

**Food, Agriculture,
and the Environment
Discussion Paper 4**

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A 2020 Vision for Food, Agriculture, and the Environment in Sub-Saharan Africa

*Edited by Ousmane Badiane and
Christopher L. Delgado*

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“A 2020 Vision for Food, Agriculture, and the Environment” is an initiative of the International Food Policy Research Institute (IFPRI) to develop a shared vision and a consensus for action on how to meet future world food needs while reducing poverty and protecting the environment. It grew out of a concern that the international community is setting priorities for addressing these problems based on incomplete information. Through the 2020 Vision initiative, IFPRI is bringing together divergent schools of thought on these issues, generating research, and identifying recommendations.

This discussion paper series presents technical research results that encompass a wide range of subjects drawn from research on policy-relevant aspects of agriculture, poverty, nutrition, and the environment. The discussion papers contain material that IFPRI believes is of key interest to those involved in addressing emerging Third World food and development problems. These discussion papers undergo review but typically do not present final research results and should be considered as work in progress.

**A 2020 Vision for Food,
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in Sub-Saharan Africa**

*Edited by
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Foreword

The 2020 Vision for Food, Agriculture, and the Environment initiative of the International Food Policy Research Institute (IFPRI) has two primary objectives: to develop and promote a vision for eradicating hunger and malnutrition while protecting the environment, and, by generating information and encouraging debate, to influence action by national governments and international development institutions to achieve the vision.

The 2020 Vision initiative has conducted analyses and syntheses on many topics related to food, agriculture, and the environment. It has brought together researchers, analysts, and technical experts in a score of topical workshops to extend the frontiers of knowledge and bring that knowledge to bear on action. The initiative has facilitated three regional workshops in Sub-Saharan Africa, South Asia, and Latin America for policymakers and researchers from the regions to debate regional problems and challenges and to develop regional strategies for achieving the 2020 Vision.

The workshop on Sub-Saharan Africa, jointly sponsored with the Office of the Coordinator-General of the Conference of Ministers of Agriculture of West and Central Africa, was held in Saly Portudal, Senegal, December 14-17, 1994. Two dozen African researchers, technical experts, and policymakers from 15 countries across the continent engaged in four days of intensive discussion on internal and external challenges facing Africa; components of a strategy for sustainable growth; and priority objectives for the next 25 years. This paper authentically reflects the vision of participating African scholars and policymakers on the future trends, critical choices, and opportunities for action facing their countries.

IFPRI appreciates the excellent cooperation of the Office of the Coordinator-General of the Conference of Ministers of Agriculture of West and Central Africa. We are grateful to the workshop participants for taking the time to make this extremely important contribution to the 2020 Vision for Food, Agriculture, and the Environment.

Per Pinstrup-Andersen,
Director General, IFPRI

Preface

Sub-Saharan Africa (hereinafter “Africa,” for convenience) faces many formidable challenges over the next 25 years. It is also the part of the world where outsiders have had the most direct influence on development policy in recent years, and where a great deal of uncertainty and confusion still exists about desirable strategies. This made it an obvious choice for a regional consultative workshop within the framework of the 2020 Vision for Food, Agriculture, and the Environment initiative.

A deliberate attempt was made to break the mold of outsiders conceptualizing Africa’s issues. For this reason, workshop papers were kept to a minimum. They consisted of two short background papers by IFPRI staff and two prepared by African authors for the regional conferences of Ministers of Agriculture of West and Central Africa and of East and Southern Africa, sponsored by the Global Coalition for Africa.

The Conference of Ministers of Agriculture of West and Central Africa had earlier, and for a different purpose, brought together a team of African experts to prepare a strategic framework for agricultural recovery and growth for its member countries. The report was presented and discussed at a regional conference in December 1993 in Accra, Ghana. A similar exercise took place in East and Southern Africa, including a regional conference in April 1994 in Harare, Zimbabwe, also with support from the Global Coalition for Africa and the World Bank. The regional African papers took a forward-looking view of immediate issues for moving agriculture forward in Africa and were intended as a statement of African analysts to African policymakers. They are reproduced, with permission, as appendixes to the present document.

The first IFPRI paper focused on food trends in Africa and the world and contained a summary of the projections contained in more detail in a forthcoming Food, Agriculture, and the Environment Discussion Paper, “Global Food Projections to 2020: Implications for Investment.” The second IFPRI paper took a retrospective overview of the shifting development strategies for agriculture in Africa since the colonial era to date, largely imposed on Africa from the outside. A version incorporating comments received at the workshop is available as *Africa’s Changing Agricultural Development Strategies: Past and Present Paradigms as a Guide to the Future*, Food, Agriculture, and the Environment Discussion Paper 3.

During the workshop, several working groups focused intensively on key subtopics. The workshop agenda, the list of the participants, and the terms of reference for the working groups are found in Appendixes 1–3, respectively. An overall drafting committee of eight Africans from all parts of the region brought together Anglophones and Francophones from both policymaking and research backgrounds. Members of the drafting committee were Anthony Ikpi, chairman; George Abalu; Ousmane Badiane; Simeon Ehui; Wilfred Mwangi; Rajul Pandya-Lorch; Kimseyenga Savadogo; and Nick Vink. The drafting committee brought together the reports of the working groups; their report forms the backbone of the present document. Where useful, statistics and elaborations have been added to flesh out points made by the drafting committee. Although the presentation of the points has been slightly reorganized, great care has been taken to maintain the tenor and substance of the workshop statement.

The discussion at the workshop was particularly notable for the absence of defensiveness and the presence of constructive self-criticism. Most important, the participants conveyed a strong commitment to act. The end result was a thoughtful statement of objectives and strategies for food, agriculture, and the environment from a truly African perspective, which will be helpful to the 2020 Vision initiative in defining forward-looking priorities for action in Africa.

Ousmane Badiane
Christopher L. Delgado

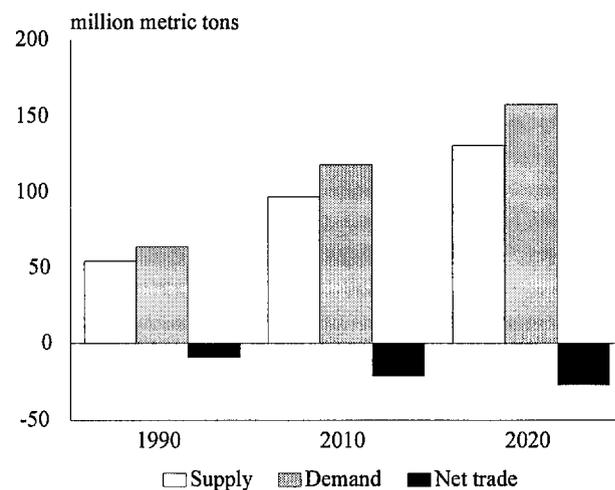
Editors

1. Introduction

In Sub-Saharan Africa, a large and increasing number of people subsist on per capita incomes of less than a dollar a day. Although estimates differ, the share of the population that falls below the poverty line could be as high as 50 percent. Moreover, 30 million preschool-age children are malnourished. Unless strategies that can change this outlook are adopted, the number of malnourished children will increase sharply by the year 2020. Furthermore, even if more active population policies were adopted, the average rate of population growth among African countries is expected to decline only slightly over the next 25 years, from nearly 2.8 percent today. This will render advances in poverty reduction extremely difficult. The need is urgent for increased efforts by African governments and the international community now, in order to avoid extreme hardship among poor Africans in the future.

The seriousness of the challenge facing African countries is reflected in Figures 1–3. Aggregate cereal demand and supply balances for African countries, assuming a continuation of present trends in economic, agricultural, and population growth, show an increase in the required cereal imports by 2020 from 9 million metric tons to 27 million metric tons (Figure 1). Given the likely difficulties in mobilizing the necessary resources to finance imports and the implications for the local availability of food, this scenario would unavoidably lead to a deterioration of the food security situation in Africa. In the rapid-growth scenario (Figure 2), the economy is projected to grow at a rate 25 percent higher than the present average of 3.3 percent a year, and crop productivity growth is boosted by increased investment in agricultural resources. Even under the rapid-growth scenario, the absolute number of malnourished children will increase from 29 million children currently to about 34 million by 2020, despite a decline in the relative share of malnourished children in the total number of children from 29 to 21 percent (Figure 3). If the present trend were to continue, the number of malnourished children would climb to 43 million, or 26

Figure 1—Baseline projection for cereal supply, demand, and net trade, Sub-Saharan Africa

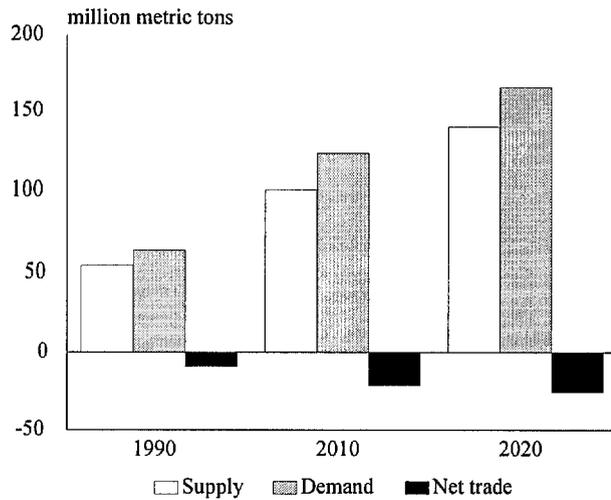


Source: Mark W. Rosegrant, M. Agcaoili-Sombilla, and N. D. Perez, *Global food projections to 2020: Implications for investment*. International Food Policy Research Institute, Washington, D.C., 1995 (mimeo).

percent of the total population of preschool African children. In light of these projections, the main challenges facing African countries are how to prevent food insecurity and famine, address the root causes of poverty, and slow environmental degradation for the next generation.

Agriculture is not only the primary source of food in Africa, it is also the principal means of livelihood in rural areas. In addition, agricultural exports are the major source of the foreign exchange needed to finance food imports. Yet growth in Africa's agriculture sector has been largely disappointing over the last 15 years, despite the existence of pockets of good performance in certain commodities, markets, and countries. Concerted and sustained action to reverse that trend and raise agricultural resource productivity is therefore required in most cases to achieve sustained and broad-based improvement in food security in Africa.

Figure 2—Rapid-growth scenario for cereal supply, demand, and net trade, Sub-Saharan Africa

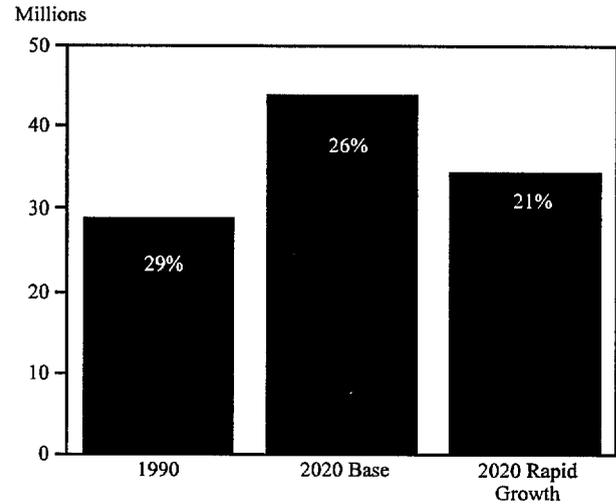


Source: Mark W. Rosegrant, M. Agcaoili-Sombilla, and N. D. Perez, *Global food projections to 2020: Implications for investment*. International Food Policy Research Institute, Washington, D.C., 1995 (mimeo).

The reasons for the generally poor performance of Africa's agriculture sector and the rapid increase in poverty and food insecurity involve both policy and structural factors, each of which has internal and external components. To reflect these factors, the discussion at the workshop covered both inward- and outward-looking policy and structural issues primarily in terms of intra-African divisions and interests. The debate was among African policymakers and analysts, not between Africans and donors.

Unlike similar gatherings only a few years previously, there was broad consensus at the workshop on the role of internal policy and institutional factors in the poor performance of African agriculture and the need for domestic economic policy reforms of the type associated with Structural Adjustment Programs. The debates mainly focused on the future,

Figure 3—Number and proportion of malnourished children in Sub-Saharan Africa



Source: Mark W. Rosegrant, M. Agcaoili-Sombilla, and N. D. Perez, *Global food projections to 2020: Implications for investment*. International Food Policy Research Institute, Washington,

rather than on explaining the past. The question was what can be done now to provide a basis for sustainable growth and to enable countries to reduce poverty and improve food security for their populations.

The objectives identified by the workshop participants, and discussed in Chapter 3 of this paper, represent fundamental changes from recent trends in African economies, despite the wide consensus that the objectives are well within the technical and economic capacity of most African nations. Major questions that remain to be answered are whether African governments and their international partners will agree to make these objectives top priority, will undertake the necessary efforts to mobilize the required resources, and will adopt the policy and institutional changes that realization of these objectives demands.

2. *The Global Environment Facing Africa's Food Economy: Trends, Challenges, and Perspectives*

Changes in the global and domestic food sectors from the period following independence to the present have affected agricultural trade and production in African countries. At the political and internal governance levels, countries were influenced by (1) the effects of the Cold War era on agricultural and rural development policies; (2) chronic civil and social strife and the displacement of populations; (3) the mismanagement of national resources; and (4) the failure to build capacity in such critical areas as policy analysis and entrepreneurship. Economic events that affected the African countries include (1) developments in the agriculture sectors and policies of industrialized countries; (2) the reduction in demand for primary commodities; (3) the concomitant shocks caused by the oil crisis; (4) the periodic droughts of the 1970s and 1980s; and (5) the entry of the former Soviet Union into world food markets.

The agriculture sectors in African countries have generally performed poorly since the 1970s, despite pockets of good performance in certain commodities, markets, and countries. African countries have not been able to compete on export markets because technology levels have been low and unit costs of production and distribution have been high. Changes in the global agricultural trading environment that have compounded these developments include a general downward trend in world agricultural prices, increased competition resulting from the erosion of trade concessions, and the creation of new trading blocs at the expense of African producers. However, African countries have begun to take significant positive steps, including reform measures to address past inadequacies in sector policies and trade and exchange rate regimes.

While international factors have been important in shaping trends in agricultural production and trade in Africa, domestic factors have been equally important. Because resolution of the latter is primarily in the hands of Africans themselves, many opportunities exist to solve the problems facing the agriculture sectors of African countries and

to promote stronger participation in the global economy.

Supply Issues

In Africa, past trends in production and their underlying factors vary by agroclimatic zone and by category of commodity. The agroclimatic zones that can be distinguished include the mid-altitude to highland zones of East and Southern Africa, the coastal areas of West and Central Africa, and the Sahel.

Mid-Altitude to Highland Zones. Total production for all food crops has increased over the past three decades, but only Southern Africa has had significant per capita increases for maize, primarily due to area expansion in South Africa and technology advances (including increased use of hybrid varieties and fertilizers) in other countries in the maize-dominated areas of the highlands, particularly in Zimbabwe. In contrast, per capita production of wheat has generally stagnated because rain-fed areas suitable for wheat cultivation are limited.

Past growth in production of tree cash crops has been insignificant in spite of great potential. Per capita growth of livestock has declined; performance in these zones, however, has been better than in the lowland areas because disease has been less prevalent, exotic breeds have been successfully introduced, and the feed situation and marketing have been better, particularly in the periurban areas.

Coastal West and Central Africa. Per capita production has declined for all categories of commodities in this zone. The main reasons for the decline in cereal production are poor policies and inappropriate technologies, with the exception of rice, in which some progress has been achieved as a result of substantial investment in irrigation. For livestock, severe disease problems (such as trypanosomiasis), poor genetic potential, and poor feed quality have impeded production. Finally, for tree cash crops, the most important factors in low production have been poor policies, especially for input delivery and output marketing, and weak supporting institutions.

Sahel. The Sahelian zone is characterized by a decline in per capita production for all categories of commodities, except cotton. Underlying this poor performance are environmental degradation, lack of appropriate technology, and poor policies. The relative success of cotton is due to active intervention in and support of marketing and processing structures by governments. Although the Sahel has traditionally been a livestock-producing zone, lack of feed, poor-quality feed, poor genetic potential, and marketing bottlenecks have severely limited the development of the livestock sector in this zone.

Demand Issues

Food demand among African countries over the last three decades has been affected by high rates of population growth and urbanization, combined with a much slower expansion of food production and declining incomes. Stagnation or decline in per capita domestic production and increasing domestic food prices usually have meant reduced access to food by vulnerable groups. This overall trend masks some variations in demand patterns. As imports have become a more important source of supply, demand has shifted away from traditional

staples and domestic cereals toward imported foods. Other changes underlying this shift are structural changes associated with rapid urbanization. As the population has become more urban, food preferences have changed and the opportunity costs of preparing food have risen. Unless technology is developed to process traditional food crops into substitutes that meet the changing demand parameters, the trend toward preference for imported foods is likely to persist.

In light of the difficulty of keeping production in line with the rapidly growing population, trade will continue to play a key role in satisfying food demand in African countries. Trade provides access not only to world food supplies, but also to foreign markets for the agricultural exports of many African countries. Therefore, the effects of the recent General Agreement on Tariffs and Trade (GATT) on world agricultural markets will be of great importance for future food security in Africa. If the reforms under GATT lead to reduced production in Organization for Economic Cooperation and Development countries and therefore to reduced supplies and higher world food prices, food security in African countries would decline, unless the African countries succeed in significantly raising their exports.

3. Strategic Issues Facing African Countries

The future prosperity of Africa depends on political stability, sustainable growth in agricultural production, reduction of the rate of population growth, and the protection of its natural resources. Success in these matters will require specific attention paid by policymakers to fostering the right institutional, infrastructural, and financial environment for growth. It will also require reducing the incidence of poverty and malnutrition, as both a primary objective of policy and a necessary instrument for promoting the stability needed for sustained growth.

Specifically, the workshop participants called on African countries to work to achieve a series of interrelated but specific objectives. Paradoxically, these are both a matter of choice and not a matter of choice. They are a matter of choice because achieving them primarily involves making them a priority over the other things that governments do. Priorities cost money, which has an opportunity cost. Yet these objectives are not really a matter of choice, because failure to achieve these objectives over the next 25 years will condemn Africa in the long run to stagnation and despair even worse than that of the past 15 years.

The workshop participants debated the danger of creating a pious wish list. The critical point that decided the issue was a shared feeling that short-term pressures have combined in Africa to prevent governments from developing a consensus over key long-run objectives for food, agriculture, and the environment. The participants felt that it was important to be heard clearly on this point. They agreed on these priority objectives for 2020:

- *Reduce the number of absolute poor by at least half.* While it is perhaps true that the poor shall always be with us, in a relative sense, the participants were extremely concerned that if absolute poverty continues to swell in Africa the ability to develop peacefully and harmoniously will be compromised. The days are long gone in many areas when new entrants to the rural labor force could have automatic access to land, or

when unsuccessful migrants to cities could return to till the land.

Most governments want to reduce poverty, but many are doubtful that it can be done on a sustained basis. This illustrates the importance of understanding both the sources of poverty in Africa and the links between economic growth and poverty alleviation. Since 90 percent of Africa's poor live in rural areas, key poverty reduction strategies should aim at raising rural incomes. This necessarily involves measures to increase agricultural productivity, which will directly increase rural incomes. Incomes will also increase indirectly through creation of effective purchasing power in rural areas for services and local manufactured items, thus increasing off-farm employment.

Strategies should also include proactive measures to attack poverty more directly and to alleviate it more quickly—through food-for-work schemes and other targeted public works programs, for example. If they are formulated so that they contribute to protecting the environment and providing needed infrastructure, the programs would also contribute to the objective of long-term food security and poverty alleviation. At times, direct poverty alleviation measures may conflict with growth objectives. This reinforces the need for more research and experimentation in order to find where these trade-offs lie and to devise ways to overcome the conflicts.

- *Greatly reduce chronic food insecurity and eliminate chronic malnourishment of children.* Achieving this objective will require specific attention to delivery systems capable of reaching those who need help the most, including food subsidies targeted to rural women and children. Reaching 30 million malnourished children is well within Africa's capacities, but only if the political will is there and if the underlying level of growth

in rural areas is high enough to sustain the distributive policies involved. This growth will have to be significantly higher in the next 25 years than it was in the past 15 years. More generally, a necessary—but not sufficient—condition for progress in African food security is to boost the rate of growth of African rural incomes, including that from food production, by enough to meet food needs.

As pointed out in the introduction, agricultural and rural growth cannot be relied upon to eliminate poverty and food insecurity in the next 25 years. Targeted subsidies that work effectively can make a significant contribution to food security among the rural poor. Urban consumers and other politically influential groups have long benefited from subsidy policies, and in many cases continue to do so. If the political will is there to make appropriate changes in distributive and budget allocation policies, it should be possible to design and implement efficient direct food security intervention programs to target rural women and children.

- *Achieve a rate of agricultural growth of at least 4 percent.* This is a controversial issue in African and donor policy debates. Yet there is a need to step back to consider that there is no other choice if Africa is to progress. It is simply not realistic to believe that African incomes will go up enough outside agriculture by 2020 to permit the import and distribution to all who need it of sufficient food to support a population growth rate of 2.8 percent per year. Since averages mask considerable variation in food entitlements across income groups, and since poor people tend to spend extra income primarily on increased food intake, meeting this need from African sources will require at least a 4 percent average growth rate in agricultural production. The participants were clear in their view that this growth rate is well within the technical and economic capacity of most African nations, *provided* that reaching this goal is made the top priority in public investment for research, producer support systems, and infrastructure, in a way that effectively mobilizes private production activity.

Much has changed in Africa over the past 15 years, and the region has achieved many if not all of the preconditions for sustained growth in agricultural production. In particu-

lar, many of the policy and structural problems African producers have faced in the past are changing: confiscatory pricing and marketing policies, biased trading and exchange regimes, depressed international prices, low educational levels of rural people, and poor infrastructure.

Ultimately, increasing the productivity of agricultural production resources is the key to achieving a sustained 4 percent growth rate. While boosting the productivity of agricultural labor is the key to making farming a viable activity and assuring food security, the entry point for doing this over the next 25 years will mostly be through increasing yields. Land-surplus areas still exist in countries such as Angola, Mozambique, Tanzania, Zaire, and Zambia, and these represent considerable potential for expansion of production through area expansion. Yet most production growth in Africa to 2020 will have to come from intensification of production on currently cropped land.

The currently low average use of fertilizer (estimates range from 9 to 11 kilograms per hectare) and of irrigation in Africa (estimates range from 4 to 6 percent of cropped area) both suggest that the long-term technical capacity for expanding production through seed-fertilizer-irrigation strategies is potentially high. Nevertheless, a better understanding is required of why this has not occurred more widely to date, including increased attention to the constraints imposed by very poor infrastructure and high transport costs within Africa.

The currently low use of inorganic fertilizers and of irrigation also suggests that much of the required intensification will have to occur in rainfed agriculture, with maximum use of organic fertilizers. However, because of the widespread need for extensive improvements in soil fertility, the puzzle of why use of inorganic fertilizer is so low in Africa will have to be solved if the 2020 Vision production goals are to be reached. This will require specific attention to both the private and social costs and benefits of improvement of the fertility of African soils. A sustained rate of growth of yields of the magnitude needed requires in-depth scientific research, research on improved practices under farm conditions, improved incentives, adequate

attention to fertilizer supply, and improved transport infrastructure.

- *Evolve institutions, technologies, and incentive systems to stop the process of rural environmental degradation.* As noted above, African production systems are far less intensive than those found elsewhere in the world, perhaps because land constraints were not a factor in much of the region up to 20 years ago. However, it is presently estimated that 80 to 85 percent of the land in Africa is threatened by degradation, and that some 4 million hectares of forest are lost every year. Reaching the needed increases in food production while avoiding rapid escalation of environmental degradation will require that ways be discovered to support sustainable, productivity-enhancing farming practices, including replacement of nutrients in the soils. Otherwise, any increase in food production would have to result from further expansion in cultivated area, thus claiming additional uncleared bush and forest land.

A key institutional problem that hinders the adoption of appropriate strategies toward the management of natural resources is the lack of consistent and coordinated national efforts, with actions too often dispersed within several ministries. Strategies for resource conservation should include, among others, the development and diffusion of environmentally friendly production techniques that are acceptable to farmers. However, conservation policies that are successful in one type of setting can be doomed to failure under another. What works in the arid, Sahelian countries may not work at all in the humid or subhumid parts of the continent.

Ultimately, every country experiencing land constraints must seek to provide an ever expanding supply of jobs outside the farming sector. Yet experience in Africa and elsewhere has shown that rapid growth in agriculture is required for this to occur, to create local demand for nonfarm production and to provide the physical counterpart to wages earned by workers outside agriculture (such as food). The participants were clear that sustainability of rural areas, which account for a high share of total population, cannot be attained without high agricultural growth rates. The case is quite different in societies where agriculture accounts for a much smaller share

of economic activity and food can be easily imported.

- *Promote lower rates of population growth.* The participants recognized the difficulty of making progress in Africa with a 2.8 percent growth rate of population. Without a significant reduction in population growth rates, it will be very difficult to achieve great success in reducing poverty and significantly improving food security. The participants pointed out that current population growth rates in Africa to some extent reflect responses to a set of incentives, to cultural norms, and to the unavailability of alternatives. While each of these three areas might provide scope for lowering growth rates, the participants felt that by themselves such programs would not be adequate to alleviate even medium-term food issues. It was stressed that, when designing population control programs, the scope for short- to medium term effects need to be taken into consideration and weighed against the opportunity cost of resources to be allocated to these programs.

Making the Critical Choices for 2020

The workshop participants were clear that now is the time for choices, and that without the will to make those choices, the likelihood of success in boosting agricultural growth on a sustained basis will be small. Without such growth, it will not be possible to improve food security or halt natural resource degradation. It seems unlikely that all countries of Africa will choose to put in place the necessary conditions for growth, which makes it all the more important to decide at the outset which conditions are most likely to beget further success. Participants highlighted four principal conditions that are all interrelated: greater stability, probity, consistency, and analytical quality in the policy-making process for agriculture; increased public investment by national governments to facilitate growth in the agriculture sector; proactive adaptation to changing global trade conditions; and inclusion of the poor and malnourished in growth.

- *Improving the quality of agricultural policy.* Clearly, overall political stability is a requirement for agricultural and overall growth. Those countries that have opened

their political systems to effective rural participation are far more likely to achieve good agricultural policies and to succeed in mobilizing from smallholder farmers the vast amount of private resources required for growth. Good governance is also a choice and a precondition for success in market-led (and probably other) systems. The failure to establish transparent, accountable, and participatory governance systems has been a key factor in the security and stability problems that have plagued many African countries and for too long siphoned away most of the countries' scarce resources.

Inconsistency of agricultural policies has been a major problem in the past, both policy flip-flops—often imposed by external actors—and inconsistency between sectoral growth objectives and the dissuasive effects of macroeconomic, fiscal, and trade policies that discriminated against the majority of rural producers. These inconsistencies have been largely remedied in recent years, mostly in response to external pressures. Political development that incorporates rural areas will increase internal pressures for more consistent policies. Yet remaining inconsistencies point to the final precondition for sustained agricultural growth: the need for a locally based process of analytical input into policymaking capable of discerning inconsistencies and finding practical solutions.

- *Boosting national public investment in agriculture.* In the past, up to 90 percent of public investment in agriculture—research and extension systems, infrastructure, and so forth—was funded by an array of foreign sources. This diversity of nonaccountable (to those concerned) funding sources helped prevent the implementation of consistent national strategies; equally important, these sources of finance are drying up. Since the necessary rate of agricultural growth cannot be achieved without effective and increased domestic resource mobilization, African governments must take this in hand. Although this need comes at a time of public retrenchment, it is a question of priorities. In most countries, the rate of national public investment in agriculture must be raised significantly. Given the size of the agriculture sector, its present and potential contributions to the economy, and its share in export earnings and fiscal reve-

nues, as much as 30–40 percent of national budget outlays should be invested in agriculture, a figure that far exceeds the historical average of roughly 7 percent of budgetary expenditure going to this sector.

Furthermore, the participants felt that one way in which the donor community could play a major supporting role in mobilizing the resources required to achieve the agricultural growth objective would be to tie a given percentage of external aid (say, for example, 25 percent) to investment in the rural sector. If such an arrangement were implemented, it would be important to make sure that external resources were additional to local public funding to agriculture, rather than displacing it.

- *Pursuing proactive national and international competitiveness.* Access to national, regional, and global markets is critical to the objective of sustained agricultural growth. Concrete measures will be required at all three levels, in descending order of importance. First, at the national level, it will be necessary to raise productivity and cut costs of agricultural production, to develop lower cost local marketing systems, to improve product quality, and to create innovative products through agro-processing. This involves improved technology and infrastructure, and the elimination of policies and institutional arrangements that unnecessarily inflate unit costs of production and distribution. The painful process of structural adjustment over the past decade has in fact removed major barriers to competitiveness. Generally, policy reforms increase transparency, accountability, and participation. They contribute to maintenance of stable and consistent fiscal and monetary policies. Further, continued privatization with recognition of the proper role of the state, liberalization of trade and support for regional integration efforts, and properly targeted short-term support programs will all have growth-enhancing effects.

Second, at the regional level, it will be necessary to implement existing regional integration agreements, harmonize national taxation and support policies for more efficient cross-border trade, and cooperate in removing the infrastructural and institutional barriers to the movement of commodities across borders. Given the porosity of national boundaries, uncoordinated and inconsistent national policies are doomed to fail.

Furthermore, the historical focus on institutional arrangements to promote regional trade and integration is unlikely to yield greater success in the future, unless it is accompanied by measures to eliminate the disharmonies between the national agriculture sectors and overall trading policies, and complemented with strategies to raise the competitiveness of intercountry exports on regional markets. While some thought in the 1980s that intra-African trade would provide an alternative to competing on world markets, it quickly became apparent that the same factors that make Africa's trade competitive in world markets are exactly the ones that make it grow regionally.

Third, at the world level, it will be necessary to develop collective strategies for global trade negotiations to ensure access to fair markets. The recent world trade agreements and emerging changes in the agriculture sectors of Eastern Europe and the former Soviet Union are likely to further increase competition in Africa's traditional European export markets over the next 25 years. To face up to the challenge, African countries will have to increase the competitiveness of their exports, both in cost and quality.

The key point on competitiveness is that there is no solution to cutting unit costs of production and distribution at any level that can be achieved without adequate attention to technology generation and infrastructure creation. On technology, the challenges are to encourage a broad-based adoption of available technologies and to strengthen local capacities to generate and diffuse sustainable crop and livestock technologies. The participants felt that there is a need to reassess the relevance of existing research systems and to develop technologies that are less dependent on input and infrastructure except in high payoff areas. They also emphasized the need to concentrate research and development on disease-resistant and drought-tolerant varieties and breeds, and on technologies

to stop and reverse the rapid degradation of soil fertility. Finally, they emphasized the need for resource and farming management systems that increase returns to farm labor, as an alternative to migration.

Reductions in Africa's very high transport costs, which in real terms are often twice as high as elsewhere in the developing world for comparable items and distances, cannot be achieved without significant improvement in the quality of physical and institutional rural infrastructure. And the growth objectives for Africa cannot be met unless transport costs are reduced. The participants felt that the following actions are required: increase investment in rural transport systems that are less capital intensive; provide needed social infrastructure such as schools and health facilities, especially in rural areas; and foster local participation in and control over rural institutions.

- *Including the poor and malnourished.* Even if a 4 percent aggregate rate of growth is achieved by 2020, the problems of reducing malnutrition and alleviating poverty will still present a formidable challenge in Africa. Failure to deal with this is not only a serious moral failure, but it will jeopardize the stability necessary to achieve other objectives. Most governments will need to take direct measures in the immediate and medium terms to combat poverty and nutrition problems, including targeted subsidies for vulnerable groups, particularly in rural areas, targeted public works and other employment programs, and child nutrition programs for at-risk groups. The economics of such interventions are largely known, and depend for their viability on a robustly growing agriculture. From a political economy point of view, a constituency for such interventions has been lacking and needs to be established in most African countries. It is in this respect that the emerging policy reforms and the promotion of participatory governance systems will contribute to the objectives of poverty alleviation and food security among African countries.

Appendix 1: Agenda

WORKSHOP ON A 2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT: ISSUES FACING AFRICAN COUNTRIES

Organized by

International Food Policy Research Institute (IFPRI)

and

**Conference of Ministers of Agriculture of
West and Central Africa (CMA/WCA)
December 14–17, 1994**

Saly Portudal, Senegal

AGENDA

TUESDAY, DECEMBER 13

Arrival of Workshop Participants

WEDNESDAY, DECEMBER 14

Plenary Session: 09:30 – 12:15

Chairperson: Robert Sagna, Minister of State, Minister of Rural Development and Agriculture and Chairman, CMA/WCA, Dakar, Senegal

09:30 – 09:45 Welcome Address — Baba Dioum, Coordinator-General, CMA/WCA, Ministry of Agriculture, Dakar, Senegal

09:45 – 10:00 Opening Address — Robert Sagna, Minister of State, Minister of Rural Development and Agriculture and Chairman, CMA/WCA, Dakar, Senegal

10:00 – 10:15 Africa in the 2020 Initiative — Per Pinstrup-Andersen, Director General, IFPRI, Washington, D.C.

10:15 – 10:45 Coffee Break

Plenary Session (continued)

Chairperson: Baba Dioum, Coordinator-General, CMA/WCA, Ministry of Agriculture, Dakar, Senegal

- 10:45 – 11:00 Introduction to Program and Logistical Announcements — Ousmane Badiane, Research Fellow, IFPRI, Washington, D.C.
- 11:00 – 11:30 Future Global Food Trends Affecting Africa — Per Pinstrup-Andersen, Director General, IFPRI, Washington, D.C.
- 11:30 – 12:15 Discussion
- 12:15 – 14:00 Lunch Break

Plenary Session: 14:00 – 17:45

- Chairperson:* Yao Kouassi Martin, Director General, National Agency for Rural Development Support, Abidjan, Côte d'Ivoire
- 14:00 – 14:30 State of the Strategic Debate: West and Central Africa — Samuel Dapaah, Chief Director of Policy Planning, Monitoring and Evaluation, Ministry of Agriculture, Accra, Ghana
- 14:30 – 15:00 State of the Strategic Debate: Eastern and Southern Africa — Wilfred Mwangi, Regional Economist, International Maize and Wheat Improvement Centre, East African Region, Addis Ababa, Ethiopia
- 15:00 – 16:00 Discussion
- 16:00 – 16:30 Coffee Break
- 16:30 – 17:00 Contrasting Perspectives for Agricultural Development in Africa Since the 1960s — Christopher Delgado, Research Fellow, IFPRI, Washington, D.C.
- 17:00 – 17:45 Discussion

THURSDAY, DECEMBER 15, 1994

Plenary Session: 08:00 - 08:25

- 08:00 – 08:10 Introduction to the Day — Ousmane Badiane, Research Fellow, IFPRI, Washington, D.C.
- 08:10 – 08:25 Terms of Reference for Working Groups — David Nygaard, Research Fellow, IFPRI, Washington, D.C.

Working Group Sessions: 08:25 – 11:25

08:25 – 11:25

Working Group 1: Future Global Environment Facing the Food Economy: Trends, Challenges, Perspectives

Chairperson: Glenn Magagula, Deputy Vice-Chancellor, University of Swaziland, Kwaluseni, Swaziland

Facilitator: George Abalu, Senior Regional Advisor, Food and Agricultural Policy and Planning, United Nations Economic Commission for Africa, Addis Ababa, Ethiopia

Rapporteur: Rajul Pandya-Lorch, Special Assistant, IFPRI, Washington, D.C.

08:25 – 11:25

Working Group 2: Supply Issues in Food, Agriculture, and the Environment: Trends, Challenges, Perspectives

Chairperson: Dunstan Spencer, Agricultural Economist, Managing Director, Dunstan Spencer Associates, Freetown, Sierra Leone

Facilitator: Marcel Galiba, Director for Benin and Togo, Sasakawa-Global 2000 Project, Cotonou, Benin

Rapporteur: Josué Dioné, Coordinator, The Sahel Institute, Bamako, Mali

08:25 – 11:25

Working Group 3: Demand Issues in Food, Agriculture, and the Environment: Trends, Challenges, Perspectives

Chairperson: M. El Habib Ly, Director General, Senegalese Institute for Agricultural Research, Dakar, Senegal

Facilitator: Wilfred Mwangi, Regional Economist, International Maize and Wheat Improvement Centre, Addis Ababa, Ethiopia

Rapporteur: Chérif Chako, Auditor for the Economic Politics Program, Clermont-Ferrand Cedex, France

11:25 – 11:45 Coffee Break

Plenary Session: 11:45 – 12:45

Chairperson: J.K. Mukiibi, Director, National Agricultural Research Organization, Entebbe, Republic of Uganda

11:45 – 12:45 Presentation of Working Group Results by Working Group Rapporteurs

12:45 – 14:15 Lunch Break

Plenary Session: 14:15 – 15:15

Chairperson: Augustin Salambanga, Director of Studies and Planning, Ministry of Economy, Finance, and Planning, Ouagadougou, Burkina Faso

14:15 – 15:00 Discussion of Working Group Results

15:00 – 15:15 Terms of Reference for Working Groups — Ousmane Badiane, Research Fellow, IFPRI, Washington, D.C.

15:15 – 15:30 Coffee Break

Working Group Sessions: 15:30 – 18:00

15:30 – 18:00

Working Group 4: Critical Responses and Strategic Options Facing African Countries

Chairperson: Glenn Magagula, Deputy Vice-Chancellor, University of Swaziland, Kwaluseni, Swaziland

Facilitator: Baba Dioum, Coordinator-General, Conference of Ministers of Agriculture of West and Central Africa (CMA/WCA), Ministry of Agriculture, Dakar, Senegal

Rapporteur: Kimseyenga Sawadogo, Center for Economic and Social Studies, Documentation and Research, University of Ouagadougou, Burkina Faso

15:30 – 18:00

Working Group 5: Critical Responses and Strategic Options Facing African Countries

Chairperson: Samuel Dapaah, Chief Director of Planning, Monitoring, and Evaluation, Ministry of Agriculture, Accra, Ghana

Facilitator: Nick Vink, Divisional Manager, Development Bank of Southern Africa, Halfway House, South Africa

Rapporteur: Simeon Ehui, Head, Socio-economic Sciences Division, International Livestock Centre for Africa, Addis Ababa, Ethiopia

15:30 – 18:00

Working Group 6: Critical Responses and Strategic Options Facing African Countries

Chairperson: Gordon Sithole, Chief Agricultural Economist, Ministry of Lands, Agriculture, and Water Development, Harare, Zimbabwe

Facilitator: George Abalu, Senior Regional Advisor, Food and Agricultural Policy and Planning, United Nations Economic Commission for Africa, Addis Ababa, Ethiopia

Rapporteur: Rajul Pandya-Lorch, Special Assistant, IFPRI, Washington, D.C.

FRIDAY, DECEMBER 16, 1994

Plenary Session: 08:00 – 08:15

08:00 – 08:15 Introduction to the Day — Ousmane Badiane, Research Fellow, IFPRI, Washington, D.C.

Working Group Sessions: 08:15 – 10:45

08:15 – 10:45

Working Group 4: Critical Responses and Strategic Options Facing African Countries

Chairperson: Glenn Magagula, Deputy Vice-Chancellor, University of Swaziland, Kwaluseni, Swaziland

Facilitator: Baba Dioum, Coordinator-General, Conference of Ministers of Agriculture of West and Central Africa (CMA/WCA), Ministry of Agriculture, Dakar, Senegal

Rapporteur: Kimseyenga Sawadogo, Center for Economic and Social Studies, Documentation and Research, University of Ouagadougou, Burkina Faso

08:15 – 10:45

Working Group 5: Critical Responses and Strategic Options Facing African Countries

Chairperson: Samuel Dapaah, Chief Director of Planning, Monitoring, and Evaluation, Ministry of Agriculture, Accra, Ghana

Facilitator: Nick Vink, Division Manager, Development Bank of Southern Africa, Halfway House, South Africa

Rapporteur: Simeon Ehui, Head, Socio-economic Sciences Division, International Livestock Centre for Africa, Addis Ababa, Ethiopia

08:15 – 10:45

Working Group 6: Critical Responses and Strategic Options Facing African Countries

Chairperson: Gordon Sithole, Chief Agricultural Economist, Ministry of Lands, Agriculture, and Water Development, Harare, Zimbabwe

Facilitator: George Abalu, Senior Regional Adviser, Food and Agricultural Policy and Planning, United Nations Economic Commission for Africa, Addis Ababa, Ethiopia

Rapporteur: Rajul Pandya-Lorch, Special Assistant, IFPRI, Washington, D.C.

10:45 – 11:15 Coffee Break

11:15 – 13:15 Meeting of Working Group Rapporteurs

12:00 – 14:00 Lunch

Plenary Session: 14:00 – 16:30

Chairperson: George Abalu, Senior Regional Adviser, Food and Agricultural Planning, United Nations Commission for Africa, Addis Ababa, Ethiopia

14:00 – 15:00 Presentation of Working Group Results

15:00 – 16:30 Discussion

16:30 – 17:00 Coffee Break

**Drafting Session: 17:00 – 20:00
(Drafting Committee Only)**

Chairperson: Anthony Ikpi, Professor, University of Ibadan, Department of Agricultural Economics, Ibadan, Nigeria

SATURDAY, DECEMBER 17, 1994

**Drafting Session: 08:00 – 10:30
(Drafting Committee Only)**

Chairperson: Anthony Ikpi, Professor, University of Ibadan, Department of Agricultural Economics, Ibadan, Nigeria

Plenary Session: 11:00 – 13:00

Chairperson: Baba Dioum, Coordinator General, CMA/WCA, Ministry of Agriculture, Dakar, Senegal

11:00 – 11:45 Presentation of Draft Document
Anthony Ikpi, University of Ibadan, Department of Agricultural Economics, Ibadan, Nigeria

11:45 – 12:30 Discussion

12:30 – 12:45 Concluding Remarks — Ousmane Badiane, Research Fellow, IFPRI, Washington, D.C.

12:45 – 13:00 Closing Address — Baba Dioum, Coordinator General, CMA/WCA, Ministry of
Agriculture, Dakar, Senegal

13:00 – 14:30 Lunch Break

Departure of Workshop Participants

Drafting Committee Members:

Anthony Ikpi, Chairman
George Abalu
Ousmane Badiane
Simeon Ehui
Wilfred Mwangi
Rajul Pandya-Lorch
Kimseyenga Sawadogo
Nick Vink

Appendix 2: Participants

WORKSHOP ON A 2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT: ISSUES FACING AFRICAN COUNTRIES

Organized by

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Saly Portudal, Senegal

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Senior Regional Adviser
Food and Agricultural Policy and Planning
United Nations Economic Commission
for Africa
Addis Ababa, Ethiopia

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Member, IFPRI Board of Trustees
Paris, France

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Auditor for the Economic
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Samuel Dapaah
Chief Director of Policy Planning,
Monitoring and Evaluation
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Accra, Ghana

Josué Dioné
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Minister of Rural Development and
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Ministry of Agriculture
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Dakar, Senegal

Aminata Keita
Ministry of Agriculture
Political Agriculture Unit
Dakar, Senegal

Appendix 3: Workshop on Issues Facing African Countries: Terms of Reference for the Working Groups

Objective

The objective of the workshop is to develop a shared vision among African economics scholars, policy analysts, and decisionmakers of the main issues involved in meeting Africa's food needs while reducing poverty and protecting the environment during the next 25 years.

For the purpose of ensuring effective interaction in a small-group setting and a structured written output from the participants, two sets of working groups have been assigned the following roles:

Working Groups 1, 2, and 3 (Wednesday, December 14 and Thursday, December 15)

The role of these three working groups is to assess (1) the changes that have taken place over the past decades in world agricultural trade and production that have affected growth of the agriculture sector in African countries (Working Group 1), and (2) supply and demand trends in the agriculture sector of these countries (Working Groups 2 and 3). The expected output from this first set of working groups is a diagnosis of past and present trends in the subject areas. Working group results will be presented on Thursday morning to provide a common basis for further discussion and to set the stage for the second series of working groups, which will assess the strategic implications of these results.

Working Groups 4, 5, and 6 (Thursday, December 15 and Friday, December 16)

Building on the historical diagnoses provided by the first set of working groups, these three working groups, meeting at the same time, will propose (1) key objectives for agriculture and the environment in African countries for the next 25 years; (2) specific constraints to the achievement of these objectives; and (3) specific measures to confront these

constraints and achieve the identified objectives. The expected output is (1) a clear formulation of priority areas, and (2) the identification of key specific measures for agricultural growth and poverty reduction strategies.

The results of the two sets of working groups and discussion in the plenary sessions will be a synthesis document that will propose a framework for evaluating the scope and comprehensiveness of agricultural growth and poverty alleviation strategies in African countries for the next 25 years.

Terms of Reference for Individual Working Groups

The following terms of reference are illustrative questions whose sole purpose is to help structure the discussions in the individual working groups. They are not binding and can be replaced by other, similar questions at the discretion of the group.

Working Group 1

Task:

To review the changes that have taken place in world agricultural trade and production that have most affected growth of the agriculture sector in African countries over the last three decades.

Output:

A report diagnosing past and present trends in world agriculture that impact on agriculture in African countries, how they do so, and implications for the near and long terms.

Illustrative questions:

What are the main features of the performance of African exporters in world agricultural markets?

In which individual markets have African countries performed well? In which have they not, and how do you explain the difference?

Which specific factors have determined the performance of African countries in world agricultural trade?

What have been the main changes in the environment (prices, policies, and competition) of world agricultural trading?

How have these changes affected trade (exports and imports) in and production of agricultural goods by African countries?

What are the key domestic factors that have affected the evolution of agricultural trade by African countries?

How have these evolved and what has been their impact on trade by African countries?

How do you compare the relative impact of domestic and world market factors on trade performance by African countries?

Working Group 2

Task:

To review major changes in the agricultural production of African countries over the last three decades and their underlying factors.

Output:

A report diagnosing past and present output and productivity trends (land, labor) of agricultural production and on the evolution of key factors underlying these changes.

Illustrative questions:

What are the past productivity trends for key agricultural products in Africa?

What are the underlying factors explaining these trends and how have they changed over time?

To the extent that there are differences across products, how can they be explained?

What are the main trends in the use of key inputs? To the extent that there are differences across inputs, crops, or countries, how can these be explained?

What changes have taken place with respect to support services for agriculture?

Are there any discernible trends in key policies that affect the supply of agricultural products?

What would be the consequences of continuation of the various trends discussed above?

Working Group 3

Task:

To review major changes in demand for food in African countries over the last three decades and their underlying factors.

Output:

A diagnosis report on past and present trends in food demand and consumption and on the evolution of key factors underlying these changes.

Illustrative questions:

What are the major trends in demand for and availability of food commodities in African countries (overall, per capita)?

To the extent that there are differences across commodities, how can they be explained?

To the extent that there are significant differences across countries or regions, how can these be explained?

What are the key domestic factors (policies, institutions, cost, prices) that have determined the observed changes in demand and availability levels?

What are the key external factors that affect food demand and availability in African countries, how have they evolved, and what has been their impact?

What would be the consequences of continuation of the various trends discussed above?

Working Groups 4, 5, and 6

Task:

To propose the key objectives for agriculture and the environment in African countries for the next 25 years; to identify specific constraints to the achievement of these objectives; and to propose specific measures to confront these constraints and achieve the identified objectives.

Output:

A clear formulation of priority areas and identification of key specific measures for agricultural growth and poverty reduction strategies.

Illustrative questions:

1. What are the prospects for agricultural growth and poverty alleviation in African countries?

Given the view of the world food economy for the next 25 years identified by the previous working groups, how do you judge the prospects for agricultural and economic growth in African countries?

What objectives would you set for agricultural growth, poverty alleviation, and resource conservation in African countries for the next 25 years?

What options are there for dealing with poverty concerns in the absence of broad-based agricultural growth?

What are the implications of broad-based agricultural growth for the environment?

What does the above imply in terms of strategies for agricultural growth, poverty alleviation, and food security in African countries?

How do the GATT agreements alter the prospects for agricultural and economic growth and what strategic response do they call for?

2. What are the critical areas of concern?

What do you see as the key factors that would constrain the achievement of the objectives identified above?

What priority areas would you derive from these constraints?

What would facilitate movement toward these priority objectives?

Are African countries on the right track in confronting these constraints?

If not, what hinders the movement forward?

3. What specific options are available to African countries to face up to the challenge?

What key specific measures would you suggest for the short, medium, and long runs to achieve these objectives?

What do you see as the main constraints to adopting these specific measures?

What would be needed to overcome these constraints?

4. What are the implications for research in the areas of food, agriculture, and the environment?

How do you judge the technology and extension gaps that need to be bridged in order to achieve the above objectives?

How should these gaps be addressed by research in the short and long runs, and which areas of research would be the most critical in that respect?

How does Africa's capacity to provide the information and knowledge needed for strategy formulation and implementation compare with the needs?

Has the capacity of African governments to make informed policy decisions about the future of the agriculture sector improved or not? If not, why, and what can be done?

How can this be addressed by policy research in the short and longer terms? Which areas of policy research would you identify as the most critical?

Appendix 4: Conference of the Ministers of Agriculture of West and Central Africa (CMA/WCA): Strategic Framework for Agricultural Recovery and Growth in the CMA/WCA Member Countries

The purpose of this document¹ is to provide member countries of the Conference of Ministers of Agriculture of West and Central Africa (CMA/WCA) with a pragmatic and implementable framework within which they can plan their agricultural recovery and growth strategies, as they go through their respective structural adjustment programs. It seeks to broaden the strategic approach to agricultural development beyond sector-specific policies and technology promotion, to include macro-economic policy improvement and social, environmental, legal, and institutional concerns.

While the focus of the document is on the modalities for a more comprehensive and orderly agricultural recovery and growth within the two subregions, it has been designed to provide a useful guide to member countries at various stages of the structural adjustment process, including

- countries that have carried out structural adjustment programs for considerable periods of time and are now planning for accelerated agricultural growth as a logical follow-up to these programs;
- countries that have just initiated structural adjustment programs and need to make further changes specific to agriculture in order to enhance the growth prospects in that sector; and
- countries now planning structural adjustment programs.

It must be emphasized that this document is in no way a substitute for comprehensive and well-

formulated national medium- and long-term agricultural development strategies, which are based on the particularities of individual member countries of the Conference. The document is designed to be indicative of what needs to be done, at the national level as well as regionally, to get agriculture back on the path to sustained growth and development.

The document was inspired by the need to reexamine past agricultural development strategies and efforts on the African continent in general and in the two subregions in particular, in the light of limited and scattered successes in agricultural growth, worsening environmental degradation, and rapid population growth, in spite of the large investments in both local and donor financial and human resources over the years.

Clearly, with the advent of economic reform programs in the region, the need for member countries to redefine and refocus their approach to agricultural development has been felt for some time. This document is designed to respond in a timely manner to the various initiatives taken by member countries since 1991 to solve collectively the strategic problems facing their agriculture sectors. It is also a response to the efforts by various donor agencies to redefine and refocus their activities in the agriculture sectors of the region.

The document was prepared by a group of African agricultural development experts, under the direction of the Conference Coordinator-General.² It takes into consideration a number of agricultural development policy plans and resolutions adopted

¹This paper was commissioned by the World Bank and the Global Coalition for Africa on behalf of the Conference of Ministers of Agriculture of West and Central Africa (CMA/WCA). It was prepared by Ousmane Badiane, research fellow at the International Food Policy Research Institute, in collaboration with Samuel Dapaah, director of Policy Planning, Monitoring and Evaluation, Ministry of Agriculture, Ghana; Baba Dioum, coordinator-general of CMA/WCA and director of the Agricultural Policy Unit of the Ministry of Agriculture, Senegal; and Patrick D. Gbebhelegbe of the Ministry of Agriculture, Benin.

²An earlier version was presented at the meeting of the CMA/WCA in Accra, Ghana, 13-17 December 1993. The present version of the document reflects the main comments that were made at that meeting by the Conference's Committee of Experts and by individual donor representatives.

over the years by African leaders³ as well as documents prepared by a large number of multilateral and bilateral donors, including the World Bank, the African Development Bank (ADB), the Canadian International Development Agency (CIDA), the Ministère Français de la Coopération et du Développement et la Caisse Française de Développement (MFCDC-CFD), United States Agency for International Development (USAID), country documents from Benin, Ghana, and Senegal, and many others. The reason behind this approach is to provide a framework that reflects the agricultural development policy concerns of the main actors in the area of agricultural development. This is necessary in order to mobilize sufficient support for national agricultural strategies and ensure the appropriate coordination of the efforts by individual actors.

The suggested framework is based on a detailed examination of the social, economic, political, institutional, Infrastructure, and other factors responsible for the generally poor performance of agriculture in the two subregions, especially the decreasing agricultural export shares and earnings for key commodities relative to the subregions' increasing food import bills. Against that background, the paper (1) discusses the strategic objectives for the agriculture sector over the short, medium, and long terms, and (2) outlines the collective actions that need to be taken by the member countries of the Conference to put the subregions' agriculture back onto the path of sustained agricultural growth and development.

Role of Agriculture in the Regional Economies

Agriculture is the main economic sector in the regional economies, accounting for 35 percent of gross domestic product (GDP) and about 60 percent of export earnings. Up to 80 percent of the population is employed in agriculture and agriculture-related activities. The agriculture sector is therefore the main source of income and livelihood for the vast majority of the people in the subregions of West and Central Africa. Agriculture is also the main source of domestic supply of food and of foreign exchange to pay for food imports, and therefore it plays a critical

role in national as well as household-level food security. Furthermore, through the supply of raw materials to domestic industries and demand for consumer goods and commercial inputs, growth in agriculture stimulates demand in the nonagricultural sectors of the economy. It is therefore, inconceivable that rapid economic growth can be achieved without significant and sustained improvement in the agriculture sector.

Past Performance of African Agriculture

The performance of agriculture in the CMA/WCA countries is characterized by the same crises that have plagued agriculture in other African countries: decline in food and agricultural production, drop in agricultural export earnings, degradation of the natural resource base, increasing population pressure, and poor performance of agricultural investment projects.

Agricultural value added in African countries grew by slightly less than 2 percent on average between 1965 and 1980. Even though a few countries recorded growth rates above 3.0 percent, the growth rate for African countries dropped to a mere 1.4 percent during the 1990s. The rate of agricultural growth in other developing regions, except for Latin America, during the 1990s has been two-to-three times higher than in African countries.

At the same time, the average population growth rate in African countries rose to more than 3 percent per year on average. Consequently, per capita food production by the end of the 1980s fell to 94 percent of its level at the beginning of the decade, whereas for developing countries, on average, it jumped to 115 percent. Despite the rapid increase in commercial food imports and food aid from 4 percent in 1974 to 7 percent in 1990, daily calorie intake in African countries during the 1980s was less than 90 percent of the minimum requirements. As a result, about one-quarter of the population in Africa was unable to secure adequate food consumption.

Similarly, the volume of agricultural exports by African countries fell by nearly 3.0 percent per year, on average, during the same period. The decline in export volumes is reflected in a significant loss of

³This will include the Lagos Plan of Action and the United Nations Program of Action for African Economic Recovery and Development.

market shares in almost all of Africa's traditional export markets, without any noticeable expansion of alternative exports to compensate for these losses. For instance, the export market shares for cocoa fell by one-third and that of vegetable oils fell by two-thirds, between the 1960s and the 1970s. Given the concomitant rise of food import volumes, the ratio of the food import bill to agricultural export earnings rose sharply in most countries.

The past three decades have also witnessed an increasing rate of degradation of natural resources in Africa. Deforestation in terms of lost forest areas has taken place at a rate of 0.5 percent on average and has been as high as 2 to 5 percent in some countries. Soil erosion and declining rainfall patterns since the 1970s are associated with declining yield levels in a number of countries, despite considerable investment in agricultural research and services.

African agriculture has also suffered from the high rate of failure of investments in that sector. The poor performance of agricultural investment projects has not only contributed to the growing volume of unproductive official debt but has also played a key role in the crisis in financing growth in Africa's agriculture sector.

Constraints to Agricultural Growth

The main constraints to agricultural development in Africa are related to, first, difficulties in promoting adoption of improved technologies and, second, in increasing access to international markets and sustaining the competitiveness of African products on domestic and foreign markets. Output expansion faster than world demand, export subsidies and other forms of protection in industrialized countries,⁴ and the development of substitute products have increasingly put strong pressures on most world agricultural markets. Countries in Africa suffered more from these developments than countries in other developing regions, due to the loss of competitiveness they incurred because of their failure to adjust to the increasing pressure by cutting production, distribution, and processing costs. Limited knowledge of world market mechanisms and often

poor product quality have further weakened the competitiveness of African exports. In contrast, by cutting domestic and export-related costs, other developing countries have performed well despite adverse developments in international markets.

The pressure on international markets is not expected to ease in the near future and most probably will extend to regional markets, as has already been seen in vegetable oils and livestock product markets. The future of African agriculture will, therefore, depend on the ability of African countries to find ways to raise productivity, reduce costs, and improve product quality, in order to stop and reverse the decline of their shares in domestic and international markets.

Technological stagnation, resulting from slow progress in generating and transferring modern technologies has been a big part of the problem facing agriculture in Africa. Agricultural productivity has at best stagnated in many African countries. The share of cultivated area under irrigation is still extremely low and is increasing only slowly. Similarly, fertilizer use remains remarkably low, as does the use of improved seeds and modern farm equipment.

The two types of constraints identified above are related to several domestic institutional, structural, and policy factors: (1) weak agricultural research and extension systems; (2) poor market infrastructure; (3) rapid urbanization; (4) inadequate social services in rural areas; (5) inappropriate agriculture sector policies in the areas of pricing, marketing, rural credit and investment, and land tenure; and (6) trade and exchange rate regimes that in many cases have suppressed incentives in the agriculture sector.

Despite these constraints, there are a number of factors that could facilitate recovery in African agriculture: (1) a growing labor force that should lead to declining costs, the main input in African agriculture; (2) rapid expansion of demand in regional markets, and proximity to major American and European markets, particularly Eastern Europe; (3) weakening of the effects of the Green Revolution in competing regions; (4) relatively large and unexploited agricultural potential; (5) untapped surface water and hydroelectric capacity; and (6) substantial reserves of phosphate and nitrogen-based fertilizers.

⁴Over the last few years, support to agriculture in OECD countries has reached some US\$300 billion (MFC - CF: *Politique agricole et développement rural en Afrique Subsaharienne: Tire a part du rapport d'activite, 1989 - 1990*, p. 1).

Agricultural Policy Issues in CMA/WCA Countries

Policy Formulation, Consistency, and Credibility

There is a real need to address policy inconsistencies that may exist within the mix of food and agriculture policies and between these and policies adopted in other sectors of the economy. National policy formulation should also take into consideration major policy issues within the subregion, as well as relevant developments in international markets.

Because of the tendency to identify food and agriculture narrowly with problems that are immediately related to farming, policy formulation and research in the nonfarm areas of the food sector and agricultural industry have often been neglected. However, given the profound implications for food availability, profitability, and incomes in the agriculture sector of activities related to purchased inputs, processing, distribution, storage, financing, and retailing, as well as other nonagricultural supply and demand relationships, policy formulation must begin to tackle issues in these areas more seriously. It is imperative for food and agricultural policy in general and technology research and development policy in particular to be harmonized with the relevant national development goals and strategies, and to be coordinated across regional economies in order to achieve consistency and to bring about satisfactory results.

The critical importance of economywide policies and of nonagriculture sectoral policies for growth and development in the agriculture sector deserves more consideration in formulation of national policies. There is already significant evidence that fiscal and monetary policies and protection of industry have strongly contributed to the poor performance of agriculture in many CMA/WCA member countries.

The choice of trading regimes and the fundamental approach to agricultural development and food security in the member countries has been a crucial point in policy formulation and debates within the region. Country experiences and options with respect to food and agricultural policies can be classified as follows:

- heavy export-orientation of agricultural development strategies in the early decades after independence;
- an essentially inward-oriented pursuit of national food security during the 1970s and the first half of the 1980s; and

- trade-oriented food and agricultural reform policies in the last 5–10 years.

The choice and formulation of national policies should not be guided by the question of whether export or food crops should be emphasized. The real issue is promoting the right mix of agricultural production on the basis of comparative advantage and regional resource endowment. Experiences in the region and elsewhere indicate that trade orientation can make a significant contribution to the objective of national food security both in the short and long terms, provided comprehensive and consistent policies are formulated and implemented.

Better policy formulation in CMA/WCA countries requires increased input of improved and locally based research and information on farm and off-farm issues into the decisionmaking process. Accordingly, there is an urgent need to expand and effectively build into the policy formulation process the pool of analysts and experts within and outside of government. Ensuring that the relevant information is available and used to guide decisionmaking on a continuous basis is the only way to ensure better planning and consistency and, therefore, continuity and credibility of agricultural policies.

Farm-Level Issues

The following activities representing farm-level issues, in approximate order of priority, may require immediate attention in agricultural policies in most CMA/WCA countries:

- promotion of policies that increase profitability to farmers and encourage diversification of agricultural activities based on local and regional comparative advantages;
- movement away from policies based on individual commodity development and commodity prices toward policies based on long-term viability of farming systems;
- adjustment of the systems of rural education, technology research and development, and extension to bring them in line with the need for sustained growth in the farming sector in particular and the agribusiness sector in general.

There was a strong feeling in the past that farm prices needed to be managed closely to make farming viable. There is, however, little evidence to suggest that the systems of guaranteed prices have worked to the benefit of farmers. There is little evidence that farms in CMA/WCA countries have sustainably generated acceptable rates of return to farm labor and management or other resources. Clearly, one has to look beyond price management

and the farming sector itself to find the solutions to the problems of long-term viability of farming in CMA/WCA countries.

Off-Farm Rural Sector Issues

The significant importance of off-farm sector activities, especially processing, storage, retailing services, transportation, and distribution, is often not sufficiently appreciated in the formulation of national food and agricultural policies. It is therefore critical to undertake any necessary adjustments in member countries' sector policies to allow maximum contribution of these parts of the economy to the process of sustained growth and development in the rural and agricultural sector.

Consumer Issues

The decision of a consumer to purchase a particular set of goods and services ultimately determines whether the supply of these goods and services can be sustained. It is generally believed that up to 80 percent of the average worker's income in CMA/WCA countries is spent on food. Yet an increasing proportion of this income is being spent on imported foods, mainly due to problems related to the quality and availability of locally produced foods. In fact, apart from a few examples such as cocoa, there are no acceptable quality standards for most of the agricultural commodities produced and traded in the two subregions.

Furthermore, agricultural production in the member countries is subject to a relatively high degree of year-to-year fluctuation. Accordingly, serious research and policy efforts are needed in the areas of local and transborder trade and food preservation and processing technology, in order to ensure price stability and year-round availability of locally produced goods throughout domestic and regional markets.

Public-Sector Issues

The problems in the food and agriculture sector are not restricted to farmers, processors, retailers, and consumers. There is a set of collective or public issues that need to be addressed as well. Among these are

- removal of Infrastructural and institutional deficiencies of domestic and transborder markets;
- environmental protection, management, conservation, and rehabilitation of natural resources; and
- adequate provision of rural social services.

Efficiently operating local and border markets are crucial to accelerated and sustained development of national agriculture sectors. It is to this end that marketing reforms aimed at increasing private-sector participation are being adopted in most member countries. Promoting low-cost marketing in the context of CMA/WCA countries would, however, require more than the mere elimination of parastatals and other forms of direct intervention. Rather, public-sector intervention has to be redefined regarding the need for complementary and facilitating measures, which may be necessary to ensure successful takeover by the emerging private systems. In most if not all countries the state will have to develop programs to raise transparency and competition in local markets and provide a legal framework for marketing transactions. Similarly, investments must be made to improve the quality of rural marketing infrastructure, such as rural roads, market facilities, communication, and rural electrification to support storage and small-scale processing activities.

Redefining and refocusing public intervention in the rural economy should also include improved provision of health and educational services and the adoption of measures to reduce the rate of soil degradation and deforestation.

Developing National Medium-Term Agricultural Development Programs

Agriculture in the typical CMA/WCA country accounts for some 35 percent of GDP, employs up to 80 percent of the labor force, and provides the main source of raw material for the major part of the industrial sector. Therefore, it is inconceivable that member countries can achieve economic growth and successful reduction of poverty without accelerated and broad-based development in their agriculture sectors. Sustained overall growth will therefore necessitate rapid technological change in agriculture and enhanced linkages between agriculture and the rest of the economy. These objectives cannot be attained unless member countries equip themselves with long-term-oriented strategies that provide the framework for consistent policy formulation and the environment for productive investments.

Given the need for the two subregions to make progress toward more consistent food and agricultural policies as structural adjustment programs

continue, it is imperative for each member country to develop and implement a well-thought-out national agricultural development program. Country programs could consist of rolling 5–10-year Medium-Term Agricultural Development Programs (MTADPs) that would identify key policy and institutional issues and set priorities for agriculture. MTADPs should provide the necessary framework to raise efficiency in the allocation of public and private resources in the agriculture sector in order to realize the full potential of the region's agriculture. Furthermore, MTADPs should help rationalize and coordinate donor assistance to agriculture in the region.

MTADPs should be guided by demand prospects, both internally and externally, and oriented toward enhancing productivity and competitiveness in domestic production, distribution, and processing sectors. The trade-driven approach is consistent with the observation that an ever-increasing share of world agriculture is being traded among nations. In addition, the commodity composition of agricultural trade is shifting away from raw materials toward goods at various stages of processing. In order to reduce the vulnerability of regional agriculture and to take advantage of the expansion of trading opportunities, member countries should use MTADPs to raise the share of processed agricultural raw materials from its current low level of about 10 percent.

Sustained development of agriculture will depend on the ability of member countries to sustainably improve competitiveness in regional and foreign markets by facing up to the increasing pressure to reduce unit costs of production and distribution and to raise the quality of their domestic products. The development of a competitive agro-industry beyond the traditional export sectors is not only necessary to expand market outlets for agriculture and to enable countries to profit from increased world trade, but also to accelerate the process of transformation and diversification of national economies.

The strategic challenge and the approaches outlined below are based on the vision that MTADPs developed out of this document will emphasize outward orientation and the exploitation of potential agricultural supply and trade opportunities within the region's agriculture as essential elements of national strategies toward recovery and growth. Accordingly, the centerpiece of the envisaged strategies are increased productivity and competitiveness in the production, distribution, and

processing activities in the agriculture of member countries.

The Challenges

The challenges facing agriculture in the member countries (which the framework outlined in this document should help address) can be summarized as follows:

- *Agricultural growth*: to raise the growth rate of agriculture from currently less than 2 percent to 4 percent, in order to achieve economywide growth rates of at least 4 percent (higher than the population growth rate of 3 percent), to reduce the food import bill, and to reverse the decline in agricultural export revenues.
- *Poverty alleviation and food security*: to raise the average daily calorie intake by 20 percent from the present average of about 2,000 calories to 2,400 over the next two decades, by increasing household incomes and the accessibility to food.

However, with continued growth of population at rates higher than 3 percent, even a 4 percent agricultural growth rate per year would only contribute marginally to higher per capita food consumption. Controlling aggregate population growth rates is therefore a part of the strategy.

- *Rural employment creation*: to expand agricultural and rural employment by at least 2 percent annually, which is necessary to absorb most of the 3 percent annual growth of the total labor force, and to slow down rural outmigration.
- *Natural resources management*: first, to promote improved technologies and achieve rapid and broadly-based increases in the productivity of agricultural land and labor, to reduce the rate of and eventually stop forest destruction and soil degradation, and, second, to put in place management mechanisms to guarantee a sustainable exploitation of natural resources.

The Main Elements of a Strategy for Agricultural Recovery and Growth

A strategy for facing up to the challenge should center around the following areas:

1. Generation and dissemination of improved technologies

- Refocus and energize research and development of better technologies, through a more

- efficient use of available national research resources; creation of a regional network for agricultural research in cooperation with the Special Programme for African Agricultural Research (SPAAR); and effective collaboration with and increased acquisition, adaptation, and use of results from the international research community, particularly from CGIAR research centers.
- Restructure and revitalize national extension services in connection with the private sector and nongovernmental organizations (NGOs), and expand their operations beyond production activities to include distribution and processing.
2. *Improve competitiveness of extraregional exports*
 - In recognition of the need to face up to ever-increasing competition on world markets, reduce costs at all stages of production and supply of exports, improve domestic exporting expertise, and harmonize and coordinate extraregional export trade.
 - Respond, in a forward-looking manner, to changes in emerging demand and quality standards in international markets.
 - Expand value added in the agriculture sector by encouraging private-sector involvement in postharvest activities, investing in and supporting small- to medium-scale processing operations, and creating the environment for a competitive processing sector that is responsive to the changing needs of domestic and export markets.
 3. *Improved integration of domestic and cross-border markets*
 - Build the institutions and infrastructure necessary for improved transport and communications, within an agreed legal framework, to promote competitive intraregional exchange.
 - Create a free-trading regional space for agricultural commodities, based on harmonized and regressive common tariff barriers.
 4. *Rehabilitation and conservation of natural resources*
 - Reinforce incentives and promote investments to build institutions and infrastructure and to develop the human resources necessary to induce conservation and better management of natural resources.
 - Adopt a collective, regionally coordinated approach to elaborate regional resource management programs.
 5. *Effectiveness of National Agricultural Research Systems (NARS) in technology and policy research*
 - Encourage broad-based, formal and informal human resource development focused on the agricultural and rural sector; develop agricultural research master plans.
 - Promote interaction between research systems and their clients, between farmers and policymakers.
 6. *Efficiency of rural transport and financial markets*
 - Promote efficient institutional alternatives to and provide the infrastructure for input delivery, commodity marketing, and improved credit systems.
 - Eliminate policy and other institutional constraints to the development of efficient rural financial markets.
 - Promote private rural development finance institutions to mobilize and invest rural savings.
 - Eliminate fiscal and other administrative barriers to the acquisition and operation of rural transport vehicles.
 7. *Improved efficiency of domestic agricultural output and input markets*
 - Eliminate institutional and structural barriers to trade in local and cross-border markets, with the objectives of facilitating the operations of private traders and encouraging increased participation.
 8. *Increased private-sector participation in the development process*
 - Provide incentives to producers by emphasizing efficiency and profitability.
 - Institutionally promote professional organizations to take over state activities, wherever appropriate, and facilitate broad-based participation, particularly regarding target groups such as small farmers and women in rural areas.
 9. *Building capacity of NARS to meet research needs*
 - Improve and reconvert existing capacities so that they can be better utilized.
 - Develop additional capacities in the areas of management and monitoring of policy design and implementation.
 - Raise capacities in national research systems and create the environment to retain and effectively use these capacities.
 - Provide adequate funding and support exchange and collaboration with regional and international research communities.

10. Rural infrastructure, institutions, and social services

- Increase investments in rural infrastructure (such as transport, communications, power supply, and market facilities) and rural social services (such as health, education, and water supply).
- Raise the share of the rural sector in public expenditures.

11. Improved policy and regulatory environment

- Redefine and refocus the role of the public sector in order to facilitate and encourage efficient private participation in all aspects of agricultural development.
- Create the environment for profitable agricultural investment projects.
- Promote fiscal, monetary, and labor policies as well as trading regimes that do not penalize the agriculture sector.
- Promote sectoral policies that do not reduce incentives in and responsiveness of the agriculture sector.

12. Monitoring and evaluation

- Create a coordinated mechanism to effectively guide agricultural strategies and give to the Coordinator General of the Conference

the mandate to set up such a mechanism to promote the adoption and implementation of the present strategy in the member countries of the Conference, to monitor and evaluate the progress in implementing this strategy, and to follow the process of developing agricultural strategies in other parts of the Sub-Saharan Africa region.

Summary and Conclusions

Being indicative in nature, this document presents strategy areas that should be seen as the main building blocks for individual country strategies that are to be developed by the member countries. The combination of the different blocks as well as their prioritization should be tailored to the needs of individual members.

The relationships between the main strategy elements as well as the process of implementation are presented in the appended table. The table states the types of measures that country strategies would call for and gives samples of benchmarks and progress indicators that can be used to monitor the process of implementing country strategies.

IMPLEMENTING AND MONITORING NATIONAL STRATEGIES

STRATEGY GOAL	BENCHMARK
Agricultural Recovery and Growth	Area cultivated, output levels, yields, and labor productivity per crops and agroclimatic regions; Aggregate value of agricultural production and its distribution across crop, area, and rural households
STRATEGY ELEMENTS	BENCHMARKS
1. Increased generation, adaptation, transfer, and adoption of technologies in production, processing, and distribution	Available production technologies at research stations; technologies in use across crops, areas, and categories of farmers; and gaps between these and available technologies; available processing and post-harvest / other distribution technologies at research stations and food technology research institutions; technologies used at different segments of the distribution chain and by different categories of participants; technologies in use in the processing of various agricultural crops.
2. Increased productivity and competitiveness in agriculture- based industries	Marketed quantities of individual crops; share of marketed quantities by categories of farm households; quantities marketed in local rural and neighboring urban markets; number and categories of traders participating in crop marketing; direction of commodity flows; transport costs, other marketing costs, and margins in individual area markets and along individual axes; level of competition in and degree of integration of local agricultural markets; quantities of official and informal border-crossing flows (exports and imports); level and composition of costs associated with transborder trading; number and types of traders involved in transborder trade; level of restrictions to commodity movement on local and transborder markets.
3. Improved integration of domestic and cross-border markets	Value added per unit of capital and labor in agro-industries; level and composition of unit costs of production; level of investments in agro-industries; quality of processed products.
4. Rehabilitation and conservation of natural resources	Soil pH, organic matter levels, and balance of plant nutrients; level of soil loss; changes in soil texture and structure; rate of deforestation; size of forest areas; density and composition of tree species; levels of water salinity and water pollutants.
5. Improved efficiency of NARS in policy research and technology generation and adaptation	Nature of agricultural technology and agricultural policy research needs; level of convergence between research priorities and research needs; number of technologies developed and tested per crop and agroclimatic area; number of post-harvest and processing technologies developed and tested; level of input by clients (farmers, distributors, processing firms) in technology research priority setting; nature and level of interaction with policy making system.

INDICATOR OF PROGRESS

Changes in output, area, yields, and labor productivity for individual crops and areas; growth of agricultural incomes across crops, areas, and rural households.

ACTIONS/MEASURES	INDICATORS OF PROGRESS
<p>Create a master plan for technology development to be coordinated with other CMAAOC member countries; establish competitive input delivery systems; improve effectiveness of extension systems; encourage international transfer of production and processing technologies.</p>	<p>Increase in number of newly developed production, distribution, and processing technologies; increase in number of new technology releases; number of farmers adopting new technologies; increased availability of new technologies across agroclimatic areas; increase in number of adopted technologies in distribution and processing technologies; increase in number of internationally imported new technologies.</p>
<p>Eliminate policies that raise costs and reduce flexibility and responsiveness in the processing sectors; encourage domestic and foreign private investment in agro-industries; encourage private-sector involvement in small- and medium-scale processing; create quality standards and norms.</p>	<p>Growth of value added in agro-industry; reduction in costs of production; increase in investments; improved product quality.</p>
<p>Eliminate barriers to entry in agricultural local and cross-border trading; eliminate restrictions to the movement of commodities on local and transborder markets; create effective agricultural market information systems; create a legal framework for domestic agricultural trading; work with other member countries to encourage free regional trade and set up a harmonized and regressive protection scheme for agricultural commodities.</p>	<p>Increase in volume and the shares of marketed output by crop and categories of farm households; increase in number of participating traders; decline in individual components of marketing costs and margins; increase in level of competition and degree of integration of local markets; increase in volume of transborder trade; reduction of restrictions to commodity movement.</p>
<p>Develop plans for resources rehabilitation, conservation, and monitoring; invest in rehabilitation and conservation; raise environmental content of extension packages; strengthen environmental research and information systems.</p>	<p>Stabilization of and increase in soil fertility levels; decline in rate of deforestation; increase in reforested areas; reduction in salinization and pollution levels.</p>
<p>Encourage and support development of agricultural technology and policy research master plans, and ensure funding for priority setting; ensure sufficient and sustained funding for adequate staffing and operation of research centers; promote institutions that facilitate release of developed technologies; strengthen lines of interaction between research and policy making.</p>	<p>Technology and policy research priorities reflect research demand and needs; institutional links between clients and research systems in place; increase in rate of transfer of newly developed technologies; increase in contribution of research to policy making.</p>

6. Improved efficiency of rural transport and financial markets	Density of rural markets; level of competition; degree of temporal and spatial integration of local markets; degree of instability and seasonality in local markets; level of operating costs and margins in local agricultural input and output markets; temporal and seasonal input and output price spreads; ratio of farm to consumer price for individual crops; ratio of farm delivery to input procurement prices.
7. Improved efficiency of domestic agricultural input and output markets	Density of rural feeder roads; supply of rural transport services; level of rural transport costs; level of domestic credit to agricultural sector; structure of credit demand in rural areas; number of financial institutions; available financial services; number of private commercial bank branches in rural areas; level of credit default; financial transaction costs.
8. Increased private sector participation	Share of private sector in agricultural production; share of private sector in volume and value of marketed agricultural inputs and outputs, including import and export; share of private firms in the provision of agricultural services; number of plants and employees in private agro-processing sector; share of private sector in value added and capital of agro-industries.
9. Capacity-building and increased collaboration with regional and international research community	Number of research centers and institutions; total number of staff; number of staff working on individual crop technologies and on key agricultural policy areas; level of skills and expertise in individual research areas: number of Ph.D.s, masters, average years of experience; level of external and domestic funding per scientist; number of collaborating regional and international research institutions; number of collaborative projects; type and number of technologies developed jointly; number of staff exchanges; number of man-trips to and average length of stay at regional or international research centers; number of collaborative research seminars, training workshops, or conferences.
10. Improved rural infrastructure institutions and social services	Quality of rural infrastructure; level and share of rural infrastructure investment in total public investment; quality of social services in rural areas; share of rural area in social services expenditure; per capita social services expenditure in rural areas; share of rural population with access to water, electricity, health, and education services.
11. Improved policy and regulatory environment	Effect of anti-agriculture bias in macroeconomic policies and trading regimes on the performance of the agricultural sector; effect of sectoral policies on production and trading competitiveness of the domestic agricultural sector; types of policy and regulatory constraints to increased and efficient private participation in production, distribution, and processing activities in the agricultural sector; other institutional and structural impediments.

Encourage competition and large scale participation in marketing of agricultural inputs and outputs; build rural market infrastructure; remove obstacles to entry and commodity movement; create market information and quality grading systems; provide legal contracting framework.

Increase in density of rural markets; decrease in marketing costs and margins; decrease in price spreads; increase in farm-to-consumer price ratio; decrease in input delivery to input procurement price ratio; reduced instability and seasonality patterns in local markets.

Construct and maintain rural roads; encourage rural transport enterprises; reform cost-increasing policies in transport sector; encourage establishment of private commercial banks in rural areas; provide lines of credit for rural sector; support schemes to minimize default risk.

Increase in density and quality of rural road network; increase in supply of rural transport services; decrease in rural transport costs; increase in level of credit to agricultural sector; increase in number of financial institutions; increase in supplied financial services; increase in number of commercial banking branches; reduction in transaction costs and risk default.

Promote private investment in production, distribution, and processing sectors; eliminate legal, administrative, and other barriers to private entrepreneurship in agriculture and related areas.

Increase in shares of private sector in marketing and trading of agricultural input, output, and services; increase in share of private firms in value added and employment of agro-processing sector.

Provide funding for training and other capacity-enhancing activities; encourage regional-level priority setting and programming; in collaboration with SPAAR promote cooperation with regional research institutions and international research centers of the Consultative Group on International Agricultural Research.

Increase in number and/or diversity of research institutions; Sustained increase in number of high-skill research staff; adequate and stable level of funding for national research systems; increase in number of technologies developed jointly with regional and international research centers; increase in number of collaborative projects, exchanges, and professional meetings with regional and international research community.

Ensure adequate and sustained investment in rural infrastructure and social services; eliminate the urban bias in public infrastructure and social services expenditure; encourage private-sector participation in the maintenance of rural infrastructure and the provision of social services.

Increase in the rural share of public expenditures; increase in per capita public expenditure on rural infrastructure and social services; increase in the share of rural population with access to water and electricity; reduction in ratio of health personnel to rural population; increase in school enrollment.

Eliminate bias of macroeconomic policies and trading regimes against the agricultural sector; remove distorted and restrictive policies and regulatory practices in agricultural pricing, marketing, trade, transport, and agro-industrial processing; develop programs to reduce other institutional and structural impediments to increase private sector participation and raise responsiveness of agricultural sectors.

Decrease in anti-agriculture bias of macroeconomic policies and trade regimes; decrease in level of policy and regulatory restrictions; reduction in institutional and structural impediments; sustained increase in private-sector participation.

Appendix 5: Getting Agriculture Moving in Eastern and Southern Africa and a Framework for Action

Mandivamba Rukuni

This discussion paper was prepared for the East and Southern Africa Conference of Agricultural Ministers, Harare, Zimbabwe, 12–15 April 1994. The paper was commissioned by the World Bank on behalf of the Global Coalition for Africa (GCA). The paper was prepared by Mandivamba Rukuni, professor of agricultural economics, University of Zimbabwe, in consultation with C. Ackello-Ogotu, H. Amani, P. Anandajayasekeram, W. Mwangi, H. Sigwele, and T. Takavarasha. This group met in Harare, 25–27 February and discussed an earlier draft of this paper and recommended substantive and valuable revisions. The author received further comments from C. K. Eicher and A. Otten. The author is grateful for all of these valuable contributions. The paper, however, represents the views of the author and not necessarily the views of any organization or institution. The author is also responsible for any errors that may be in the paper.

In 1985, the international mass media shocked the world by unveiling the Great African Famine, but some commentators were not surprised because the chronic decline of agriculture in Africa had been in the making for several decades. The irony in that year was that India crowned its transition from being an international food beggar to a food donor by granting 100,000 tons of wheat to Ethiopia. Today Africans and African scholars are not as preoccupied with replicating the Green Revolution in Africa. Rather, Africa has built up its own stock of knowledge and experience, and there is greater understanding of the preconditions for an African Green Revolution (Eicher 1993b).

East and Southern Africa (ESA) is a region of considerable diversity and similarity. The most im-

portant similarity is the dominance of agriculture and its contribution to national development. In most of ESA countries, agriculture still contributes more than 30 percent of gross domestic product (GDP). It is the most important earner of foreign exchange, employs the majority of the population, and contributes more than 50 percent of raw materials to industry. Agriculture is likely to maintain its strategic role in the economy for the foreseeable future, and hence there is a need to focus on getting agriculture moving in order to transform the economies of ESA.

ESA countries also share a number of other similarities including a semi-arid agroecology. A collective vision of regional integration also survives through such organs as the Preferential Trade Area (PTA), the Southern African Development Community (SADC), and the Intergovernmental Authority on African Development (IGAAD). There is a body of literature emerging that indicates that ESA probably holds enough lessons and experiences (desirable and undesirable) for an African-based Green Revolution. On the positive side, there is a selection of countries where sufficient peace, political stability, and an enabling policy environment have allowed some successes for smallholder agriculture. On the negative side, it has also been demonstrated, that civil strife is the single most vicious constraint to agricultural development in ESA given the chronic stagnation of agriculture due to inappropriate policies.¹ Experience in ESA has demonstrated the inseparable relationship between peace, stability, democracy, and good governance, on one hand, and human rights and food security, on the other.

This discussion paper is an attempt by an African, with assistance from other Africans, to exer-

¹Civil wars in Somalia, Mozambique, Ethiopia, Sudan, and Angola have resulted in considerable decline in agricultural production, leading to hunger, malnutrition and in some cases famine.

cise "double vision," that is to relate to decades of African and non-African preoccupation with African agriculture. A review of agricultural policies, strategies, and experiences in ESA provides a context and tools for building a framework and strategy for the future. Issues raised here will be tabled for discussion by the ministers of agriculture of ESA countries.

Performance of the Food and Agriculture Economies of ESA

Since most Africans are farmers, raising the productivity of farmers is a *sine qua non* of raising the African standard of living.

— W. Arthur Lewis (1955)

The key problems facing ESA agriculture sectors can simply be described as a lack of agricultural development. The "food production-population imbalance" now requires that food supplies grow at 4–5 percent per year, a rate that most ESA countries are not likely to achieve in the short term. Few countries in the world have achieved such growth rates for a decade or more. The United States and Japan, for instance, only managed an annual compound rate of growth of 1.5 and 1.6 percent, respectively, from 1880 to 1960. In the short to medium terms, therefore, ESA nations have not only to invest in expanding production, they also have to ensure that those who are food insecure are provided with a safety net. Using a variety of measures, Table 1 shows the state of food insecurity in ESA. The average per capita daily calorie supply in 1986–89 was lower in most ESA countries than in 1965.² Civil conflicts and droughts have exacerbated the levels of food insecurity in the region.

The lack of employment in rural areas is the second major burden on ESA economies. Because of a faulty industrial strategy that is not well linked to agriculture, the industrial and service sectors are unable to create enough jobs to match job seekers. In a space of 16 years (1965–1981), for instance, the share of labor in agriculture fell by only six percentage points (from 84 to 78 percent) in 22 low

income African countries. The low levels of urbanization in most ESA countries confirm that the bulk of the population still resides in rural areas (Table 2).

Environmental degradation in ESA can also be regarded as visual testimony of the self-destructiveness of an impoverished and undeveloped agriculture sector. Due to sustained overuse of biological systems, the pervasive degradation will be difficult to reverse. Since production increases in ESA are largely through increases in cultivated areas, it follows that the intensification of production is the lasting solution to environmental decline. According to Harrison (1987), only 35 percent of former savannah remains covered; an average of 6,500 hectares is cleared a day.³

Macroeconomic Policies and Agriculture

There is little disagreement that poor macroeconomic policies have contributed to the stagnation of agriculture. Futa, who is division chief for Agriculture and Rural Development in the African Development Bank (ADB), highlights the following points:

- Between 1980–86, the average annual growth of money supply in Africa was estimated at 20 percent, with an equivalent inflationary impact of about 20 percent.
- During the same period, interest rates fluctuated around 15 percent; that is, real interest rates were negative.
- Budget deficits have been ranging to 10–20 percent of GDP, exacerbating inflation and arresting capital inflow.
- The terms of trade for primary products have been experiencing negative trends since 1975.

The bulk of ESA countries are classified by the World Bank as low-income economies.⁴ Angola, Botswana, Namibia, and Zimbabwe are classified as Lower-Middle-income. According to the World Bank (1992), most of the low-income countries tend to have a high share of agriculture in gross national product (GNP).

²The average per capita daily calorie supply for Sub-Saharan Africa was 2,027 for 1986–89, down from 2,074 in 1965.

³Fallow periods have dropped drastically, and where this is not accompanied by better fertility management, yields also have dropped significantly. This in turn increases weeds, soil acidity, and erosion.

⁴Low-income countries in ESA include Burundi, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Rwanda, Somalia, Sudan, Tanzania, Uganda, and Zambia. These are countries with GNP per capita less than US\$610 in 1989.

Table 1—Food security in East and Southern Africa

Country	Population Facing Food Insecurity, 1980-82	Percent of Population Facing Food Insecurity, 1980/81	Per Capita Daily Calorie Supply		Average Supply as Percent of Minimum Requirement, 1968	Average Annual Cereal Import 1974		Index of Per Capita Food Production	
			1965	Average 1986-89		1974	1990	1964-66	1988-90
	(millions)		(calories)			(1,000 metric tons)		(1979-81 = 100)	
Sub-Saharan Africa	98	28	2,074	2,027	87	4,209	7,838	n.a.	94
Angola	n.a.	n.a.	1,907	1,742	74	149	272	127	81
Botswana	n.a.	n.a.	2,025	2,251	97	21	87	134	113
Burundi	1	26	2,131	2,320	100	7	17	100	92
Djibouti	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ethiopia	15	46	1,853	1,684	72	118	687	111	84
Kenya	6	37	2,208	2,016	87	15	188	119	106
Lesotho	n.a.	n.a.	2,049	2,275	100	48	97	120	86
Madagascar	1	13	2,447	2,174	95	114	183	105	88
Malawi	1	24	2,259	2,057	89	17	115	87	83
Mozambique	6	49	1,712	1,604	68	62	416	132	81
Rwanda	1	24	1,856	1,817	78	3	21	78	77
Seychelles	n.a.	n.a.	n.a.	2,117	91	n.a.	n.a.	n.a.	n.a.
Somalia	2	50	1,718	1,781	77	42	194	144	94
Sudan	3	18	1,938	1,981	84	125	186	89	71
Swaziland	n.a.	n.a.	n.a.	2,554	110	n.a.	n.a.	68	n.a.
Tanzania	7	35	1,831	2,186	94	431	73	87	88
Uganda	6	46	2,361	2,034	88	36	7	110	95
Zambia	3	48	2,072	2,028	87	93	100	98	103
Zimbabwe	n.a.	n.a.	2,075	2,193	92	56	83	96	94

Source: Revised from Cleaver 1993.

Notes: Food security is defined as access to enough food for an active and healthy life. The minimum daily calorie requirement to meet the energy needs of an average healthy person, as calculated by the World Health Organization (WHO) of each country, is taken into account. Index of food production, cereal imports, per capita calorie supply in 1965 is from *World Development Indicators, 1992* (World Bank 1992) except for Swaziland, which is taken from World Bank, *Sub-Saharan Africa: Crisis to Sustainable Growth, A Long-Term Perspective Study* (World Bank 1989). Per capita calorie supply 1986-89 is from *African Development Indicators, 1992* (World Bank/UNDP 1992, p. 322). n.a. means "not available."

^aAverage per capita daily calorie supply data for 1986-89 divided by requirement established by the WHO for each country.

Table 2—Selected social indicators in East and Southern Africa

Country	Urban Population as Percent of Total Population, 1989	Life Expectancy at Birth, 1990	Infant Mortality Rate, 1989 (per 1,000)	Total Fertility Rate, 1990 (birth/woman)	Global School Enrollment Ratio, 1988 (per 100)	Primary School Enrollment Ratio, 1988 (per 100)	Secondary School Enrollment Ratio, 1988 (per 100)	Adult Literacy Rate, 1990 (per 100)	Per Capita Daily Caloric Supply, 1989
Angola	28	46	173	6.5	49	93	n.a.	42	1,725
Burundi	5	50	116	6.8	33	70	4	50	2,253
Comoros	27	55	n.a.	6.8	56	80	n.a.	n.a.	2,113
Djibouti	n.a.	49	n.a.	6.6	31	46	n.a.	n.a.	n.a.
Ethiopia	13	48	133	7.5	28	37	15	n.a.	1,658
Kenya	23	60	70	6.6	73	96	18	69	1,973
Lesotho	20	57	97	5.6	80	113	25	n.a.	2,307
Malawi	12	48	147	7.6	48	66	4	n.a.	2,009
Mauritius	41	70	22	1.9	78	106	53	n.a.	2,679
Mozambique	26	49	173	6.4	34	68	5	33	1,632
Rwanda	7	49	119	8.3	45	67	6	50	1,786
Somalia	36	48	129	6.8	14	15	n.a.	24	1,736
Sudan	22	51	105	6.3	36	49	20	27	1,996
Swaziland	32	57	n.a.	6.3	82	104	n.a.	n.a.	2,631
Tanzania	31	50	103	6.6	42	66	4	n.a.	2,151
Uganda	10	49	100	7.3	47	70	8	48	2,013
Zambia	49	54	78	6.7	69	97	n.a.	73	2,026
Zimbabwe	27	64	63	4.9	93	128	51	67	2,232

Note: n.a. means "not available."

Share of Agriculture in GNP	Country
High	Burundi, Central African Republic, Ethiopia, Mozambique, Sudan, Tanzania, Uganda
Medium	Madagascar, Malawi, Rwanda, Zaire
Low	Angola, Botswana, Congo, Kenya, Lesotho, Namibia, Zambia, Zimbabwe

The importance of agriculture is still considerable even for medium-income countries with a low share of agricultural GNP. This is because agriculture is still a large employer and foreign exchange earner as well as a supplier of raw materials to industry (Table 3). Better performance of agriculture also tends to be associated with better performance of the rest of the economy (Table 4).

Intraregional trade in ESA has been small and the share of manufactured goods imported is high (Table 5). The structure of exports to non-Preferential Trade Area (non-PTA) countries shows high reliance on primary products (Table 6). This unfavorable trade performance compounds the burden of external debt. External debt as a share of GNP is high in almost all countries, with Mozambique, Somalia, Tanzania, and Zambia recording well over 100 percent in 1990 (Table 7). The corresponding debt service ratios are high (Table 8).

Inflation has been a major burden on the ESA economies. Runaway inflation has been a characteristic of even the stronger economies in the region (Table 9). In summary, agriculture in ESA in the 1980s was operating in an unfavorable macroeconomic environment. When ESA countries started implementing Structural Adjustment Programs (SAPs), these reforms affected agricultural policies considerably.

Agricultural Policies and Performance Over the Last Decade

The international literature currently exhibits a lack of consensus on the effect of SAPs on agricul-

Table 3—Contribution of food, beverages and tobacco to value added in manufacturing

Country	Contribution (percent)
Angola	n.a.
Botswana ^a	54
Burundi	n.a.
Central African Republic	n.a.
Congo, People's Republic of ^a	n.a.
Ethiopia	48
Kenya	40
Lesotho	n.a.
Madagascar	n.a.
Malawi	n.a.
Mozambique	n.a.
Namibia	n.a.
Rwanda	65
Somalia	59
South Africa	14
Sudan	22
Tanzania	28
Uganda	n.a.
Zaire ^a	n.a.
Zambia	44
Zimbabwe	35

Source: World Bank 1991, 214–215.

Note: n.a. means "not available."

^aValue added in manufacturing data are at purchase values.

ture in ESA. Most ESA countries are currently undergoing structural adjustment.⁵ Policy reforms in Africa started in the early 1980s in the eastern African states of Kenya and Tanzania. The nature of policy reforms has been rather uniform throughout ESA. The most direct effect of SAPs was on parastatal reform and privatization, particularly on market and trade liberalization. Other macroeconomic reforms such as devaluation of currencies and budget deficit reduction had a more indirect effect. Cleaver (1993), in what is arguably the most convincing vision to date of the future for African agriculture from within the World Bank, is at pains to distinguish between the agricultural performance of those countries that are "intensively adjusting" and those that are "less intensively adjusting," with the former recording higher agricultural growth rates between 1987 and 1990.

It would appear, first, that the effects of SAPs on agriculture in ESA may have to be judged over a

⁵According to Cleaver (1993), only Botswana, Lesotho, and Rwanda did not receive Structural Adjustment Program lending in ESA. Kenya, Malawi, Mauritius, Tanzania, and Zambia are classified as "intensively adjusting," with the rest of ESA "less-intensively adjusting."

Table 4—Growth of production, 1980–89

Country	GDP	Agriculture	Industry	Manufacturing	Services
			(percent)		
Angola	n.a.	n.a.	n.a.	n.a.	n.a.
Botswana ^a	11.3	-4.0	13.0	5.3	11.9
Burundi	4.3	3.1	5.8	6.1	6.3
Central African Republic	1.4	2.9	2.5	1.9	-0.5
Congo, People's Republic of	3.9	3.2	4.7	6.8	3.2
Ethiopia	1.9	-0.4	3.3	3.6	4.1
Kenya	4.1	3.2	3.7	4.8	4.9
Lesotho	3.7	-0.8	4.8	13.4	4.8
Madagascar	0.8	2.4	0.5	n.a.	0.0
Malawi	2.7	2.2	2.4	3.1	3.3
Mozambique	-1.4	0.7	-4.9	n.a.	-4.4
Rwanda ^a	1.5	-1.4	1.6	1.3	4.7
Somalia	3.0	3.8	2.5	0.2	1.2
South Africa	1.5	2.7	0.4	0.5	2.5
Sudan	-0.1	0.8	2.1	1.6	-1.3
Tanzania	2.6	4.2	-1.0	-1.6	1.5
Uganda	2.5	2.2	4.6	4.2	2.9
Zambia ^a	0.8	4.1	0.3	2.5	0.1
Zimbabwe	2.7	2.9	2.2	2.6	2.9

Source: World Bank, 1991, 206–207.

Note: n.a. means "not available."

^aGDP values and components are at purchaser values.

longer time span.⁶ SAPs may have been the de facto agricultural policies of the 1980s but they had a narrow focus on short-term gains from litigation and privatization. This in fact relegates SAPs role to partial fulfillment of one out of maybe five key prime movers of agricultural development, namely trying to create a favorable economic policy environment.⁷

African governments, on their part, have implemented SAP within a general agricultural strategic-policy vacuum. Agricultural policies have been ad hoc in nature or absent. There are no analytical reviews of the effects of previous policies. Five-year development plans pay lip service to agriculture while the sector continues to lack political and budgetary support. Policy reforms, however, have been difficult to implement because of equity and political risks and failure to link agriculture to the national economy.

The biggest disappointment for Africa is that even after devaluing exchange rates, the export sector has continued to show poor results. This may be attributed to chronic lack of capacity or resources for a quick supply response or both. Monetary policies, Futa concludes, lack efficiency when

adjusted currencies are not internationally exchanged and "have only token value."

The lack of a consensus between Cleaver of the World Bank and Futa of the African Development Bank is probably fair and predictable. In addition, their views probably represent the division in opinion between the North and Africa. Seven years of regional research on the topic by the University of Zimbabwe and Michigan State University also revealed the mixed fortunes of SAPs. Market liberalization in some instances (Tanzania and Zimbabwe) have enhanced movement of grain and therefore enhanced food security. In other cases (Ethiopia, Kenya, Malawi, Uganda, and Zambia), the collapse of or deregulation of grain parastatals has left a vacuum that the private sector cannot fill easily given the unattractiveness of undertaking grain trade in remote areas with a poor infrastructure.

Lessons Learned from Past Experiences

In spite of poor performance of agriculture in ESA, there are intermittent and isolated cases of success in most of the ESA countries. It has been observed, for instance, that a combination of appropriate

⁶It can be argued, for instance, that SAP is more than a technical issue since its implementation has often involved political choice and strategies. The socioeconomic effects of SAP through its effects on income and poverty have not been fully accounted for or understood. The extent of institutional curtailment through staff and budget cuts is also still to be judged.

⁷The other prime movers are technology, human capital, rural infrastructure, and effective service institutions.

Table 5—Structure of imports from countries outside the Preferential Trade Area

Country/Type of Import	1986	1987	1988	1989	1990
	(percent)				
Angola					
Food products	24.4	32.8	31.8	42.6	33.6
Manufactured goods	66.1	68.0	67.8	60.0	60.0
Burundi					
Manufactured goods	80.4	84.8	84.1	84.2	80.5
Comoros					
Food products	20.3	23.8	17.2	21.8	14.0
Manufactured goods	63.3	68.8	76.2	71.4	80.5
Djibouti					
Food products	44.1	40.2	34.8	31.1	34.5
Manufactured goods	69.6	71.1	61.3	60.5	61.5
Ethiopia					
Food products	33.0	18.6	20.6	20.2	20.7
Manufactured goods	69.0	71.1	61.3	60.5	61.5
Kenya					
Food products	15.4	7.8	8.1	8.9	7.7
Manufactured goods	71.6	77.7	76.4	76.8	79.0
Malawi					
Manufactured goods	93.9	92.4	87.6	84.8	84.5
Mauritius					
Food products	20.2	17.0	21.3	20.5	19.5
Manufactured goods	76.3	78.0	74.8	75.9	76.5
Mozambique					
Food products	34.2	37.9	41.0	36.3	31.7
Manufactured goods	58.1	55.1	48.6	55.3	58.8
Rwanda					
Manufactured goods	79.6	82.9	78.8	74.3	76.0
Somalia					
Food products	32.6	34.4	31.0	28.4	33.2
Sudan					
Food products	24.3	16.6	16.6	22.6	18.6
Manufactured goods	64.0	74.8	73.3	70.5	72.8
Tanzania					
Food products	10.4	8.8	10.6	7.6	5.6
Manufactured goods	77.2	78.6	78.4	80.2	82.3
Uganda					
Manufactured goods	89.3	86.6	84.0	84.5	86.3
Zambia					
Manufactured goods	89.6	91.9	91.8	91.7	83.8
Zimbabwe					
Manufactured goods	91.4	87.8	87.9	86.0	90.0

Source: Unpublished data from the office of the Preferential Trade Area.

Note: n.a. means "not available."

technology, extension, credit, and marketing policies have increased yields and production for maize in Kenya, Malawi, Zambia, Zimbabwe, and some parts of Tanzania. These strides with maize are evidence of an achievable broad-based Green Revolution for maize in ESA.

Positive effects in coffee and horticulture production have also been observed in Kenya; in cotton and tobacco in Tanzania; in cotton in Zimbabwe; and in round potatoes in Rwanda and Burundi. In Botswana, and to a smaller extent Namibia, Swaziland, and Zimbabwe, efforts to improve livestock productivity have shown posi-

tive results. Botswana in particular has developed a workable drought management program as well as a national food policy to support up to 60 percent of the population during times of drought. The livestock sector is similarly supported. Botswana's success with beef exports has mainly been due to the government's commitment to providing financial resources to control livestock diseases, providing water, and building world-class abattoirs.

In conclusion, the case for smallholder agriculture has now been proven in ESA and there is a need to intensify the key prime movers to get agriculture moving.

Table 6—Structure of exports to countries outside the Preferential Trade Area

Country/Type of Export	1986	1987	1988	1989	1990
	(percent)				
Angola					
Fuels	97.6	97.9	97.6	98.8	99.4
Burundi					
Food products	97.4	98.0	93.4	92.1	87.6
Comoros					
Food products	76.2	52.0	67.1	67.1	56.6
Manufactured goods	24.4	14.2	31.6	31.2	44.2
Djibouti					
Food products	22.7	42.0	10.8	21.6	8.4
Agricultural raw materials	48.1	40.7	63.5	60.5	62.5
Manufactured goods	23.7	16.4	16.4	12.7	21.0
Ethiopia					
Food products	82.8	74.1	72.8	78.8	67.0
Agricultural raw materials	10.4	14.5	13.7	8.4	14.8
Kenya					
Food products	88.0	83.0	82.8	81.7	79.1
Malawi					
Food products	96.4	96.0	87.5	87.2	86.7
Mauritius					
Food products	43.1	39.7	52.2	52.7	50.7
Manufactured goods	50.5	50.0	47.6	46.5	49.5
Mozambique					
Food products	64.4	68.9	41.2	32.2	28.9
Ores and metals	28.9	27.5	46.6	54.6	55.2
Rwanda					
Food products	93.4	91.9	87.1	90.7	86.0
Somalia					
Food products	65.2	67.6	70.1	90.5	84.9
Agricultural raw materials	37.8	23.7	22.4	16.6	11.8
Sudan					
Food products	16.7	29.2	28.8	31.8	21.3
Agricultural raw materials	77.9	67.1	68.6	65.8	76.7
Tanzania					
Food products	74.5	73.3	61.0	54.0	50.3
Agricultural raw materials	13.9	15.0	23.3	22.3	23.0
Uganda					
Food products	96.9	96.2	92.7	93.7	89.2
Zambia					
Ores and metals	96.2	94.5	96.8	96.7	96.8
Zimbabwe					
Food products	41.2	45.0	26.0	19.1	27.3
Agricultural raw materials	12.6	8.0	8.3	11.1	11.1
Ores and metals	40.9	37.3	69.1	62.3	53.6

Source: Unpublished data from the office of the Preferential Trade Area.

Note: n.a. means "not available."

Constraints Facing Agriculture

A single major constraint to getting agriculture moving is the general lack of comprehensive agricultural policies in ESA. This constraint has meant to governments the difference between commitment and reality. Coupled to this constraint is inadequate capacity of most national and regional institutions to address agricultural policy and to run effective support institutions.

The slow pace of agricultural transformation inevitably retards investment and the productivity of the sector. Commercialization of smallholder agriculture is suppressed by poor infrastructure and

support services, and slow uptake in technology is partly explained by the lack of commercialization.

It is also evident that recurrent drought has constrained agriculture in ESA. Drought recovery and mitigation is a costly exercise and farmers generally require several good seasons postdrought to restore capacity to the predrought level.

The poor macroeconomic environment has also taxed agriculture, and the debt crisis and deteriorating terms of trade also have made it more difficult to get agriculture moving faster and to commercialize smallholder agriculture.

Finally, there are a number of external factors beyond the control of ESA countries that have to be

Table 7—External public debt outstanding (disbursed only) as a percentage of GNP at current market prices

Country	1982	1985	1988	1990
			(percent)	
Angola	n.a.	34.0	87.7	n.a.
Burundi	18.3	36.2	71.1	78.4
Comoros	61.5	113.3	91.2	71.8
Djibouti	n.a.	27.5	n.a.	n.a.
Ethiopia	22.9	36.3	49.6	52.1
Kenya	39.2	45.4	51.1	57.1
Lesotho	16.3	34.7	37.2	41.9
Malawi	60.7	73.4	92.6	75.8
Mauritius	34.8	38.6	31.8	29.9
Mozambique	n.a.	77.7	343.0	330.3
Rwanda	13.2	19.4	26.5	32.7
Somalia	143.0	171.2	181.7	230.2
Sudan	76.2	45.1	85.2	97.1
Swaziland	34.6	52.1	42.3	37.0
Tanzania	37.8	39.5	151.1	238.5
Uganda	40.9	45.8	41.8	77.7
Zambia	64.2	156.2	133.0	143.2
Zimbabwe	18.0	42.3	38.5	41.9
Total Preferential Trade Area	n.a.	49.6	n.a.	n.a.

Source: Unpublished data from the office of the Preferential Trade Area.

Note: n.a. means "not available."

taken into consideration in devising strategies for agriculture. The changing global scenario, particularly the effects of the GATT and regional trade blocs, may mean further isolation of Africa from benefits of world trade. While ESA countries may welcome the opportunity under GATT to enter new

markets, the preferential treatment under arrangements such as Lomé IV may soon disappear. This means that ESA has to transform its agriculture faster in order to maintain and gain competitiveness. There is also merit in seeking opportunities for local processing and increasing value added.

Table 8—External debt service as a percentage of exports of goods and services

Country	1982	1985	1988	1990
			(percent)	
Angola	n.a.	4.4	7.6	n.a.
Burundi	n.a.	16.4	28.8	41.2
Comoros	3.5	8.1	0.6	1.0
Djibouti	n.a.	2.5	6.7	n.a.
Ethiopia	10.0	18.1	37.4	30.0
Kenya	21.0	22.6	22.5	21.1
Lesotho	2.2	6.3	4.7	2.4
Malawi	23.0	27.2	17.0	19.3
Mauritius	12.3	11.4	10.1	4.4
Mozambique	n.a.	23.9	12.0	5.3
Rwanda	2.9	7.9	9.7	10.5
Somalia	4.0	3.9	6.9	n.a.
Sudan	11.1	7.1	7.1	2.6
Swaziland	5.1	8.8	5.4	5.7
Tanzania	11.7	12.7	16.6	18.1
Uganda	15.9	16.7	37.6	4.8
Zambia	16.2	10.3	13.0	10.6
Zimbabwe	8.8	22.2	21.6	9.1

Source: Unpublished data from the office of the Preferential Trade Area.

Note: n.a. means "not available."

Table 9—Consumer price index (all items)

Country	1982	1986	1989	1990
			(1985 = 100)	
Angola	n.a.	n.a.	n.a.	n.a.
Burundi	77.9	101.9	127.3	137.8
Comoros	5.0	n.a.	n.a.	n.a.
Djibouti	n.a.	n.a.	n.a.	n.a.
Ethiopia	76.9	90.2	98.8	103.0
Kenya	71.7	107.7	144.9	155.1
Lesotho	67.7	118.0	168.6	184.9
Malawi	66.2	114.0	214.9	240.4
Mauritius	82.8	100.0	125.6	142.8
Mozambique	46.0	116.9	699.4	n.a.
Rwanda	87.5	98.9	107.1	111.6
Somalia	28.0	135.8	582.4	n.a.
Sudan	39.3	129.7	403.0	933.9
Swaziland	67.1	113.2	156.9	200.6
Tanzania	43.4	132.4	288.9	359.4
Uganda	24.0	269.0	4,900.0	6,629.7
Zambia	50.7	151.6	758.1	1,194.2
Zimbabwe	62.3	114.3	155.9	183.0

Source: Unpublished data from the office of the Preferential Trade Area.

Note: n.a. means "not available."

A Strategy for Getting Agriculture Moving in ESA

The Third World's failure with agriculture has been mainly at the political level, in the systems where the small cultivator carries little political weight.

W. Arthur Lewis (1984)

While the evidence is inconclusive as to whether the 1980s were a lost decade for African agriculture, and whether the 1990s are too preoccupied with "sustainability," consensus has grown as to what Africa has to do in order to get agriculture moving as an essential step in industrializing the continent. When India, in 1985, graduated from food recipient to African food donor, the mass media may not have realized that it had taken India two decades of massive and consistent public expenditure in agriculture in order to achieve self-sufficiency in the early 1980s. As Table 10 shows, India invested an average of 23–37 percent of public investment in agriculture⁸ over 32 years.

ESA countries on average spend about 10 percent of public expenditure in agriculture (Table 11). Because levels of expenditure are low, it also follows that a higher proportion of budget goes

toward overhead and nonproductive activities. This is the context in which ESA will have to derive a framework and strategy to get agriculture moving: ESA governments will have to go beyond a "recovery" approach and adopt a "push" strategy, since agriculture is still essentially the engine for economic growth. The strategy proposed in this paper is for Africans not to waste any more time getting agriculture back on top of the political agenda. They must invest more and wisely in order to lay the groundwork and to fulfill the preconditions for an African-style Green Revolution.

The Prime Movers of Agricultural Development

The visible and photogenic evidence of hunger, malnutrition, and suffering in Africa continues to fuel the search for short-run solutions. Experience, however, shows that there are no real shortcuts, only intensified investment in the prime movers of agricultural development. Five basic prime movers work in tandem to achieve sustainable development:

- New technology for large and smallholder farmers generated from investments in research by the public and private sectors. New technology has to continuously meet the changing needs of farmers.

⁸Agriculture is broadly defined to include agricultural production, major and minor irrigation schemes, fertilizer and pesticide subsidies, rural electrification, community development, and cooperatives.

Table 10—Public-sector expenditure on agriculture in India, 1950/51–1982/83

Type of Agricultural Expenditure ^a	First Plan, 1950/51– 1955/56	Second Plan, 1956/57– 1960/61	Third Plan, 1961/62– 1965/66	Fourth Plan, 1969/70– 1973/74	Fifth Plan, ^f 1974/75– 1977/78	Sixth Plan, 1978/79– 1982/83
	(percent of total)					
Agriculture ^b	10.8	6.0	8.4	12.4	11.7	14.0
Major irrigation ^c	21.5	9.1	7.7	8.6	8.7	11.4
Fertilizer and pesticides	0.4	0.8	2.6	3.1	3.9	2.4
Rural electrification ^d	0.4	1.6	1.8	4.6	2.0	2.1
Community development ^e	4.1	5.5	4.2	2.2	1.3	0.9
Total agricultural expenditures	37.2	23.1	24.9	31.0	27.7	30.8

Source: Adapted from Sanderson and Roy, 1979.

^aFirst through Fifth Plans, expenditure; Sixth Plan, planned outlays.

^bIncludes minor irrigation.

^cIncludes flood control.

^dExcludes institutional finance.

^eIncludes cooperatives.

^fThe Fifth Plan was terminated one year early; the figures are for four years.

- Improved human capital at all levels—professional, managerial, technical and artisan—achieved through investment in schools, colleges, and faculties of agriculture, forestry, and natural resources, as well as on-the-job training and experience.
- *Sustained growth in physical and biological infrastructure* through investments in roads, dams, irrigation systems, grain stores, rural electricity, and information systems, and large-scale genetic improvements of livestock herds and tree crops.
- *Effective institutions particularly able to serve smallholder farmers:* research, extension, credit, marketing, and land reform and settlement.
- *An enabling political and economic environment,* with budgetary commitment to agri-

culture, and appropriate pricing, marketing, and trade policies to facilitate agricultural growth and food security (Eicher and Rukuni 1985).

In pursuing this strategy, ESA countries have to acknowledge two important characteristics of the prime movers. First, no prime mover on its own can get agriculture to grow on a sustained basis. An improvement in prices, for instance, may achieve a short spate of growth, but the other prime movers have to be in place for a sustained supply response. The second characteristic of all prime movers is that long-term investment is necessary to strengthen them. This calls for greater commitment by governments to invest in agriculture. This requirement was recognized by African heads of states in the 1980 Lagos Plan of Action. There was, however, no subsequent political commitment to increase budgetary

Table 11—African share of agriculture in public expenditure in all sectors in selected countries

Country	1978	1982	Average 1978–82	Change in 1982 over 1978
	(percent)			
Algeria	5.6	6.0	5.9	+0.4
Benin	9.4	10.9	9.0	+1.5
Cameroon	9.5	4.5	8.8	-5.0
Central African Republic	5.9	4.6	5.6	-1.3
Gabon	1.5	2.2	2.1	+0.7
Gambia	13.7	11.8	13.6	-1.9
Kenya	10.3	13.4	15.5	+3.1
Liberia	7.3	11.2	10.0	+3.9
Mali	11.4	13.8	12.4	+2.4
Mauritius	11.5	13.8	12.4	+2.4
Morocco	6.5	7.3	7.0	+0.8
Somalia	19.4	43.1	30.7	+27.7
Swaziland	9.0	11.5	11.7	+2.5
Tanzania	10.1	8.4	9.3	-1.7

investments in agriculture from less than 10 percent to a target 25 percent within a decade.

The Framework for Action

In order to put the prime movers back on the political agenda and achieve objectives of food security, employment, and agricultural transformation, ministers of agriculture have to set themselves a 10-to-20-year time frame for action. The overall strategy is to focus on the prime movers at the national level and then to support these efforts through joint regional activities where mutually beneficial.

Elements of a National Strategy

Political Leadership and Empowerment of Farmers. After years of distinguished scholarship on African agriculture, Eicher (1993a) singles out "political leadership" as the most underrated ingredient for agricultural development. This may come as a disappointment to those who view agricultural development as essentially a technical matter. Moreover, and for decades, scholars, donors, nongovernmental organizations (NGOs), private voluntary organizations (PVOs), human rights organizations (and more recently the show-biz community), have been spokespeople for the poor in Africa. All have failed miserably and now have to come to terms with the fact that the smallholder African farmers must themselves be empowered: they must have their own political voice and clout, just as the farmers in France and Japan have power to get governments to stand up and listen.

Agricultural development is not a simple technocratic exercise because farmers, as has been experienced in Kenya and Zimbabwe, have to organize themselves into unions, commodity groups, and cooperatives, for governments to get a balanced view of the life of the rural majority. If African farmers continue to be at the periphery of the political process and governments continue to favor the politically powerful urban minority, who then will make a strong case to convince ministers of finance and heads of states to radically revise priorities and support higher farm prices, earmark foreign exchange for fertilizer imports, and invest in all-weather roads, rural electricity, modern colleges and universities of agriculture, dams, and irrigation systems?

Ministers of agriculture in ESA need to discuss and understand the paradox of agricultural politics.

Farmers in the United States, Europe, and Japan constitute a single-digit percentage of the population and yet hold enormous political power. Why then are ministers of agriculture, representing well over 70 percent of the population in ESA, relegated to such low political status? Why shouldn't ministers of agriculture follow the example of commerce and industry and see that producers of each and every major commodity, marketed locally and exported, maintain a strong voice within the central government? Consistent with human rights and democratic governance, it should be made legally and institutionally easier for farmers to group together.

Comprehensive National Agricultural Policies. There is an urgent need for governments in ESA to develop comprehensive and operational agricultural policies and strategies to facilitate short-term planning as well as external assistance. More comprehensive policies should be developed as well as the capability to analyze policy. For a start, a comprehensive review of past performance of agriculture is necessary. The short- and long-term effects of structural adjustment should be analyzed and reviewed in the process of developing comprehensive policies.

National agricultural policies need to address key objectives of agricultural and national development and analyze problems and constraints in order to spell out operational solutions to the problems. There is a need to integrate agricultural policy with industrial policy and to develop agro-industries to attain more value added for rural areas. Trade, marketing, and pricing policies have to be clear and supportive of farmers. Service institutions have to operate more as parts of a system rather than as disjointed units. And, because poverty and hunger will be around for some time, national agricultural policies have to be linked to a clear food security policy and strategy.

Technology for the Smallholder Farmer. The success of smallholder maize and horticulture in Kenya, maize and cotton in Zimbabwe, and other similar examples provide convincing evidence that smallholders can be a major economic force and that the smallholder farm is the centerpiece of the agricultural transformation in ESA. But there is a lack of agreement in Africa on why there are so few success stories and why new technology has not been widely adopted. In spite of the poor performance, national and international research systems and many international NGOs seem convinced that adequate technology is on the shelf, but it has not been widely adopted because of a missing factor

such as poor extension or a poor policy environment. But Eicher (1993) has shown that the search for the missing factor is an intellectually bankrupt approach to getting agriculture moving in Africa.

There is prima facie evidence that technological bullets are operating in an institutional vacuum in many African nations. Africa's success stories show that agricultural research that generates new technology requires efficient public and private support institutions such as seed distribution, credit, and extension. Instead of stressing missing factors, ESA ministries of agriculture should focus on building efficient *systems* of farmer-support institutions that are, in turn, supported by farmers with political power. There are now many successful national public agricultural research stories that show that smallholder farmers can seize market opportunities in a favorable macroeconomic environment. Impact assessment studies indicate significant positive annual rates of return to agricultural research. Karanja (1990) computed an average annual rate of return on investment in hybrid maize research in Kenya from 1955 to 1988 and found it to be 68 percent. In Zimbabwe, Kupfuma (1993) estimated the same for maize and found the annual rate of return to be 39 percent. Overall, the returns to investments in research have been impressive. In spite of these impressive returns, the maize research programs in both Kenya and Zimbabwe suffered severe setbacks in the 1980s, with operational budgets plummeting in both cases. Why?

The myth of appropriate technology on the shelf that is not reaching smallholders is, in my judgment, an overstatement by some national and international centers and by some influential northern experts far removed from the realities of Africa. The idea of good technology that is not widely used is a contradiction in terms. The false assumption of technology on the shelf has contributed to the practice of giving higher funding priority to extension than research. The institutional separation of research and extension services in most ESA countries has also diluted the sense of responsibility for developing technology that is farmer-based and problem-oriented.

The international agricultural research centers (IARCS) based in ESA are also having some difficulties. The most recent example is the Sorghum and Millet Improvement Program (SMIP) of SADC, executed by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and based at Matopos, Zimbabwe. After a decade of research and about US\$40 million (thanks largely to the

United States, German, and Canadian taxpayers), the SADC/ICRISAT SMIP has yet to deliver widely adoptable sorghum and millet varieties. This is testimony that the days of the formidable Consultative Group on International Agricultural Research (CGIAR) may be over. In addition, the Southern African Centre for Cooperation in Agricultural Research (SACCAR) and SADC now have to pay for their lack of capacity to direct indigenous major regional research programs by having to take over what is effectively a costly white elephant. Donors, whose earlier overenthusiasm led to US\$4 million annual funding for SMIP, now crack the "sustainability" whip, putting pressure on SADC to take over the overrated program.

ESA ministers of agriculture have to reexamine some key questions for the future:

- What may have been the inadvertent damage to scientific capacity in national agricultural research services (NARS) as a result of budgetary and staff cuts in the process of implementing Structural Adjustment Programs?
- How can ministers use the growing evidence of good returns to agricultural research to make a case for bigger treasury allocations?
- How should current NARS be reformed so that they are more productive and farmer-focused?
- What has been the experience with the regional approach to research, such as the SACCAR and IGAAD initiatives?
- How can ministers foster closer collaboration between research and extension?
- What could be done to attract and retain outstanding scientists in NARS?
- What is the appropriate partnership between public and private research and development (R&D) initiatives?
- How can planning and priority setting be strengthened?
- How best can NARS coordinate external resources?

Human Capital and Capacity Building. In 1985, Shapiro reported that the stock of human capital in scientific fields in Africa in 1980 was one-fourth of Asia's in 1970. Enrollment in secondary schools and universities in Africa was lower in 1980 than in Asia and Latin America in 1960. T. W. Schultz is quoted by Eicher (1985) as follows:

The role that U.S. foreign aid and that of American leadership . . . played in assisting the Indian political and academic leaders in establishing the agricultural universities in India

stands as a major achievement of permanent value. It was not a short-term undertaking. It entailed building a new institution (the state agricultural university) for the long term. But regrettably, U.S. aid has failed to undertake any corresponding enterprises since then; to wit our dismal record throughout most of tropical Africa. (Schultz 1983, 484).

African universities are in a worse state at independence than in the early 1960s. The civil service is underpaid, demoralized, and often confused by politicians. In 1987, SADC member states reviewed their policies and strategies on food, agriculture, and natural resources and recommended more attention be given to human capital and training. The SADC council proceeded to expand the role of SACCAR to include training at the tertiary level. SACCAR was given the task of preparing a blueprint to phase out Bachelor of Science in Agriculture training as soon as possible and to strengthen postgraduate training within the region (SADC 1987).

In what is regarded as a watershed speech by Africans and Africanists, Edward V. K. Jaycox (1993), Africa region vice-president of the World Bank, identified capacity building as the missing link in African development. But it seems appropriate to pose a hard question: Why is the African Capacity Building Initiative (ACBI) discriminating against agriculture? The World Bank, United Nations Development Program (UNDP), and ADB set up the ACBI and charged it with training economists and development managers. This is a noble objective but why not also train agricultural scientists, managers, and professors? The ACBI is four years old now and should be subjected to independent international evaluation. Ministers of agriculture in Africa should provide their views to the evaluation team on how to incorporate agriculture in the ACBI.

The blueprint (SACCAR 1990) identified the limited supply of trained experienced professionals as critically limiting the capacity of public and private sector institutions in agriculture. The regional strategy is based on two approaches. The first is to develop regional centers of specialization where specialized M.S. and B.S. programs are provided to students from the whole region. Secondly, interuniversity activities should enhance student and staff exchanges as well as exchanges in teaching material and curricula. SACCAR is currently

setting up a Regional Programme for Support of Agricultural Faculties⁹ with assistance from Canada. Some regional centers are currently operational and supported by Germany. Support, however, has to be increased considerably if this noble objective is to be achieved.

The implications for the international agricultural community are first to invest the current divestiture from agricultural research into regional initiatives in capacity building. Initiatives such as the Special Programme for African Agricultural Research (SPAAR) and ACBI need to be revisited and revised to reflect needs of the ESA region. Table 12 shows the paucity of highly trained staff in NARS and the high reliance on expatriates.

Institutional Innovation. In many ESA countries institutions of research, extension, and marketing are still developing capacity to serve smallholder farmers. Servicing smallholders effectively has proven problematic for most institutions. Service institutions in ESA have generally been unable to fulfill three requirements for innovative and effective support to smallholders:

- experiment with mass or group techniques in order to reduce transaction costs and reach large numbers. Oral and visual evidence in Africa can defuse quite far and quickly enough;
- rely on or establish local-level structures; and
- create linkages and synergy between existing institutions to create a system of interactive development institutions (Bonnen 1990).

Evidence to date, however, is a combination of weak and uncoordinated government and quasi-government institutions on one hand, and disjointed and discontinuous donor-financed projects on the other.

Agriculture-Led Industrialization. Agricultural policies in ESA need to be well integrated with industrialization policies in order to achieve sustainable economic development. For this goal to be realized, there is a need to build the rural infrastructure. Biological and physical infrastructure is a key prime mover, which facilitates agricultural development as well as nonagricultural economic activities. A higher priority needs to be given by ESA governments to rural roads, dams, electricity, telecommunications, irrigation systems, schools and training colleges, clinics, and grain stores. Because

⁹Agriculture here includes veterinary medicine and forestry.

Table 12—Total number of agricultural researchers in national agricultural research services and universities and qualification indices, 1980-86 average in East and Southern Africa

Country	Number of Agricultural Researchers			Qualification Index: Total	Qualification Index: Nationals Only
	Total	Local	Expatriate		
					(percent)
Central Africa					
Burundi	53	30	23 (43)	85	73
Central African Republic	n.a.	n.a.	n.a.		
Congo, People's Republic of	68	37	31 (46)		
Gabon	24	10	14 (58)	71	30
Rwanda	34	24	10 (28)		
Sao Tome and Principe	3	n.a.	n.a.		
Zaire	43	n.a.	n.a.	23	
Subtotal	225		(43)	60	59
Southern Africa					
Angola	28	16	13 (46)	46	0
Botswana	50	22	28 (56)	73	38
Lesotho	15	9	9 (50)	67	33
Madagascar	83	73	10 (12)	48	40
Malawi	50	75	5 (6)	30	26
Mauritius	99	n.a.	n.a.	36	
Mozambique	77	13	64 (83)	83	0
Swaziland	11	7	4 (36)	44	17
Zambia	111	57	54 (49)	61	24
Zimbabwe	153	n.a.	n.a.	45	
Subtotal	710		(41)	52	24
Eastern Africa					
Comoros	14	7	7 (50)	50	0
Ethiopia	142	134	8 (6)	43	40
Kenya	483	408	75 (16)	45	
Seychelles	7	4	3 (38)	38	0
Somalia	31	27	4 (13)	9	
Sudan	206	n.a.	n.a.	81	
Tanzania	276	214	62 (22)	61	49
Uganda	185	n.a.	n.a.		
Subtotal	1,343		(17)	54	44
Total Sub-Saharan Africa	4,905		29 percent	53 percent	38 percent

Source: Pardey and Roseboom, 1988.

Notes: Calculated as (number of PhD + MSc)/(number of researchers). For the Qualification Index based on the total (national + expatriate) number of researchers, the expatriate researchers were assumed to hold either a PhD or M.MSc (or equivalent) qualification.

Subtotal figures are weighted group averages where the weights represent the proportion of total agricultural researchers for each regional group accounted for by each country.

rural areas in ESA embody a totality of life, agricultural and nonagricultural, rural infrastructure tends to reinforce symbiotic growth of agriculture and nonagricultural activities. Pingali et al. (cited in Cleaver 1993) report that transport links to product markets stimulate agricultural productivity even in low population density areas. Rural road density in ESA is estimated at 36 meters per square kilometer, compared with 730 meters per square kilometer in India for comparable population den-

sities. Moreover, the distribution of road density by country is highly skewed, and roads are poorly maintained.

There is a 75 percent correlation between agricultural growth and overall economic growth in low-income economies. The newly industrialized countries of Asia—Thailand, Indonesia, Malaysia, Republic of Korea, Taiwan, and China—have enjoyed rapid agricultural growth preceding rapid economic growth and poverty reduction.¹⁰ This is

¹⁰For instance, China achieved an annual economic growth rate of 9.5 percent in the 1980s following a successful agricultural reform; Indonesia achieved 4.3 percent agricultural growth rate during 1965-80 leading to 5.5 percent annual GDP growth in the 1980s; the corresponding figures were 4.6 percent and 7.6 percent for Thailand; for Kenya 5.0 percent and 4.2 percent (Puetz et al. 1992).

overwhelming evidence that Africa is not likely to skip stages of development by industrializing on a weak agricultural economy.

The process of agricultural transformation is in essence linking smallholder farmers to urban and world economies. But agricultural economies of Africa are not well connected to the rest of the economy and the urban economy. Ackello-Ogutu (1993) relates to the Kenyan experience and observes that nonconventional export products, particularly horticulture, provide such opportunities.

Smallholder agriculture also needs selective and appropriate mechanization in order to remove drudgery and excessive competition, particularly for women's labor. The reasons why certain high-yielding technologies or management practices are not adopted by farmers becomes more obvious in light of the scarcity of labor in African smallholder households. Africa is the world's least mechanized continent. Humans provide 89 percent of the agricultural power, with 10 percent coming from animals and 1 percent from machines. Because of poor linkages between agricultural and nonagricultural economies, ESA smallholders have yet to enjoy such innovations as power hoes, low-volume well pumps, even rural telephones that are enjoyed by their counterparts on other continents.

Eastern and Southern African nations have only a small percentage of land under irrigation, with Sub-Saharan Africa averaging 4 percent in 1989/90 (Table 13). There is growing evidence of high rates of return to investments in smallholder irrigation schemes (Rukuni 1993). Large areas of shallow groundwater could be put to intensive cultivation if research focused on some aspects of environmental protection as well as on developing low-volume water pumps.

Management of Natural Resources. ESA countries must seek to ensure that the management of natural resources will contribute to improved productivity and increased incomes while also ensuring that agriculture does not undermine the diversity and richness of the region's natural resource base. ESA ministers have therefore to agree on a three-pronged approach to utilization and management of natural resources:

- maintain and increase the productivity of all forms of land and water utilization for the long-term benefit of the rural populations and society at large;
- ensure the conservation of natural resources primarily for sustainable production and also to maintain and enhance the quality of ESA's environment and natural heritage; and

Table 13—Irrigation and fertilizer use

Country	Percentage of Irrigated Land, 1985-87 ^a	Fertilizer Consumption ^b	
		1970-71	1989-90
(100 kilograms/hectare)			
Sub-Saharan Africa	4	33	89
Angola	0	36	18
Botswana	0	15	7
Burundi	5	5	35
Djibouti	1	n.a.	n.a.
Ethiopia	7	4	70
Kenya	1	238	481
Lesotho	28	10	144
Madagascar	9	61	36
Malawi	6	52	227
Mauritius	1	2,095	3,302
Mozambique	3	22	8
Rwanda	3	3	14
Seychelles	12	n.a.	n.a.
Somalia	38	27	26
Sudan	3	28	39
Swaziland	0	n.a.	n.a.
Tanzania	0	31	93
Uganda	0	14	1
Zambia	0	73	166
Zimbabwe	7	446	604

Sources: Irrigation, World Resources Institute; fertilizer, World Bank 1992b.

Note: n.a. means "not available."

^aIrrigated land as a percentage of arable and permanent cropland.

^bFertilizer consumption in terms of hundreds of grams of plant nutrients per hectare of arable land.

Table 14—Food production characteristics

Country	Food Production Per Capita, 1988-90 (1979-81 = 100)	Roots and Plantains in Total Calories (percent)	Cereals Yield Variability, 1970-90
Angola	80.1	32.5	n.a.
Botswana	78.9	1.0	0.62
Burundi	94.7	22.7	0.06
Central African Republic	95.1	50.6	0.11
Congo, People's Republic of	92.1	45.2	0.18
Ethiopia	85.1	3.1	0.11
Kenya	106.5	9.1	0.11
Lesotho	81.0	0.6	0.29
Madagascar	90.6	19.8	0.04
Malawi	82.8	6.4	0.08
Mozambique	85.5	41.8	0.10
Namibia	94.7	n.a.	n.a.
Rwanda	78.0	44.3	0.05
Sudan	75.4	1.8	0.19
Swaziland	92.7	0.7	0.29
Tanzania	88.3	29.7	0.08
Uganda	92.3	45.3	0.21
Zaire	96.6	61.3	0.03
Zambia	98.4	4.8	0.15
Zimbabwe	95.6	1.4	0.29

Source: World Bank 1992a; FAO 1987, 1980; W. K. Jaeger 1992.

Note: n.a. means "not available."

- recognize the outstanding economic, nutritional, scientific, educational, cultural, recreational, and aesthetic value of natural resources of the region by requiring a process of environmental monitoring and impact assessment (SADC 1992).

Household and National Food Security. Because poverty is the major cause of hunger and malnutrition, growth is the long-term solution to food insecurity. Economic growth, however, is achievable in the long term, and ESA governments have an immediate task of ensuring that their citizens do not suffer unnecessarily from hunger and malnutrition. A household and national strategy has to address both the *food availability* and *food access* sides of the food security equation. Food availability is enhanced by increasing production and productivity, storage and strategic stock management and imports (commercial and aid). Food access is important because the poor go hungry even in the midst of plenty. Food access is through home production, purchasing on the market, and targeted food transfer programs that are normally put in place by governments for the poorest of the poor.

Elements of a Regional Strategy. The size and variability of countries within ESA precludes a single universal strategy for getting agriculture moving. Three decades of postcolonial experience,

however, provide adequate lessons for a general framework. It could also be agreed that consensus is probably at its all-time highest point between Africans and non-Africans as to what needs to be done to get agriculture moving and to achieve sustainable development. A selection of tools for ministers of agriculture to consider as they exchange and borrow ideas from each other and focus on creating a regional framework for cooperation in increasing farm production is presented in the next section. In the same way, African nations cooperated magnificently in tackling the 1992 drought and preventing it from turning into famine.

Coordinated Regional Agricultural Policies and Strategies. It is conventional wisdom in Africa that gregarious behavior is one tool in fighting poverty and hunger. Members take advantage of each other's strength and try to cover for each other's weaknesses. It also happens that modern economic theory recognizes that regional grouping of countries is beneficial. ESA has now had considerable experience after a decade with PTA and SADC. The weakness of ESA regional groupings to date can be summed up in the negligible increase in intraregional trade. The successes, however, are the convergence of foreign policy as well as economic and political policies. There is visual evidence of greater internal economic migration and a

number of sensitive issues (such as food security and human rights) have become more depoliticized and open to public debate within the region.

Speaking in functional terms and focusing on agriculture, one could argue that the time has come for ministers of agriculture to increase the dialogue on a "coordinated regional agricultural policy" in ESA, or at least by subregions, East and South. SADC, for example has pioneered regional cooperation in areas of food security,¹¹ research, environment, and land management, livestock production and disease control, fisheries, forestry, and wildlife.

After SADC member states ratified a new treaty, some commentators (Sigwele 1993) argued that the time has come for member states to enter into binding agreements on protocols to enhance regional agricultural trade and free mobility of resources. While states experience surpluses and deficits in commodities such as maize, fish, seed, vegetables, milk, and beef, as well as processed foods, intra-SADC trade is still small because of inconvertible currencies licensing regulations and local content tariffs. Protocol could also be signed to ratify common agricultural legislation: environment, chemicals, seed certification, and so on.

Investment Policy. ESA countries need to coordinate and rationalize investment policies to promote agribusiness development. This is particularly desirable in areas of fertilizer, seed, and machinery, which are key inputs for smallholder agricultural development. Efforts need to be intensified in both production and distribution of these and other products. In such cases, R&D efforts may lead to the development of agro-industry and thus to improved competitiveness of the region on the world market.

Regional Institutions. The lack of comprehensive agricultural policies coupled with the lack of capacity and overreliance on foreign experts in policy formulation provides the rationale for building and strengthening regional institutions. Regional institutions should be targeted at three important areas:

- research and development (R&D);
- agricultural policy analysis and research; and
- training.

In the area of R&D, both SACCAR and IGAAD need to take stock of experience to date to foster greater subregional cooperation in developing technology more appropriate to smallholder farmers on a broader scale than hitherto. This in turn has to be linked to agro-industrial development and better production and distribution of key inputs such as fertilizer, seeds, and small machines.

It is further proposed that a new Regional Agricultural Policy Analysis and Institute (RAPARI) be created to reduce dependence on foreign experts as ESA countries develop comprehensive agricultural policies and food security strategies. The institute will, in collaboration with regional universities, be responsible for research and analysis leading to the coordination of agricultural policies and strategies in ESA. The institute will create an operational agricultural commodity research/information system that should promote intraregional trade as well as build ESA into a strong regional trade bloc.

In the area of training, the concept of regional centers of specialization is under trial in ESA, and this needs strengthening in order to build strong regional universities. The concept of regional centers of specialization is appealing because of perceived cost savings and elimination of unnecessary duplication. The target should be training MSc and PhD students within the ESA region to cover most applied agricultural disciplines. Except for highly specialized training, most overseas training should be phased out over the next 10 to 20 years as higher quality and more relevant training is provided to postgraduates within the region.

Promoting Linkages and Cooperation between NARS, African universities, RACs, and IARCs. The lack of widely adopted technologies in ESA is evidence of poor operational links between national, regional, and international R&D initiatives. For a long time, however, IARCs have enjoyed strong funding support from donors. As NARS went through financial hardships and staffing problems in the 1980s, IARCs in ESA played a supportive role and project funding assisted in maintaining some of the research programs. According to Puetz et al. (1992),¹² however, the CGIAR may not be

¹¹The drought of 1992 was the worst in the recorded history of SADC. Through regional cooperation in food security and transportation, the region imported record levels of commercial imports and food aid. Famine was averted, and this is probably an unparalleled success story of regional strategy in Sub-Saharan Africa.

¹²In the study, Puetz et al. (1992) chronicle the indicators of decline in agricultural development assistance; its share declined from 22 percent in 1980 to 14 percent in 1990. In the same period the value decreased from US\$12 billion to US\$10 billion in real terms.

able to maintain the strategic leadership role it has enjoyed to date. Within ESA there has been a drastic decline in the presence of IARCS, coupled with a decline in donor funds, and latent in this decline is more competition between IARCS, NARS, and RACs for donor funds.

NARS, RACs, and IARCs now have to form a new and more effective partnership in Africa, to emerge from a collective chronic irrelevance to the African smallholder farmer. The traditional division of responsibility has been to assign strategic research to IARCs and RACS, while NARS give priority to applied and adaptive research. While this appears logical, in practice NARS need to have considerable capacity in order to borrow technology intelligently. By bidding for project funds from donors, RACs and NARS could call for bids from IARCs as well as private-sector research and universities for development of specific technology or components thereof. For instance, ESA ministries of agriculture may want a collection of widely adaptable drought-tolerant maize varieties. After finding funds for such a project, the region may ask for bids or contract some of the proven IARCs such as CIMMYT. If NARS have to reform and operate more efficiently for higher return to research, it may be that the CGIAR in Africa has to develop innovative ways of assisting in the development of location-specific technological packages.

Regional Food Security. By focusing on cost-effective mixtures of policy that ensure adequate availability and access to food, food security strategies have become more acceptable than food self-sufficiency strategies. When governments develop specific policy instruments at three levels—household, national, and regional—structures emerge that more easily link food-deficit households with national, regional, and international food markets and food transfer programs. This explains why Botswana, a chronically food-deficit nation in southern Africa, has managed to avoid famine and to feed up to 60 percent of its population in times of need.

Regional food security could be enhanced by cooperation in a number of broad areas:

- interregional trade;
- transportation integration and food aid management;
- information exchange and early warning on climate and international food markets;

- drought management, mitigation, and preparedness; and
- production-related activities resulting from coordinated agricultural policies.

ESA countries could start by taking stock of the experiences drawn from SADC and IGAAD activities in order to set priorities for a subregional strategy.

Political Will. For a regional strategy to succeed, there is need for considerable political will and the sacrifice of narrow national or sectional interests. If it is agreed that regional cooperation and integration through activities cited earlier are desirable, a practical mechanism should be set up to assist in the following:

- harmonization of policies;
- development of memoranda of understanding, protocols and treaties; and
- financing of regional activities.

At this stage, the responsibility lies squarely with the Global Coalition for Africa, which has been instrumental to this regional grouping, to generate and intensify the political commitment and continuity to see this far-sighted goal through to fruition.

Conclusion

In spite of the poor performance of the food and agriculture sector, enough success stories exist in most ESA countries to strengthen the case for an intensified smallholder-based African Green Revolution. It has been argued in this paper that such a Green Revolution is more likely to take place through a comprehensive approach of investing in key prime movers for agriculture at the national level. For this to occur, agriculture has to be put back on top of the local political agenda, and greater commitment must be made to investment in rural areas. A regional strategy is also proposed, although regional cooperation is more likely to succeed if national programs and activities are effective. Regional activities should therefore not substitute for but complement national activities. The establishment of a Regional Agricultural Policy Analysis and Research Institute could coordinate regional efforts and integrate these with national policies and strategies.

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