to increase integration of the poorest and most vulnerable into the social and economic life policies, actions and investments to promote sustainable livelihoods and better opportunities for an active and productive life include:

- Access to land, resources and markets;
- Good governance, human rights;
- Conflict prevention and resolution;
- Sound social and economic policies
- Education and health services
- Reduced child and maternal mortality, basic health care, good nutrition;
- Safe drinking water, adequate sanitation;
- Emergency and humanitarian needs;
- Literacy, access to knowledge and information;
- Effective primary education and post primary education.
- Protection of the environment and sustainable management of physical and natural resources.

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