Evolution of Agricultural Services in Sub-Saharan Africa

Trends and Prospects

V. V. V. Venkatesan
Jacob Kamponi
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Evolution of Agricultural Services in Sub-Saharan Africa

Trends and Prospects

V. Venkatesan
Jacob Kampen

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When I introduced the Training and Visit extension system nearly three decades ago, almost all the extension services in Asia were in the public sector. They were fragmented and competing with each other. The challenge was to build an effective and well-organized extension service that can deliver what almost all agreed is vital for an extension service to do. To ensure that all the many good ideas about extension would be effectively implemented, we established a strong organization ensuring linkages with research and providing the extension workers with training, a field-oriented work program, and adequate support. I am glad that over the years this has been achieved in many countries. As a result, extension is now regarded as an important tool for increasing farmers' knowledge, agricultural production, and income.

The challenge in Africa, where I have been working for the last two decades, was even greater. Initially, both research and extension were very weak. National research programs were often isolated from extension and from farmers. Extension services in the ministries of agriculture often lacked focus, good management, and linkages with research. We have come a long way in addressing these challenges: there is now continuous training for farmers and staff, and the focus is now on responding to the demands of rural people.

New and exciting evolutionary trends have been emerging more recently: the informal sector is increasingly active and gradually starting to take responsibility for the delivery of agricultural services. More and more African countries are introducing political and administrative decentralization, which allows for decentralization of extension. These and other changes make extension more accountable to the beneficiaries. In many countries, the stage is set to look beyond extension and to address the entire rural development agenda.

I am happy that these evolutionary trends have been captured in this paper.

D. Benor
Special Adviser to the Vice Presidents
Africa Region
ABSTRACT

The paper traces the evolution of World Bank support to agricultural services, particularly extension and research, in Sub-Saharan Africa from the early 1970s to the present. In the early 1970s World Bank support to agricultural extension and research was part of overall support to rural development and the Bank and other donors supported Integrated Rural Development and Area Development Projects. When these projects did not result either in alleviating rural poverty to the extent envisioned or in promoting sustainable services in their sectoral components, the World Bank began to support national programs in the early 1980s, starting with agricultural extension in Kenya. The paper describes the Bank's experience with the implementation of national programs in agricultural extension and research and how these are evolving to face the problems of the future. This discussion leads to an account of the resurgence of interest in rural development resulting in the World Bank sector strategy paper Rural Development: From Vision to Action (World Bank 1997). The paper concludes with the observation that participation of beneficiaries in the design and implementation of programs is critical and will ensure convergence of the national programs toward rural development.
ACKNOWLEDGMENTS

Our thanks are due to the countries and their farmers for setting in motion the evolutionary forces resulting in a variety of extension situations.

The findings given here are based on a number of observations by the Bank’s field staff and the donors. The efforts of Ms. Connie Chan-Kang and Ms. Kathleen Fernicola who were summer assistants with the World Bank in the summer of 1996 and gathered instances from the field, deserve special mention. The latter particularly gathered material for this paper from the field by visiting some five countries, and also provided office support in drafting the early versions of this paper.

The paper has immensely benefited from the observations of many external reviewers. In particular, the comments of Mr. Daniel Gustafson (presently Resident Representative of FAO in Kenya) were very useful and resulted in many improvements.

Dr. Deirdre M. Birmingham had a very special role in the preparation of this paper. She was the principal author of the portions of the paper relating to agricultural education and training and presented her contribution at the Cape Coast workshop. She was also one of external reviewers and provided detailed comments on the initial drafts.

The Swiss Development Cooperation (SDC) generously funded the portion of the paper related to agricultural education and training to be presented at the Cape Coast Workshop in October 1997. The (now well known) Neuchatel Initiative started by the SDC provided the initial stimulus for the paper.

Mrs. Almaz Teklesenbet and Mr. Noel Kaufmann provided secretarial support for the preparation of the paper. The former especially patiently made all the editorial changes suggested.
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<td>ADP</td>
<td>Area Development Projects</td>
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<tr>
<td>AMTA</td>
<td>Agricultural Management Training for Africa</td>
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<td>ASARECA</td>
<td>Association for Strengthening Agricultural Research in Eastern and Central Africa</td>
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<td>ASI</td>
<td>Agricultural Services Initiative</td>
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<td>ASIP</td>
<td>Agricultural Sector Investment Programs</td>
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<td>CAS</td>
<td>Country Assistance Strategies</td>
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<td>CFM</td>
<td>Consolidated Funding Mechanisms</td>
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<td>CORAF</td>
<td>Conference des Responsables de Recherche Agronomique Africains</td>
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<tr>
<td>CTA</td>
<td>Technical Center for Agricultural and Rural Cooperation</td>
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<td>DAES</td>
<td>Department of Agricultural Extension Services</td>
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<tr>
<td>DANIDA</td>
<td>Danish Aid Agency</td>
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<td>DOA</td>
<td>Directorate of Agricultural Production</td>
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<td>DOE</td>
<td>Directorate of Livestock</td>
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<td>DRC</td>
<td>Democratic Republic of Congo</td>
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<td>EDI</td>
<td>Economic Development Institute, World Bank</td>
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<td>ERR</td>
<td>Economic Rate of Return</td>
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<td>ES</td>
<td>Extension Systems</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>FEW</td>
<td>Frontline Extension Worker</td>
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<td>FFA</td>
<td>Frameworks for Action</td>
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<td>FS</td>
<td>Field staff</td>
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<td>FSR</td>
<td>Farming Systems Research</td>
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<td>GTZ</td>
<td>German Technical Cooperation</td>
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<td>HRD</td>
<td>Human Resource Development</td>
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<td>HRM</td>
<td>Human Resource Management</td>
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<td>HYV</td>
<td>High-Yielding Varieties</td>
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<td>IARCS</td>
<td>International Agricultural Research Centers</td>
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<td>IDA</td>
<td>International Development Association</td>
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<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
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<td>INADES</td>
<td>Internationale Africain du Développement Économique et Sociale</td>
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<tr>
<td>INSAH</td>
<td>Institut du Sahel</td>
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<td>IRAG</td>
<td>National Agricultural Research Institute of Guinea</td>
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<td>IRD</td>
<td>Integrated Rural Development</td>
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<td>IRDP</td>
<td>Integrated Rural Development Projects</td>
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<td>ISNAR</td>
<td>International Service for National Agricultural Research</td>
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<td>KARI</td>
<td>Kawanda Agricultural Research Institute</td>
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<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
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<td>MDHS</td>
<td>Multi-Donor Hubs and Spoke Systems</td>
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<td>MDR</td>
<td>Ministry of Rural Development</td>
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<td>Acronym</td>
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<td>MINAG</td>
<td>Ministere de l'Agriculture</td>
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<td>MOA</td>
<td>Ministry of Agriculture</td>
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<td>MOP</td>
<td>Memorandum for the President</td>
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<td>MOU</td>
<td>Memorandum of Understanding</td>
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<td>MRA</td>
<td>Ministere des Resources Animales</td>
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<td>NAEP</td>
<td>National Agricultural Extension Project</td>
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<td>NARM</td>
<td>National Agricultural Research Master Plan</td>
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<td>NARO</td>
<td>National Agricultural Research Organization</td>
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<td>National Agricultural Research Systems</td>
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<td>Nongovernmental Organization</td>
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<td>National Resources Institute</td>
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<td>Natural Resources Management</td>
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<td>National Seeds Project</td>
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<td>On-Farm Research</td>
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<td>PAR</td>
<td>Participatory Action Research</td>
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<td>PMU</td>
<td>Project Management Unit</td>
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<td>Research Extension Liaison Committee</td>
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<td>Rapid Rural Appraisal</td>
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PREFACE

This paper is part of the ongoing efforts of the Africa region of the World Bank to take stock of the state of agricultural services, particularly agricultural extension and research in Sub-Saharan Africa (SSA) and to anticipate the challenges which the future holds for us and prepare ourselves to meet them. The paper also discusses the lessons learned from the World Bank's experience with the design and implementation of agricultural extension.

More specifically, the objectives of this paper are to:

- Briefly trace the World Bank's experience with rural development in the region and to recapitulate the lessons learned from the Integrated Rural Development Projects and its variant, the Area Development Projects.
- Trace the evolution of national programs in agricultural extension and research, particularly the gradual evolution of the national agricultural extension program from a situation when there was one dominant provider, namely government, and only one organizational option, namely straight line organization from the head of the extension system to the frontline extension worker (Benor and Harrison 1977), to a pluralistic system with organizational innovations and variations among countries.
- Describe the growing set of variations in the implementation of the Training and Visit system of agricultural extension in Africa.
- Describe the key characteristics of a national program, taking extension as an example.
- Discuss the recent efforts of the donor community in providing a forum for exchanging their views of extension in SSA such that they can serve the SSA countries more effectively.

This paper is intended for an audience well beyond World Bank staff. It can be of interest to decision makers and implementers working in rural services, colleagues from the non-governmental organizations and in the donor community, scholars and students from the academic world, and generally to all those who are interested and active in agricultural extension and rural development.

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Sector Director
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EXECUTIVE SUMMARY

INTRODUCTION

The World Bank’s support to agricultural development in the 1960s and the early 1970s consisted mainly of support to large-scale development schemes to introduce modern agricultural technologies for crops (particularly export crops) and livestock, based on packages of high-yielding varieties (HYV), fertilizers, chemicals and credit, usually accompanied by mechanization or irrigation or both. The address of the former World Bank President, Mr. Robert McNamara to the Board of Governors of the World Bank in 1973 led to a shift of focus from large-scale, heavily mechanized projects to poverty alleviation through smallholder farming and rural development (McNamara 1973).

ROAD TRAVELED

Integrated Rural Development

The Bank addressed the challenge of rural development through programs which delivered services in agriculture and related areas (most of which were in the public sector) in an integrated manner. To achieve this, the field staff of the organizations providing the services were placed under the administrative responsibility of an integrating authority. Support for rural development was the objective, and Integrated Rural Development Projects (IRDP) and its variant, the Area Development Projects (ADP) were the medium. A typical IRDP included agricultural extension, research, marketing, input supply, credit, rural roads, water supply, rural electrification, small-scale irrigation, and sometimes, social infrastructure components such as primary schools and health centers. The number of IRDPs in Sub-Saharan Africa (SSA) increased from 38 in 1965-73 to 171 in 1974-86; the corresponding figures for lending were $ 218.1 m and $ 2976.6 m respectively (World Bank 1988:105,110). The results of the IRDPs and the ADPs in the SSA were disappointing (World Bank 1988: xvi).

Lessons from the IRDP Experience

Coordination

One of the key reasons for adopting the IRDP management model was the need to coordinate the delivery of agricultural and related services to rural areas by different agencies. To achieve better coordination, field staff of the different agencies concerned were placed administratively under the IRDP manager. However, the coordination of services never occurred to the extent intended, mainly because farmers and others who were intended to benefit from the coordinated services were not associated with implementing the project.
Closed universe syndrome

The IRDPs operated in a closed universe and were seldom linked to local, national and international agricultural institutions. Solutions to many problems, from the need for agricultural technologies to improved rural infrastructure, were sought within project resources mainly through hiring foreign technical assistance (TA). When the project closed, the project management unit (PMU) disbanded without strengthening an existing institution or creating a new institution capable of continuing project activities. National institutions and ministries did not have a sense of ownership of the project since they were not responsible either for its design or implementation.

The IRDP experience offers other important lessons for organizing services in the rural sector.
• It is essential that the service providers build appropriate linkages with the beneficiaries and involve them actively in planning and implementing services.
• Coordination between the delivery of various rural services is achieved from below, that is, the beneficiaries, rather than from above, that is, the bureaucracies providing them.
• The staff of these agencies need access to periodic training and interaction with institutions at the national or international levels.
• Each agency\(^2\) providing a service should have a methodology and strategy and management system consistent with its objectives.
• In much of SSA, strengthening links among institutions providing agricultural services is key to improving rural services that help increase rural incomes.
• Institutions providing services should be institutionally and financially sustainable.

National Programs

Disenchantment with the IRDP approach caused a shift to supporting national programs in agricultural services, initially in extension. In 1982, the World Bank started supporting the National Extension Service in Kenya. A national program providing a service does not necessarily imply a single provider of that service or a single donor. The same national program can have different providers supported by different donors, depending on donor preferences and strengths. A national program does not necessarily cover the entire country. The ministry or the department concerned is responsible for the policies relating to the program, particularly its management and methodological characteristics which are described below.

Characteristics of a National Extension Program

A national program delivering a rural service generally has four inter-related characteristics: institutional, organizational, managerial and methodological. Each characteristic has a variety of options. A chosen combination of these options comprises
the typology of the rural service. This can be illustrated using agricultural extension as an example.

**Institutional**

In most countries in SSA, the governments and parastatals mainly provide agricultural extension services. In most industrial countries, and in some SSA countries, other institutions also provide extension services, such as private companies, input suppliers and farmer organizations and non-governmental organizations (NGO). When, more than one institution is engaged in extension delivery, the system is said to be pluralistic.

**Organizational**

The organizational characteristics of the extension institution relate to its structure, pattern of communication within the organization and its relationship with: (i) research institutions; (ii) those which deliver extension and other services to farmers (e.g. credit, inputs); and (iii) the beneficiaries of extension viz. farmers. The degree of administrative, financial and political decentralization are important organizational characteristics.

**Managerial**

This characteristic covers the kind of management system followed. Issues such as the frequency and regularity of training of extension staff and visits to farmers, supervision of field extension, the linkages between research and extension (REL), the monitoring and evaluation (M&E) set-up, and cost recovery of services.

**Methodological**

This characteristic, often called extension approach, covers the manner in which the extension system interacts with its beneficiaries, viz. farmers, and is probably the most widely written about in extension literature. Some examples of extension methodologies are: face-to-face extension, farmer participation in technology development, and dissemination, reaching farmers through media such as radio and television. Some methodologies are mutually exclusive; some are consistent with and complementary to each other.

**Need to Unbundle the Various Characteristics of National Programs**

The experience with the implementation of extension programs in SSA indicates that there is need to unbundle the various components of extension, so that the program can have different typologies to suit the different countries in the region and even different situations within the same country. When choosing a specific typology, the preferences of farmers must be considered. Much of the extension literature discusses the subject
from the points of view of the providers of extension services or of donors. What is needed is a list of the essential features of an extension service from the point of view of the beneficiaries and a method which develops an extension system which would contain and represent these features and be sustainable. The development of such an extension system is facilitated by starting pilot projects containing a chosen set of key features to see which one can be successfully implemented.

National Agricultural Extension Programs

To a significant degree, the national agricultural extension programs introduced by the SSA countries are based on the Training and Visit (T&V) system of extension. The T&V system of extension has gradually evolved from a situation where there was a single provider, with a single mode of organization to a pluralistic system with organizational innovations which vary among countries. Some countries that are reforming their extension services are also modifying their T&V type of extension, adjusting it to the changes in their administrative and political context while retaining its essential features. The T&V system of extension was built upon the following assumptions.

- When extension reforms are introduced, one must often work with the existing staff and other resources, gradually taking steps towards what is desirable
- It is essential to increase the professionalism of the extension workers through better training, and limit their work to the provision of technology and information.
- Introduction of managerial and methodological reforms will eventually lead to other desirable reforms in extension, such as financial, administrative and political decentralization, accountability to beneficiaries and increasing delivery of extension by the private sector.

National Agricultural Research Systems

Research is another key agricultural service the Bank has been supporting in Africa since the 1980s. Like extension, the Bank’s strategy has been to replace the earlier project-specific research initiatives with national programs by strengthening the National Agricultural Research Systems (NARS). Extension and research reforms supported by the World Bank in SSA incorporate the lessons learnt from the IRDPs, particularly the lesson that field coordination among services that span many sub-sectors or sectors is best achieved by beneficiaries. The steps taken by the NARS have been:

- Strengthening the linkages of research with extension so that the research gets a continual feedback from farmers;
- Active involvement of farmers in the process of prioritizing research questions;
- Establishing a management system that includes regular interaction with extension and on-farm trials;
- Introducing contract research for cash and export crops;

Establishment of competitive grant programs to finance research in specified topics; and
- A sub-regional approach to research involving many SSA countries.
THE ROAD AHEAD

Role of Governments in Agricultural Services

Unlike in industrial countries where most of the services to farmers are provided by the private sector, in SSA, the public sector provides most of the agricultural services. Despite recent policy reforms, many policies help perpetuate this dominance of the public sector and the dependence of farmers on public sector agencies for many of their needs. Many governments in SSA are more keen to provide many agricultural services themselves rather than create conditions that encourage the growth of alternative providers such as the private sector. In agricultural development, it is necessary to clearly recognize that the government has a role which it should play and that it should conserve its resources such that it is able to play this role properly. But it is common to see governments in the SSA not finding enough resources to do the job which they should do as these are drained by the efforts of the governments to provide many agricultural services, which they are not equipped to carry out efficiently.

In the initial stages of development, it may often be desirable to limit the government’s role in agriculture to the provision of basic services, such as research, extension, irrigation and infrastructure. As far as the other services are concerned, particularly, inputs, credit and marketing, its role should be to create proper conditions for the growth of a competitive private sector. In later stages of development, it may make economic sense to leave even some of the basic services to the private sector. Governments must decide judiciously which services to undertake and periodically reevaluate the services which they already provide that could be privatized or whose costs could be shared with the beneficiaries.

Importance of Agricultural Education and Training

Besides supporting continual in-service training as part of the dynamics of T&V system of extension, the World Bank supports agricultural education and training through funds provided in the extension and research projects. The Bank has also placed an extension training specialist in Africa to provide training to nationals in various aspects of extension management. However, such support falls short of being sufficient. Three fundamental issues need to be addressed seriously if donor support to strengthen agricultural services is to have greater long-term impact.

- Recognition that the systems of agricultural education in SSA are critically weak. Unless they are strengthened, both public and private sector organizations in agriculture will not have the trained personnel they need. This means that the potential for economic development, particularly in the rural sector, is not utilized.
- Investments in training need to be used for the purposes of strengthening institutions rather than meeting the needs of individuals. This requires that human resources policies and structures be established and adhered to.
Investments in human resources need to be leveraged through staff incentives. Avenues for using new knowledge and skills acquired by the staff through training, and rewards for good performance are lacking in most extension services. In research there is a need for training research staff on how to conduct downstream research, that is, research closer to farmers, focusing on their problems and opportunities to solve these keeping in mind their resource endowments.

Future Challenges

Future challenges which extension and research are likely to face will be increasingly complex. More will be expected of them than before, including the need to dramatically increase agricultural production while addressing environmental concerns, natural resource use and bio-diversity. Additional future issues are likely to include:
- The increasing complexity of technology and the need to provide farmers with a wider range of technological options;
- The reduced abilities and willingness of the central governments to fund extension and research services even though more is expected of extension and research than ever before;
- Increasing awareness of the issues concerning the institutional and financial sustainability of extension and research systems;
- How to select the research and extension services that can be privatized; more specifically:
  - functions in research and extension that should be publicly financed, and those that should remain in the area of public delivery;
  - those that could be sub-contracted while still financed with public funds;
  - those that can be left completely to private initiative, with no public funds involved;
- How to actually shift research and extension services to the private sector, more specifically:
  - increasing farmers’ say over the extension delivery arrangements, particularly the accountability of extension staff to farmers;
  - selection by farmers of the organization they would like to receive extension from;
  - increased say of farmers on the technologies to be disseminated
- The need for extension and research to improve their services to better help farmers capture opportunities as markets increasingly globalize; and
- The organizational changes needed in extension and research services to meet the challenges listed above.

From Agricultural to Rural Development

In the past one year, there have been two important developments which indicate that rural development is back again on the agenda of the World Bank. The first has been the
publication of the World Bank's Sector Strategy Paper *Rural Development: From Vision to Action* (World Bank 1997). The second has been the World Food Summit held in Rome on Nov. 13-17, 1996 at which the President of the World Bank stressed the institution's commitment to agricultural and rural development. It is clear that the Bank's support to extension and research reforms in SSA will evolve as components of a comprehensive rural development strategy anchored in national programs with multidimensional linkages, and increased beneficiary participation.

The key question before development professionals is: how to organize services to rural populations in such a manner that:

- The lessons learned from the experience in SSA with agricultural extension are applied to the design of the future rural development programs, particularly:
  - an unbroken chain between the source of technology and the end-user
  - periodic upgrading of the skills of service providers
  - regular monitoring and evaluation;
- The good features of the national program model are preserved;
- The institutions providing agricultural services are institutionally and financially sustainable;
- They are accountable to the beneficiaries; and
- The latter are effectively involved in program planning and implementation, so that they can demand more effective and coordinated action among service providers.

**Responsibility of Donors**

Donors have a special responsibility to:

- Support the development of a strategy in each sub-sector in agriculture and support national programs in these sub-sectors, ensuring the necessary linkage with technology;
- Avoid piecemeal schemes unrelated to the mainstream institutions in each sub-sector;
- Support the strengthening of systems of education and training in Africa; and
- Support the evolutionary trends in the delivery of services, as in the case of extension and research.
INTRODUCTION

Farmers require many goods and services, importantly, technology, information, inputs (such as seed, fertilizer, pesticides), means of production (such as labor, farm power, farm implements), infrastructure (such as irrigation, rural roads), marketing and credit. The services which they need are collectively called 'agricultural services'. World Bank support to organizing and managing agricultural services in Sub-Saharan Africa (SSA) has gone through several evolutionary stages since the 1960s. This paper describes these stages and the lessons learned from them, and the future issues facing extension and research in SSA. The organization of agricultural services in SSA at present:

- Embodies the lessons of the integrated rural development projects (IRDPs) and provides sustainable alternatives to them;
- Builds upon the positive characteristics of the national program model;
- Realizes increased beneficiary participation in agricultural services; and
- Provides greater opportunity for SSA countries to coordinate donor efforts.

The current national programs for agricultural services provide examples for organizing development programs in other sectors or sub-sectors.

The central theme of this paper is that for a service to be relevant to its beneficiaries, it must have a management system which:

- Brings the service providers into regular contact with farmers; and
- Facilitates links among program administrators, technology and education institutions, and other government agencies connected with the provision of the relevant service.

It is difficult for other features of successful development programs such as accountability of the programs to the beneficiaries, and sharing of the costs of the program by the beneficiaries, to be realized unless these preconditions are satisfied. Many services for rural areas must be delivered in a coordinated fashion to bring about sustainable rural development. Coordination is not possible without the active involvement of beneficiaries in program planning and implementation.

Chapter 1 traces the evolution of World Bank support to national programs in SSA, particularly extension, starting with the Bank's experience in supporting integrated rural development (IRD). Agricultural extension is examined from a broad evolutionary perspective.

Chapter 2 discusses the organization of agricultural extension and research which were the earliest national programs supported by the Bank in SSA. The discussion includes an account of the innovations introduced by the various SSA countries in their national agricultural extension programs. It shows that developing national programs is a necessary first step toward other innovations in the delivery of agricultural services. Examples are given of national extension systems which are institutionally pluralistic and
involve farmers substantially in technology generation. The extension review then leads to a discussion of agricultural education and training in SSA and the national agricultural research systems (NARS).

Since the Bank started supporting national extension and research programs, it has provided assistance in implementing them. Three main types of assistance are discussed.

- Bank staff who provide technical, managerial and training support to the national extension and research staff in the field;
- Workshops on extension and on-farm research for Bank and national staff organized by the Bank’s Training Specialist; and
- Periodic workshops involving the national staff and staff of the NGOs to discuss the larger issues of extension and research.

The World Bank, other donors and NGOs continually interact and have established areas in which they are collaborating. Examples of projects supported by various donors and implemented by various agencies in a complementary manner are given. Workshops and seminars on extension organized by other donors are also discussed.

Chapter 3 discusses the future challenges which face development professionals in the agricultural sector, and the need for SSA countries to introduce necessary changes to the extension and research systems.

Chapter 4 discusses broader issues arising out of the World Bank’s experience with extension and research, particularly the current concerns over rural development. It discusses the lessons that can be drawn from the Bank’s experience with agricultural services, and concludes that national programs providing agricultural services must be organized and managed such that beneficiaries are involved in planning and implementing programs so that their demands for more effective and coordinated services among various providers can be met.
ROAD TRAVELED

1. THE EVOLUTION OF WORLD BANK SUPPORT TO NATIONAL PROGRAMS

Small-scale extension initiatives in Africa have been supported by the World Bank since the 1970s when it started financing integrated rural development projects (IRDP) serving agriculture. Following the shift in its emphasis from IRDP to the development of national institutions, the Bank’s support to reforms to national extension systems in Africa began in 1981 in Kenya. Since then, Bank-supported national extension programs have been started in much of SSA. Following extension reforms, reforms to the research management systems have also been introduced through Bank-assisted national agricultural research programs in many SSA countries. A major thrust of these is the development of national agricultural research systems with strong linkages to extension. The Bank’s decision to go beyond extension and research and pay attention to management improvements in other agricultural services, such as seeds, credit and marketing, resulted in the World Bank's Agricultural Services Initiative (ASI) in Africa in 1987. The Bank’s involvement with management reforms in these areas in still in its early stages.

The evolution of World Bank support to agricultural and rural development is extensively documented in various World Bank publications listed under References. This section reviews only those characteristics which have either not been adequately dealt with or are specifically relevant to the issues discussed in this paper.

WORLD BANK SUPPORT TO AGRICULTURAL DEVELOPMENT IN THE 1960S AND 1970S

Bank’s Support to Agricultural Development During the 1960s

The Bank’s support to agricultural development during the 1960s and early 1970s was mostly to large-scale development schemes, which often involved mechanization of agriculture, irrigation construction and rehabilitation. World Bank support to rehabilitate and construct irrigation projects in the Sudan is an example of such schemes. They sought to introduce modern and off-the-shelf agricultural technologies for food crops, export commodities and livestock (Gibbon and others 1993).

Emphasis on Poverty and Rural Development

The address of a former World Bank President to the Bank’s Board of Governors led to a shift in emphasis from large-scale mechanization schemes to smallholder farming and rural development (McNamara 1973). This shift was evident in the Bank’s Rural Development Sector Policy Paper which described the operational goals of rural development as “improved productivity, increased employment, and thus higher incomes for target groups, as well as minimum acceptable standards of food, shelter, education and health.” (World Bank 1975). The paper concluded that the development programs “must embrace a wide range and mix of activities.” Subsequently, lending for rural
development in SSA increased from $218.1m between 1965-73 to $2976.6m between 1974-86 (World Bank 1988).

**Integrated Rural Development Projects**

When the Bank decided to support small farmer development in the 1970s, the IRDP framework and its variant, the Area Development Projects (ADP) were considered appropriate responses to the need to integrate the delivery of services in agriculture and related areas to rural smallholders. It was thought that the best way to achieve a coordinated delivery of services was to bring the field functionaries of the ministries concerned under the administrative control of the project administrator of the IRDP.

An IRDP covered a small geographical area (usually a district or a region) and typically included components such as agricultural extension, research (if technology was lacking), marketing, input supply, credit, rural roads, water supply, rural electrification and small-scale irrigation. Some IRDPs also had social infrastructure components such as primary schools and health centers. A project unit as an umbrella or integrating agency was usually established parallel to the relevant government ministries and independent of them, to manage and integrate development activities in a geographical area defined by the project. In most areas the project staff were different from the mainline government staff. Lele (1975) deplores this dual and parallel set-up in most IRDP areas. She feels that this has bred jealousy and envy among the ordinary government staff who resented the special status enjoyed by the “project staff.” “An elitist project administration may develop that is not capable of establishing rapport with the normal administrative structure. These tensions will persist unless the performance and the incentives in the normal government administration are improved or unless the autonomous projects lose their special characteristics in the course of integration.” (Lele 1975:129).

ADPs were similar to the IRDPs and were located primarily in areas of low agricultural potential, which, according to the countries concerned and the World Bank, had been by-passed by past investment strategies (World Bank 1993d). The logic behind such projects was that since those who inhabit such areas were generally poor, a strategy of poverty reduction should include projects to serve them. The World Bank’s Operational Directive 4.15 titled “Poverty Reduction” has called for a special focus on the poor by “concentrating on geographical areas where the poor live, on products and services the poor produce and consume, and on assets the poor hold.” These projects, like the IRDPs, were multisectoral, providing services largely through heavy reliance on foreign technical support in agriculture, water supply, health, rural infrastructure, and small-scale, off-farm enterprises.

**Weaknesses of the IRDPs**

The weaknesses of the IRDPs have been noted by many authors (Lele 1975; World Bank 1988). The main weaknesses relevant to the arguments of this paper are:

- Weak intersectoral coordination in the IRDPs;
- Lack of integration in IRDPs;
• Closed universe syndrome - weak linkages with other institutions;
• Weak management systems;
• Lack of beneficiary involvement;
• Failure to build institutional and financial sustainability;
• Heavy reliance on foreign technical assistance; and
• Failure to build local capacity.
These are discussed in the following sections.

Policy and field coordination

The participating public sector agencies can be coordinated at two levels: at the national or state level, and at the field level. The former focuses on coordinating policies, the latter on coordinating project operations. The difference between policy coordination and field coordination is illustrated in an example from the seeds sub-sector. Policy coordination exists when import taxes on seeds are removed, and national research centers perform research on seed varieties which are in high demand and which can be made readily available. Effective field coordination involves:

- Delivery of relevant messages (e.g., planting times, chemical fertilizer application) by the local staff of the extension service on available seed varieties;
- Stocking of these seed varieties in local markets before the planting season; and
- Functional rural roads and transportation which can help farmers purchase inputs and market surplus harvest.

Although field coordination is extremely difficult without effective policy coordination, policy coordination at the national level does not automatically guarantee field coordination. For example, a national policy states that farmers whose credit applications have been approved should get inputs before others whose credit applications have not been approved. However, since there is often little field coordination between the credit agency and the input supply agency, this policy is seldom implemented.

Other problems emerged as the implementation of the IRDPs progressed. Absorbed by the need to reorganize ministries and departments and to construct umbrella agencies, the Bank and other donors did not pay sufficient attention to the basic prerequisite for field coordination: beneficiary involvement. Policy coordination arrangements in IRDPs could not substitute for operational field coordination which involves the active participation of the beneficiaries in project implementation. The Bank’s Operations Evaluation Department noted this deficiency, but only after several years had elapsed: “Formal coordination arrangements between what amount to competing or at best indifferent government agencies almost never worked as planned.” (World Bank 1988:xvii).

To achieve field coordination one needs to devise a suitable management system within each of the services involved and allow the end-users to bring about coordination between the institutions concerned. Establishing a project management unit (PMU) close to the beneficiaries might facilitate coordination but is insufficient without actively
involving beneficiaries in project implementation. Many of the government bureaucracies "were out of touch with beneficiaries, who could much more easily have coordinated the relatively simple task at the local level" (Binswanger 1994:15).

**Issues regarding coordination and integration in IRDPs**

In the 1970s, coordination and integration, essential to effective, rural services were frequently discussed among development practitioners. Many argued, as noted above, that placing the field staff of the agencies providing rural services under the IRDP manager would secure integration of these services and would facilitate coordination among the participating agencies and departments. It was also argued that the solution to the problem of achieving better field coordination would be to reorganize the government bureaucracies providing agricultural services - in SSA almost all agricultural services were (and still are) in the public sector.

**Lack of integration in IRDPs**

The term 'integration' suggests something much stronger than "coordination" - it promised something which did not exist in the IRDPs. A dictionary definition of ('Integrate') is "to form or blend into a whole; to unite with something else; to incorporate into a larger unit." Quite obviously, the individual components of the IRDP did not blend into a larger whole, but retained their individuality.

The pressure to spend project funds on schedule often diverted management's attention away from the key element of an IRDP's success: closely coordinating rural development components. Project savings from "slow-spending" components such as extension or on-farm research were often diverted to "quick-spending" components such as credit programs, cooperatives, road construction or the purchase of machinery. For example, in the Bank-supported Integrated Agricultural Development Project-I in Kenya, expenditures on extension, project management, and monitoring and evaluation were 83 percent of what was envisaged at appraisal, whereas credit to cooperative unions was 192 percent and support to cooperatives was 1766 percent of the appraisal estimates. Without both effective coordination and integration, the most important *raison d'être* for the IRDPs ceased to exist.

**Closed universe syndrome**

The IRDPs operated as a closed universe or enclave, which did not interact with national or international institutions, nor did it draw upon or make a strong effort to improve the human resources available in the country. They did not have the necessary management system to establish linkages with the relevant institutions (see Box 1). "Unless there is far-reaching reform of the indigenous rural administration, it seems unlikely that in the long run the objectives of rural development can continue to be realized simply through the establishment of autonomous project authorities" (Lele 1975).

Nor did the management of the IRDPs bring about the vertical linkages between different levels within institutions so that local programs were supported by the necessary
technical skills and resources within the country (Leonard and Marshall 1982). The extension components of IRDPs had insufficient access to, and training by, national research expertise. Similarly, IRDP research components had insufficient access to the national extension system's understanding of farmers' technology and information needs. In fact, rather than develop links with research and encourage research on farmers' priority problems, the IRDPs often poached the best researchers from the national agricultural research systems to begin research sub-projects within the IRDP. Many of these research sub-projects of IRDPs could not be completed before the project ended.

Box 1. Linkages in development administration

The term 'linkages' occurs often in development literature. According to Leonard and others (1981) vertical linkages are possible between different levels of the same institution, such as the federal and the state agriculture departments. Horizontal linkages are possible between agencies performing different but mutually reinforcing tasks, such as the linkage between research and extension. The term 'linkages' is used often to denote both, namely the relationships and patterns of communication at various levels or even at the same level, between institutions implementing a program.

Vertical linkages between different levels of the same institution are useful as different kinds of skills are required at different levels. For example, in agricultural extension, the kinds of skills needed at the village level are different from those required at the administrative level.

'Linkages with beneficiaries' connotes some degree of farmer participation in the programs. The beneficiaries are not passive recipients of the services, but are actively associated in planning and implementing them.

Decentralization promotes linkages of the agency delivering services with beneficiaries and would eventually make these services accountable to the beneficiaries lead to their control of the services and thus enhance their sustainability. Decentralization implies strong vertical linkages between the federal or central government and the local governments. The stronger the federal or the central government, the more effective is decentralization. Delivery of national programs at the local level exists in many countries; there are many examples in the U.S. of federal programs delivered by the states.

The technological content of the IRDPs was not strong. "A cornerstone of the Bank’s rural development strategy was the belief that technology was available or could be developed" (World Bank 1988:29). Particularly in SSA, this belief was not based on facts. "Off-the-shelf" technology relevant to farmers was not available; it had to be developed within the projects. But, as noted above, IRDPs did not have the necessary management system to ensure periodic interaction between extension and research. In the absence of such interaction, farmer participation in research and in adapting new technologies was minimal (Binswanger 1994). Without their participation, researchers are unlikely to generate technology which farmers would find relevant and useful.

Weak management systems

An essential precondition for any bureaucracy to be effectively involved in small farmer development is the establishment of an appropriate management system. However, the IRDP management did not communicate project objectives to the project
staff in operational terms. For instance, if the objective of the IRDP is to increase agricultural production in the project area by a certain percentage, what does this mean, in operational terms, to the project staff responsible for research, extension and infrastructure development? Further, the project staff for the IRDPs were drawn from each of the government ministries concerned and often did not have relevant managerial experience in rural development. For example, if the project’s main objective is to bring about coordinated rural development, how should the extension and research staff of the IRDPs function so that this project objective is achieved? The management system for agricultural extension, for example, should specify whether services are to be delivered on farmers’ fields using face-to-face contact or through mass media or through other means. In the case of face-to-face contact, the management system should specify the frequency of interaction between the extension service and farmers. It should also detail its linkages with other services, especially research.

The effectiveness of government services can be enhanced if following features are built into the institution’s system.

- A management system involving frequent and regular contact with the beneficiaries, resulting in effective participation of the latter with the planning and implementation of programs.
- Regular training programs and regular contact with technology-generating institutions to enhance the professionalism of the service provider.
- Decentralization of bureaucracy and making it accountable to the beneficiaries.

These features were lacking in the design of the IRDPs.

Lack of beneficiary empowerment through economic improvements

There are two well-established sources of power in a country: economic and political. In the context of the realities existing in most SSA countries, the former is essential to any program which seeks to empower rural population. The yardstick to measure the success of any rural development program is whether it has resulted in an increase in the incomes of the beneficiaries. The IF'DP did not bring about the expected change in the economic condition of the rural population, even though the main objective of the program was poverty alleviation through increasing the incomes of the beneficiaries (World Bank 1988: 18).

Raising income levels of the rural population through increased agricultural production and marketing of surplus produce is only the first, albeit crucial, step in the process of rural development. Once a majority of the rural population has achieved food security, they can begin to play a more active role in the planning and implementation of rural development programs. The demand for efficient services generated by a more prosperous and secure rural population will require agencies delivering rural services to coordinate with each other in the field. In turn, these agencies would exert pressure on the ministries or departments concerned to coordinate national policies which would further facilitate the coordinated delivery of rural services.
Results of the IRDPs and the ADPs

The results of the IRDPs and the ADPs were disappointing. ADPs were "the most conspicuous project failures" (World Bank 1988: xvi). They "performed somewhat worse than RD projects as a whole, the latter having reached a re-estimated rate of return of 16.7% with a 37% failure rate" (World Bank 1988:25) 9. The report further notes that failures of ADPs were most frequent in Eastern and Southern Africa. "Twelve out of 15 area development projects in that region failed, the only exceptions being one in Mauritius and two in Malawi. The rate of failure (80%) is rather higher than the failure rate for other audited RD projects in Eastern and Southern Africa (three out of five projects). In Western Africa, the record is less dismal, although still unsatisfactory, with 43% of area development projects (9 out of 21) classified as having failed, compared with 33% of other RD projects (3 out of 9)." (World Bank 1988:25). But as the above report notes, the failure of these projects to meet the economic rate of return (ERR) criteria would be understandable if they had resulted in the development of sustainable institutions. But they did not. With few significant achievements in most IRDPs, disenchantment with the IRDP approach grew and more effective organizational frameworks were pursued.

WORLD BANK SUPPORT FOR NATIONAL PROGRAMS

National Programs

The weaknesses inherent in the IRDP approach led to the Bank support to national programs in research and extension. This approach addressed the main weaknesses of the IRDP as it focused upon:

- Delivery of only one service (e.g. extension, research);
- Linkage of the end-user with the institutions engaged in the generation of technology; and
- A strong management system with accountability of the staff to the program management.

National programs did not rely on foreign TA and by working through existing institutions in the countries they enhanced the institutional sustainability of the programs. The strengths and weaknesses of this approach are discussed in this and the following sections.

Characteristics of a national program

A program is national if it is formulated by the department or the ministry in the country concerned and outlines the basic objectives and strategy for the sub-sector. Examples are national programs in extension, research, credit, roads, and health. The major difference between the national program and the IRDP approach lies in the distinction between a program and a project. A program denotes a set of activities with common objectives and strategies, and a long-term (ten to fifteen years) time horizon for implementation. The program need not be confined to any specific geographical area. Within the framework of a common objective and strategy, the details of the program can
vary from one country to another or even from one region to another within the same country. For example, in the case of agricultural extension, a country can define its objectives and strategy: it can, for instance, say that the objective of the extension system is to provide extension on all crops, livestock and fisheries. As regards strategy, it can state that extension will be provided face-to-face and will have regularly interact with research. Other operational details, such as the frequency of farm visits, periodicity of training of frontline extension staff and the frequency of their interaction with research are left for local adaptation.

Programs and projects

A project, therefore, is the vehicle through which the program is implemented and defines the area where it operates and the time-period when it is operational, which, for Bank-funded projects, is generally four to seven years. There can be several projects within the framework of a national program, with all projects sharing the common objective and strategy outlined by the program. For example, while a national irrigation program could spell out the broad policies and strategies, there could be many individual irrigation projects as parts of this program. National programs in SSA have projects supported by different donors.

- In Zambia, there are many donor-assisted projects in the national small farmer seed program.
- In Kenya, the national extension program has projects assisted by the World Bank and the International Fund for Agricultural Development (IFAD) in different districts; the NARS is supported by many donors.
- In Tanzania, in addition to the World Bank, national extension system works with IFAD and other donors including German Technical Cooperation (GTZ), the African Development Bank (AfDB), and the French government.
- In Burkina Faso, Côte d’Ivoire, Mozambique, Niger, Cameroon, Uganda, and Democratic Republic of Congo (formerly Zaire), donors and NGOs are working closely with the Bank-supported national extension program.
- In Ghana, the support of Sasakawa Global 2000 to the national extension program is through its support to developing a mid-career B.Sc. degree program in agricultural extension education at the University of Cape Coast.

Institutional and organizational variations under a national program

Within the objectives and strategies of the national program framework, the institutional and organizational arrangements for the program could differ from one part of the country to another. For example, extension can be provided by the government in one part of the country and it can be provided by the private sector or by a municipality in another particular (see Box 2). The organizational arrangements can also vary. One part of the country could have a centralized organizational structure while another part of the country has a decentralized one.
The responsibility for program implementation at the national level rests with the ministry or the department responsible for the sector or sub-sector. In some countries, only the policies relating to the various characteristics of an extension system are decided at the national level, and implementation is left to the states, regions or districts, as the case may be. The division of responsibilities between these various levels of administration, that is, the national, regional and district levels may vary from one country to another depending upon the structure of the government. It is not always necessary for a national program to cover the entire country from the start. For example, the national extension program in Kenya covers at present only part of the country.

Program objectives

Program objectives must be specifically tailored to the needs and capabilities of the country concerned. These objectives can be broad, such as the accelerated agricultural development of a country, or they can be more specific, such as improving the quality and effectiveness of an agricultural service. A program whose objectives are considered too broad or narrow for one country may not be considered so for another country. For example, a program with the objective of accelerating agricultural development may be considered too broad for an industrial country, with many specialized agri-businesses, but may not be regarded as too broad an objective for some countries in SSA. In addition, a program may be too broad or narrow at one point of time and may not be so at another point as the capacity and needs of a country change. For example, a program to increase the production of export crops in Guinea may have been considered too narrow an objective for the agricultural sector fifteen years ago when food security was an issue, but is not considered so at the present time. While defining the objectives of a national program in the agricultural sector, it is necessary to take into account several factors, importantly:

- The state of the agricultural sector;
- The level of maturity of the sector;
- The prevailing policy environment;
- The level of agricultural services, particularly extension and research; and
- The status of the seed system and the associated regulatory framework.
The strengths and weaknesses of national programs

National programs have certain strengths and weaknesses, which are outlined here.

Strong vertical linkages

In most national extension programs, strong linkages connect the frontline staff to the head of the extension system. Depending upon the organizational characteristics of the extension system, the frontline staff are under a local government (e.g. in a federal set-up like Nigeria) or a local administrative set-up (e.g. Uganda, Ghana) and these entities have strong linkages to the regional or state level administration. These vertical linkages ensure greater accountability of the program administration to the institution providing extension services and its representative at the national level.

Linkages to technology

National programs have linkages at various levels to institutions providing technology. For example, national extension programs have linkages to NARS at various levels. They also have linkages to international institutions in research and extension. Many International Agricultural Research Centers (IARC) train national extension staff in areas such as technology transfer.

Weaknesses

The weaknesses of the national programs have been commented upon by a number of persons. The weakness most often commented upon is the so-called ‘top-down’ approach of many such programs. This ‘top-down’ approach is present in government - provided services and in many countries, governments are the dominant providers of extension services. This perceived weakness, and the measures built into the extension systems supported by the Bank, are discussed later in this paper.

Extension in SSA before the National Programs

When the World Bank decided to support national programs in SSA, there were two main types of extension initiatives in SSA:

- Extension components of the IRDPs; and
- Crop-specific projects, whose objective was to increase the production of specific crops, such as cotton (e.g. Gezira in Sudan), tea, coffee or cocoa.

Extension components of the IRDPs were merged with the national extension programs when the IRDPs closed. Crop-specific projects were more common in Francophone West Africa, where they were often implemented by parastatals who provided farmers with a variety of services extension, inputs, plant protection, post harvest and marketing (Moris 1991: 65-71). This was known as the filière approach. In many crop-specific projects, extension was combined with other non-extension duties and responsibilities, such as, inputs, credit, collecting statistical information and monitoring crop development. Partly, this was because of the way in which these projects were designed by the donors and the countries, and partly because extension field staff were...
not adequately trained to meet the information needs of farmers and therefore often carried out non-extension functions. Due to lack of operational funding, extension field activity was severely limited except in externally financed development projects. As a result, extension messages delivered to farmers were not always relevant to their farming activities, and often strained their available resources.

Senegal and Niger are typical of the status of agricultural extension before extension reforms were introduced under Bank-assisted extension projects. A description of this status is given in Annex 1.

Agricultural Sector Investment Programs

Increasingly in SSA, support to the agricultural sector by the World Bank and other donors is being provided through Agricultural Sector Investment Programs (ASIP). An ASIP is a long-term program covering public expenditures in the entire agricultural sector. It provides a forum for interaction of the donors with each other and with the country concerned on the underlying objectives and strategy for the agriculture sector and also for each sub-sector. It also provides common platform to the donors concerned from where they can address issues which might not be addressed through individual sub-sector programs. For example, a donor wishing to address issues concerning the seed system, which spans several sub-sectors, finds it difficult to do so in a situation where there are projects only in individual sub-sectors, such as extension or research. An ASIP naturally has a broad objective, but a typical ASIP would contain many sub-programs, each with a specific, much sharper objective. In all ASIPs, national agricultural extension and national agricultural research are important sub-programs.
2. ORGANIZATION OF AGRICULTURAL SERVICES IN SSA

AGRICULTURAL EXTENSION

When the national extension programs replaced the IRDPs and crop-specific programs in SSA, the extension components of the latter projects were merged with the new national programs in extension. A unified extension service means that the same extension service provides extension advice to farmers on all aspects of their farm enterprise. It does not mean unifying institutions delivering extension, as is sometimes believed, but rather unifying the agricultural subjects handled by extension. There are two underlying factors which enhance farmer acceptability of unified extension. One is that the extension service’s concerns should be congruent to farmers’ concerns. The second is that the extension service raises the professional standards and knowledge of its agents to enable them to respond to farmers’ needs. A typical national extension program in SSA now covers the entire farming system without parallel commodity-specific extension services.

Unified Extension

It is frequently debated whether one extension service should cover all crops and livestock or if separate services should cover different crop types and livestock. These debates need to consider several key factors:
- The source of funding;
- Cost-effectiveness; and
- The types of farming systems being served.

It is perfectly reasonable for farmer groups to organize and pay for their own extension service according to their interests. This would be a private extension service for that group. However, when a government agency is organizing and financing extension services with public funds, the government must seriously consider how to deliver services in the most cost-effective manner. In Africa, export crops, such as cocoa, coffee, cotton, and tea, are largely grown on small farms along with food crops. Many smallholder farmers also raise livestock or fisheries. Financing separate extension services for each crop-type or livestock or fisheries can be quite expensive. Many farmers have expressed their preference for one extension agent advising them on their entire farming enterprise rather than different individuals from separate services who would have a segmented view of their farming activities. For these reasons, a publicly-funded agricultural extension could more cost-effectively meet farmers’ needs through a comprehensive or unified extension service.

Combining separate extension services into a unified extension service is a difficult process, as it involves restructuring many government bureaucracies. The experience in SSA varies from one country to another. Some countries have not done the restructuring as needed while others have. In countries that have, the organizational structures and the
subject-matter areas covered by unified extension vary. Ghana is an example of a country that has not done the restructuring, and extension for cocoa is still provided by the Cocoa Board. Uganda and Côte d'Ivoire are examples of countries that have, and the unified extension service now covers crops, livestock and on-farm fisheries. In some countries, the earlier, separate extension services have been merged at all levels (i.e. field and headquarters). In some others, extension staff of the different departments which were providing extension on specific crops or livestock have been merged only at the field level and separate departments for certain crops, livestock and fisheries continue as before. These separate departments provide technical advice to the unified frontline extension workers (FEW). This is the situation in Ghana, where the subject matter specialists are located in their parent departments and provide technical advice to the FEW who are with the extension department.

**Location of subject matter specialists**

Subject matter specialists (SMSs) can be located administratively in two ways, each with its attendant advantages and disadvantages. They can either be within the extension department or in the departments of their expertise (for example, livestock, fisheries, horticulture). In the former, extension staff are more assured of the availability of the SMSs as needs arise, since the extension service controls their schedule. But the SMSs have less opportunity to interact with colleagues in their respective areas of specialization. Further, their colleagues miss the opportunity to learn more about farmers’ needs from the SMSs. In the second scenario, that is, when SMSs are housed within their respective technical departments, they are not necessarily available to meet extension’s needs as they arise. They have less opportunity to become as familiar with farmers’ needs as they would have in the first scenario, and will be less able to help extension serve farmers. Where the SMSs are located administratively is not as important as is a management system which ensures that they regularly meet with farmers and with extension agents.17

**Characteristics of an Extension System**

An extension system has four main characteristics: institutional, organizational, managerial and methodological.18 Each characteristic has many options, and those given below are not exhaustive. Some of them are mutually exclusive and some are consistent with and complementary to each other. The characteristics and the options under each of them are discussed in the following text, followed by a discussion of the inter-relationships among them. This discussion will help view the Training and Visit (T&V) System of Extension and other extension systems and related issues in a broader context19.

**Institutional**

In much of SSA, governments and parastatals are the dominant institutions in extension delivery. In the industrial world and in much of SSA, other institutions are also involved in delivering extension services, such as private companies, input suppliers, farmers’ organizations and cooperatives, and NGOs. When more than one institution is engaged in extension delivery, the system is said to be “pluralistic.” Many countries in
SSA have pluralistic extension systems in which the private sector and NGOs are engaged in extension delivery alongside government. For example, Lonrho, a private sector company provides extension service for cotton in Zambia using T&V management principles which are described later in this section. In Kenya, exporters of horticultural crops and flowers provide their contract farmers with extension service for these crops outside of government extension services, which mainly focus on foodcrops and livestock. The Cameroon Projet National de vulgarisation Agricole (National Agricultural Extension Project) is a good practice example of a partnership between the government extension service and private agro-input supply companies. The key to success in Cameroon is the demonstrated ability to leverage the comparative advantage of each party without compromising the efficiency, objectivity or the principles of the extension services. The private suppliers provide new technology while the national extension service shares its experience in testing new technologies with farmers through small-scale demonstration plots. Box 3 gives an example from Tanzania of a private sector extension service which works alongside government extension service as particular of the national extension system.

<table>
<thead>
<tr>
<th>Box 3. Private extension in Tanzania - TOPSERVE</th>
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<tr>
<td>TOPSERVE is a private company owned by the parastatal Tanzania Cigarette Company, and the international finance company INCONTRA, and is involved in purchasing tobacco. It started operations in 1994. It is involved in extension and input delivery to farmers who are members of cooperative societies that have signed tobacco purchasing agreements with the company. At present, it has signed contracts with ten primary cooperative societies, each of which is expected to supply 200,000 kg of flue-cured tobacco to the company. It employs twenty extension workers each with a diploma in agriculture, which makes them much better qualified than the FEWs of the Ministry of Agriculture (MOA), who have at most a certificate in agriculture. Each extension agent of TOPSERVE services about 100 farmers. TOPSERVE plans to greatly increase its extension service over the next five years, employing about 800 certificate and diploma holders. This would allow the company to service about 400 villages/cooperative societies if the present ratio is maintained.</td>
</tr>
<tr>
<td>TOPSERVE uses a system of direct face-to-face contact with individual farmers in its extension program. After a meeting with all prospective farmers at the start of the crop season at which all extension themes are briefly introduced, farmers who sign-up are visited by extension agents who give advice on different crop activities. The extension agents do not follow a fixed schedule. Presently, farmers receive advice on tobacco, maize and cassava, although, as expected, the emphasis is on tobacco. No advice is given on livestock activities, nor to farmers who do not grow tobacco. Field staff have indicated an interest in trying the group approach in extension delivery in the future.</td>
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**Source:** Spencer, D. and Butare, I. (1996).

**Organizational**

The organizational characteristics of extension relate to the extension institution's structure, internal patterns of communication, and its relationships with research and education, other agricultural services such as inputs and credit, and, importantly, its beneficiaries. The most common organizational variations are given below.
Hierarchically organized

Most extension services are organized hierarchically with a vertical chain of command. The organogram is pyramid shaped. The chain of command starts with the head of the national extension service, moves to his or her deputys, provincial or regional heads, district and then other sub-levels to the FEW. This type of organization is often called the “straight line organization with a vertical chain of command.”

Administratively decentralized

In this set-up there is greater horizontal communication than vertical, and the regional or district level heads of extension interact more with the research and other institutions in the region or district, than with the national head of extension. Examples of administratively decentralized extension systems are found in Malawi, Ghana, and Tanzania.

Politically decentralized

In this set-up there is a democratic body at the regional or district level, called the ‘regional or district council’ that assumes responsibility for extension. An example of such a body is found in Uganda. (See Box 4). In decentralized extension services, farmer representatives to local institutions (formal or informal) interact with FEWs. An example is the commtées de gestion des terroirs in Francophone West Africa. These are informal farmers’ associations started for land management purposes whose roles have expanded to include natural resource management and village-level planning. There are examples of political decentralization from Chile, Venezuela, and Columbia in Latin America - in these countries, national extension programs are delivered by local democratic institutions, many of them in the public sector.

Organizational issues also relate to characteristics other than the structure of extension services, such as the location of the SMS.20

Managerial

This aspect covers the kind of management system followed. Important issues here include:

- The ‘frequency and regularity’ of training and visits to farmers; 21
- Supervision of field extension staff;
- Linkages between extension and agricultural research and education, which includes feedback from farmers’ fields and on-farm trials;
- Monitoring and evaluation (M&E) system; 22
- Whether extension should provide non-extension services such as provision of inputs and credit or confine itself to its professional field; and
- Cost recovery of extension.

The managerial aspects of T&V system of extension has been described in Benor, Harrison and Baxter (1984).
Uganda's efforts to decentralize its development administration provide an excellent opportunity to allocate responsibility, ownership and eventually part of the cost of extension to farmers. Districts decide their budgets according to their priorities, and how much money they allocate as counterpart funds for extension, they become the supervisors and evaluators of the extension service, which is accountable to the elected people at the district level. This new approach also enables farmers and their organizations to better specify their priorities and concentrate their efforts in achieving results in their priority areas.

The donors should be in a position to deal directly with and disburse funds directly to the districts instead of to the national administration. The districts will provide the needed counterpart funds. This will require an attitudinal change on the part of donors who will need to adjust to a new way of doing business. They will have to devise simple and effective mechanisms to work with the individual districts. While the districts have many persons who are good at field-work, many of them may lack the financial capacity to manage funds. This capacity needs to be built patiently without relying on external technical assistance.

The World Bank supports the process of decentralization. It expects that decentralization will demonstrate that involving beneficiaries, local governments and the national ministry is a viable and sustainable manner of organizing rural development programs.

**Methodological**

This characteristic covers the manner in which the extension system interacts with the beneficiaries. Examples of extension-farmer interaction are:

- Face-to-face extension;
- Farmer participation in technology development and dissemination; and
- Reaching farmers through media (radio and television).

When writers on extension refer to the approach of an extension system they generally refer to the methodological aspect. There is extensive literature analyzing extension-farmer interaction, farmers' constraints and obtaining farmers' participation in technology generation.

It is possible for two providers of extension to have a common extension methodology even though they may differ in other characteristics. For example, the extension system in Ghana which is administratively decentralized has the same extension methodology as the one in Kenya which is centralized. Other characteristics of an extension system, namely, the institutional, organizational and managerial characteristics, should be consistent with the chosen extension methodology. For example, it is not possible to obtain feedback from farmers' fields if the extension methodology does not include face-to-face extension.

Some methodologies are mutually exclusive while some are consistent with and complementary to each other. Examples of mutually consistent and complementary methodological options are:

- Face-to-face extension in which extension workers meet farmers on their fields;
- The use of mass media, such as radio and television to diffuse extension recommendations, to complement face-to-face extension;
- Involvement of farmers in the process of technology generation (see Box 5); and
• Using farmers as trainers in monthly workshops (see Box 6).

Some of the above methodologies are described in the following paras.

**Face-to-face extension methodology**

The extension methodology in practice in SSA relies on face-to-face extension. This implies that the extension agent visits farmers in their fields according to a fixed schedule, and SMSs regularly interact with researchers. On-farm rapid diagnostics and informal seed initiatives in Guinea, described in Annex 3, illustrate the beneficial effects of face-to-face extension. Historically, face-to-face extension has played a crucial role in developing the extension service in many industrial countries. Even today, extension agents in many industrial countries visit farmers to disseminate new technologies and to respond to farmers’ concerns. Face-to-face extension is also implicit when farmers participate in generating technologies.

**Farmer involvement in technology generation**

Many extension programs in SSA involve farmers in the process of technology generation and transfer. The steps in this process are:

- Identification of problems by research and extension in the light of their contact with farmers;
- On-station research on the identified problems; and
- On-farm trials, the various steps in this process being:
  - testing the preliminary research results on farmers’ fields under their own management; extension, that is, FEWs and SMSs, and research, jointly visit farmers during this phase;
  - the experiences of farmers are ascertained and discussed in the monthly research-extension workshops where researchers and extension staff are present; and
  - in the light of the results of the trials on farmers’ fields, recommendations to farmers are changed and refined.

It is obviously not possible for the above process to work if extension management does not allow for face-to-face extension. Box 5 gives an example from Uganda of how research recommendations were modified based on farmer feedback. Annex 4 contains more examples of farmer participation in technology generation in national extension and research programs.
Box 5. Example of farmer participation in designing post-harvest technology in Uganda

The Kawanda Agricultural Research Institute (KARI) is responsible for developing grain storage technology. KARI scientists started by working with farmers and extension staff to define key problems and to identify potential technological solutions. Farmers and extension staff were brought in early on in this process, and participated actively in testing and evaluating technology developed by KARI. KARI researchers collaborate with extension agents, rural artisans, local leaders, and farmers in the implementation of the technology suggested.

During the stage of on-station research, emphasis was on the use of locally available materials, so that the cash outlay by farmers would be kept to a minimum. The only cash components were rat guards, wires and nails. Problem definition took into account the requirements of farmers: crops should be kept dry in the storage; storage should guard against losses due to rodents and birds, and thefts. Research started with the testing of some model storage units from Zimbabwe. These units had concrete bottoms with a spout for taking out the grain. It was found that this design would not work in Uganda where the moisture level was too high (hence the storage area has to be raised from the ground level), and farmers generally store unthreshed maize (hence the spout would not work). Further, for the drying of maize cobs, aeration was necessary. The design was therefore modified to take care of these requirements. Essentially two kinds of storage evolved: for unthreshed maize where aeration was important, and for threshed maize, and other small grain such as beans. The second category consisted of a crib with a cement binder with a bed and roof. Both were elevated and were provided with rat guards and locking arrangements.

When the designed storage units were tested at farm level, many innovations were made by farmers: termite-resistant materials which were available on-farm were used (e.g. palm stems); the existing materials were made termite resistant by burning the exteriors of the supporting poles; a mixture of mud and the local brew residue was used as binders to make local cement; neem leaves were used to keep insects out.

Extension tools

An extension tool is a means of motivating farmers to adopt a recommended technology and is generally neutral to the chosen methodological option. The common extension tool under T&V is the “mini-plot” technique. Farmers are invited to adopt the recommended technology with their own resources on small parts (about 10mx10m) of their fields; there is no subsidy on inputs. If they are convinced that the technology is appropriate to them, they can increase the area of “mini-plots” on which they are adopted.

Demonstrations of recommended technologies where inputs are subsidized and mini-plots described above are examples of mutually exclusive extension tools. Subsidized demonstration as a tool for disseminating technologies is practiced widely by governments both in Asia and Africa. A few farmers selected jointly by research and extension are given a package of inputs at little, if any, cost, and technological recommendation, which they then try on their farms. Neighboring farmers are invited by extension to examine how the technology performs. The efficacy of such demonstration is doubtful as:

- Often, farmers know that the farmers selected for such demonstrations are generally the better-off farmers and are not therefore convinced that the recommendations are appropriate for them.
Even if the demonstrations held on the farms of resource-poor farmers, those factors which are the primary causes of their not adopting the recommended technology namely, the cost of inputs and their accessibility, are neutralized by the free or subsidized provision of inputs. Without the subsidy on inputs, the resource poor farmers are not likely to adopt the demonstrated technologies and practices.

On the contrary, SG2000 feels that the size of mini-plots is too small to have a demonstrative effect on farmers. They would rather prefer a much larger plot (usually one hectare) and would neutralize the risk which farmers take in trying out a new technology by subsidizing the cost of inputs.

Another extension tool used in SSA relates to training. Realizing that farmers can be effective trainers in certain subject matter areas, Guinea has a program for using farmers as trainers (see Box 6).

**Inter-relationships between the various characteristics of extension**

The inter-relationships between the various characteristics of extension, particularly between managerial and methodological ones, is seldom addressed. The options available under each of the extension characteristics are inter-related. Some of the options in the institutional and organizational characteristics are consistent with some of the managerial and methodological ones, while others are not. For example, the managerial option chosen influences the extension methodology. If the managerial option chosen does not involve regular visits by extension to farmers’ fields and close interaction with research, it is difficult to get farmers to try a technological recommendation on their farms, and to get research to focus on farmers’ problems. The T&V system of extension emphasizes the close connection between the managerial and the methodological issues. Much of the effort in the SSA countries which have undertaken extension reforms has been in the introduction of management reforms - such as periodic training, interaction with research, and greater mobility to extension staff by providing them with vehicles - so that the methodological issues are adequately addressed.

The following issues relating to the inter-relationships between the various characteristics of extension need closer attention.

- What type of organization would facilitate the kind of interaction between the farmer and the extension system that farmers want?
- How often should frontline extension agents be trained and who should train them?
- What should be the operational links between extension, education and research?
- How should the work program of a large number of frontline extension staff be managed so that service to farmers is rendered in the most cost-effective fashion?
Box 6. Farmers as trainers in the National Extension Service in Guinea

Using farmers as peer trainers in monthly workshops has proved to be an effective means of convincing other farmers of the efficacy of extension messages. In lower Guinea, the extension service has used farmer-trainers to demonstrate a new rice sowing technique which doubles the yield of rice compared to the traditional broadcasting method. Skilled farmers who use the technique are selected by the extension service to demonstrate the technique and to train farmers in other regions of lower Guinea. Farmer-trainers approach the training session from the perspective of farmers.

Another means of encouraging farmers to train other farmers is by using the regional rural radio stations. Although radio is traditionally seen as a one-way transfer of information, using farmer interviews as material for the broadcasts has greatly increased farmers' interest in extension radio broadcasts. At present, four rural radio stations in Guinea broadcast news in the local languages used in the four main agro-ecological regions. But often, radio programs on agricultural techniques are found by farmers to be too technical. The lack of visual aids in describing new techniques and the lack of interaction possible in face-to-face extension hamper radio's effectiveness leading to low farmer adoption rates. To address these problems, the SNPRV26 developed a new format for its technical messages: farmer interviews. A crew of journalists, researchers and extensionists select a farmer with good cultivation practices and ask precise questions regarding the new techniques which he or she uses. The interview is recorded and carefully edited to reflect mainly the farmer's answers to questions posed by the interviewer. The resulting program is an effective and accessible dialogue with farmers on new agricultural techniques.

Post-broadcast surveys indicate that many farmers were impressed by the broadcasts and followed the recommendations. Some farmers were motivated to excel in farming to be selected as an interviewee for future broadcasts. Such motivational factors cannot be underestimated in spurring agricultural growth. They generate enthusiasm and self-reliance by engaging farmer expertise.

Extension Typologies

An extension typology is comprised of options from each of the characteristics mentioned above. The details of the possible extension typologies relevant for SSA are given in Annex 2.

While much is known about the views of donors and extension providers on types of extension systems, little is known from the beneficiaries’ point of view. To elicit views of the beneficiaries of the kind of extension system they would prefer, beneficiary evaluations of extension were undertaken by the World Bank in Senegal, Mali and Guinea. These evaluations offer insights into some of the features which beneficiaries of the ongoing extension services in SSA would need.

- Predictability of service (when and where it is available);
- Clarity on what is provided;
- Precise indication on how farmers are involved in its development;
- Addressing all the advisory needs of farmers;
- The service providers to be well-qualified, confident and knowledgeable; and
- Efficient feedback mechanism from the farmers’ fields to research centers.

In the absence of these features, it is unlikely that an extension system meets the expectations of the beneficiaries.
Key Issues of the T&V System of Extension

The T&V system of extension is built upon the following assumptions which have been borne out by experience:

- When extension reforms are introduced it is best to gradually work towards what is desirable by improving on the available resources. What was available generally in SSA when the Bank-supported extension reforms were introduced were public extension systems characterized by: low staff morale; little mobility to meet farmers; lack of professionalism; lack of a management system emphasizing periodic contact with the beneficiaries and linkages with technology institutions. Therefore, the immediate necessity was to encourage the countries to build on what the countries had.

- It is essential to increase the professionalism of the extension workers through better training, and limit their work to the provision of technology and information.

- Introduction of managerial and methodological reforms will eventually lead to other desirable reforms in extension, such as financial, administrative and political decentralization, accountability to beneficiaries and increased delivery of extension by the private sector.

The T&V system of extension has gradually evolved from a situation where there was a single provider, with a single mode of organization, to a pluralistic system with organizational innovations which vary among countries. Some countries that are reforming their extension services are also modifying their T&V type of extension, adjusting it to the changes in their administrative and political context while retaining its essential features (described in Annex 2). These features allow a national extension program to use the extension typologies flexibly. “It is currently difficult to say what T&V is, as much of these principles are broad common sense suggestions found even in projects run by NGOs, which would be aghast at the suggestion that they are using T&V.” (Christoplos and Nitsch 1996:14).

Development programs follow an evolutionary path and the T&V system of extension is no exception. Those programs that are agile, flexible and consistent with evolutionary trends survive. It is the responsibility of the Bank and donors to help the countries put in place programs that are consistent with these trends and nudge the programs along the evolutionary path. The T&V system of extension as described in 1977 (Benor and Harrison) rarely exists today in SSA, even though many continue to discuss T&V as described in 1977 (for example, Hulme 1992). In fact the main strength of the T&V system of extension is its responsiveness to farmers’ needs and more flexibility to adjust to different countries’ circumstances than its critics believe. But despite this, many writers of extension seem to take a static view of T&V, a trap which, in the past, many observers of the extension scene have succumbed to. Picciotto and Anderson (1997:250) take a static view of extension and describe it “as a transmission belt between agricultural research and millions of farmers.” This view is not different from the view expressed by Roling (1995), and is not borne out by the facts on the ground, as many examples in this paper indicate.
Issues generally raised about T&V or any extension system can be classified as systemic and implementational. The former is an integral part of the extension system itself. For instance, sustainability is a systemic issue. Implementation issues (Moris 1991) comprise problems encountered while implementing the system. For instance, it is a common complaint in SSA that the frontline extension staff do not visit farmers regularly as funds to meet the costs of travel are not available to them. Such implementation issues are generally neutral to the extension system, as lapses in implementation are common to many extension systems. The discussion below is confined to key systemic issues raised about T&V.

**Input and credit needs of farmers**

It is often argued that extension should provide inputs to farmers and that because T&V discourages extension agents from handling inputs or credit, farmers cannot adopt recommended practices which require these (Howell 1988:91). In many parts of Asia and Africa, prior to the reform of the extension systems along T&V lines, what passed for ‘extension’ was mostly an ineffective public sector input and credit delivery system. There are severe limitations to the extension agent handling inputs. The main ones are as follows:

- Even at a modest level of input usage by farmers, the handling of the required seed, fertilizer, pesticide, and herbicide by the extension agent becomes a physical impossibility.
- Inputs and credit are generally used by the relatively well-off farmers, and extension agents are prone to attend to their inputs needs to the detriment of the resource-poor ones.
- There is also a real danger of the extension agent being saddled with the paper-work which would further deflect from visits to farmers. “Unified extension will put more demands on the frontline extension staff who cannot obviously manage non-extension (e.g. credit, subsidy administration) functions in addition to extension (with its regular training and visit schedule)”. (Bagchee 1994:22).
- The failure of governments to adopt suitable policies and strategies for the growth of institutions (including private sector institutions and farmers’ organizations) for seeds, fertilizers and credit should not result in these functions being loaded on to the extension systems. “Extension staff should not undertake such duties, which in essence transfer the costs of bad policy-making from donors and banking system to the extension service itself” (ital. in original) (Moris 1991:151). Such a step would only postpone the growth of specialized institutions for specific purposes, such as seed multiplication and sale, supported by appropriate strategies and a legal framework (Venkatesan 1994; Tripp 1995). Yet some still argue that extension should not be divorced from inputs and credit delivery (Christoplos and Nitsch 1996:15).

Extension could certainly play a positive role in developing input and credit institutions. The role it can play in the development of institution for seed production is illustrated in Box 7 with an example from Guinea.
Box 7. The informal seed initiative in Guinea

The Informal Seed Initiative in Guinea is an example of the appropriate role of extension relating to seed production and reflects the dynamism which is generated when farmers and national extension staff cooperate in response to farmers' demands. Under the IDA-assisted National Seed Project (NSP) which ended in June 1995, three seed conditioning centers were established in Kindia, Koba and Kankan, which are approximately 500 km apart from each other. After the funding under the project ended, the informal seed initiative has continued the production of seed through the efforts of regional seed production SMSs and the numerous private seed producers and distributors throughout the country.

The demand and interest of farmers for this project is widespread. In one region, a farmer who was selected to receive the new seed is also a local religious leader. After his harvest, he not only returned ten kilograms of improved seed to the FEW, he also distributed packets of the new seed to some members of his religious constituency. Another farmer reported to his FEW that he was able to exchange a kilogram of his improved seed for two kilograms of the local variety at the village market.

One of the major factors which has enabled this informal seed project to endure is the presence of trained SMSs in each region who train FEWs and farmers in appropriate seed multiplication techniques. The SNPRV trained fourteen SMSs and the top seven performers were selected and transferred, one to each region, as regional rice seed SMSs. This training focused on all the techniques needed for the production of good seeds (i.e., plot isolation, sowing or transplanting, plant preparation, good maturity, post-harvest treatment, etc.). Regional SMSs are responsible for:

- Training FEWs as needed, changing the fortnightly training schedule if necessary to reflect increased training sessions;
- Assisting the FEWs in training the farmer and ensuring that established seed plots reflect correct cultivation practices; and
- Keeping contact with selected farmers during the vegetative and post-harvest periods.

The sustainability and widespread success of the informal seed project is already evident in the level of activity which has been reported from the field. After the first season, approximately 4,000 farmers have received the improved seed and, in 1996, it is estimated that 12,000 farmers will have access to the improved seed. Involving small farmers in seed production generates a knowledge base among a large number of farmers on seed production. In the following years, the seed program could be started for other crops such as cassava, corn, groundnuts, and banana.

Communication pattern among farmers, extensionists and researchers

When researchers meet with extension staff at infrequent intervals and hand down research recommendations, the communication between research and extension staff and farmers is said to be “top-down.” Many such instances are described by Moris (1991). The conceptual models of communication within extension systems are based on situations where the flow of communication between research, extension and farmers is linear: “first, research develops a technology, then it trains SMSs in this new technology, the SMSs train the FEWs and the FEWs train the contact farmers, who pass on chunks of information to follower farmers” (Roling 1995). The efforts of a good extension service will have to be towards avoiding this linear model and reversing the flow of communication.

Many services delivered by government bureaucracies do tend to have a proclivity toward being top-down. A number of African extensionists continue to disseminate poor,
standard advice received from research organizations. It is a formidable management challenge to make a government bureaucracy responsive to farmers’ needs (Albrecht and others 1990). The steps which have been initiated in many SSA countries to make the extension service more responsive to the needs of beneficiaries are as follows:

- Periodic training of extension staff to increase their knowledge and their confidence to meet with farmers.
- Periodic interaction of extension with research, which builds confidence in the frontline extension staff, and makes research staff more field-oriented.
- Professionalism in extension staff by eliminating non-extension functions, such as handling inputs and credit.
- Steps to improve the morale of extension staff, by providing them with a defined work program and the means with which to conduct their work.
- Increasing the element of accountability of extension to farmers.
- Decentralizing the organization and management of extension.
- Extension agents in SSA increasingly working with farmers’ groups as it has been found that diffusion of information is better and quicker when extension works with groups than when working with individual farmers.27
- Farmers are involved in various phases of technology generation and transfer, such as on-farm adaptive research.

**AGRICULTURAL EDUCATION AND TRAINING**

The World Bank considers agricultural education and training for institutional strengthening a priority. This is evident by:

- The type of extension approach the Bank supports in which extension staff at all levels are regularly trained;
- Bank financing of the full costs of additional project related training (PRT) which averages almost 12 percent of total project costs in extension projects; and
- The Bank providing staff to directly train and to assist human resource development activities of national extension staff.

The last two components of the Bank’s support to training in extension are discussed in this section. These two components strengthen the first component, that is, the training inherent within the extension service.

Before discussing these two components, the status of training prior to the Bank’s involvement is discussed followed by an overview of the Bank’s current support to training. This section then gets to its central purpose: the fundamental issues that must be addressed if the support of donors to training extension staff is to make long-term improvements in the human resources of extension services. Rather than list all the issues that the Bank has dealt with in training extension staff, three absolutely essential issues are dealt with.
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Total: 708.32 | 388.88 | 82.07 | 54.23 | 11.59 | 7.66

Note: Contingencies are included in project total costs and are included in figures for training and extension in most cases as available. Costs are those estimated in the project appraisal document. Often actual training expenditures exceed appraisal estimates.

1. Total training includes strengthening agric college
2. Total training includes support to six agricultural colleges.
4. The figures in the above table are extracted by the authors from World Bank documents.
Status of Extension Training Prior to World Bank Involvement in Extension

Before 1980, training provisions in the budgets of national extension services basically did not exist. Training was done largely through donor-supported projects and TA. The short-term objectives of those projects and the courses and consultants already in supply often dictated the kind of training done. Training was both defined and designed externally by donors and private consulting firms. Training plans were rarely based on in-depth training needs assessments that considered the long-term needs of the agricultural sector. Training was disconnected from the institutions providing pre-service education. Persons skilled in human resource development or in training were rare in extension services. Those in TA functions often did not invest their time and energy in the counterparts they would leave behind. Little was done to train in-country trainers and to establish human resource development units and training systems with policies, administrative structures, and financing. In essence, training was fragmented and fell short of building national capacity to effectively manage and develop extension’s human resources.

World Bank’s Current Support to Restructuring Agricultural Extension Services

The Bank provides financial support and expertise to at least twenty SSA countries to restructure their agricultural extension services (see Table 1). In addition the Bank has supported extension services in twelve other countries. Governments in SSA are establishing unified extension services covering all crops, livestock and fisheries. Field-level agents from formerly separate services covering particular crops, livestock, or fisheries, hired at different points in time, and under different educational requirements are now combined into one service. They work as multi-disciplinary field agents and are supported by disciplinary specialists. However, theoretically multi-disciplinary, many are wanting in capacity. Some field-level agents have only a primary level of education. Many have no formal agricultural education. Those with some agricultural education or training often studied one or a few agricultural specialties (for example, livestock) without first receiving a general education in agriculture. They are now required to advise farmers on all their farming activities rather than a single crop-type or livestock.

Governments are addressing the inadequate levels of education and experience needed for restructured extension services by:

- Removing selected staff with poor performance histories;
- Providing intensive training to those they retain and to new recruits hired with insufficient levels of education; and
- Raising the educational requirements of new recruits.

Governments are making politically difficult decisions regarding the quality of their staff. Staff with inadequate educational backgrounds are being redeployed, retired, retrained, or simply severed from the institution. For example, Benin’s Ministry of Rural Development Services reduced its staff by 45 percent to about 2,200. In Cameroon the Ministry of Agriculture envisages reducing their agricultural services staff by 50 percent to about 4,000. Expanding geographic coverage, adding new staff positions, and adding new
responsibilities for agricultural expertise to existing staff creates learning needs that can and are being addressed with education and training.

**World Bank's Support to Training**

This section looks at the two components of the Bank’s support to training that are in addition to and supportive of the regular in-service training of staff in T&V-based extension services.

- Additional project related training (PRT) which is fully financed by the Bank.
- The Bank's provision of staff to directly train extension staff or support human resource development processes.

**Project-Related Training**

The Bank includes PRT as part of investment costs in the Staff Appraisal Reports (SAR) of each project. This cost often appears in budgets of SARs as “training-international” or “training-domestic.” PRT budgets for extension projects active in the third quarter of 1997 totaled over $82 million (Table 1, Column C). These projects comprise stand-alone national extension projects, research and extension projects, and agricultural services projects. They do not include the newest breed of projects called ASIPs, or projects with a only a minor extension component. The total estimated PRT budgets include training support to institutions providing agricultural services, such as extension and research, and in a few countries, institutions of agricultural education.

PRT estimates when the projects were appraised averaged nearly 12 percent of total project costs (Column C/A). Actual expenditures often exceed these estimates. Training support budgeted specifically for extension services totals at least $61 million (Column D) representing almost 8 percent of total project costs (Column D/A). These figures compare quite favorably against lending for PRT for all sectors except education in Africa which declined from 3.4 percent of total lending in FY90 to 2.7 percent in FY92 (Berkman 1992).

PRT budgets are used for widely varying types of training—from on-the-job training to advanced degree studies in foreign universities. The major categories are: (a) short courses, (b) workshops, conferences, seminars; (c) diploma and degree studies; and (d) study tours. More recently, project managers are encouraging the use of in-country resources for education and training as they are far more cost-effective and relevant. Fewer extension staff are undertaking long-term studies outside of Africa. Properly planned study tours are increasingly used as a training tool for selected staff. For example, carefully selected managers and senior cadres are visiting extension services in neighboring countries to discuss difficulties and progress in restructuring extension services. Field-level agents, supervisors and farmers are visiting other districts within their own and neighboring countries on specific topics of mutual interest. PRT funds are used for remedial or recyclage training designed in many countries, (e.g. Mozambique, Guinea and Côte d'Ivoire) to raise staff to a common level of knowledge and skills on specific technical and methodological topics.
Bank provision of staff to support training

In addition to making funds available, the Bank has a cadre of agricultural services specialists most of whom are local staff residing in SSA. Roughly 75 percent of their time is devoted to training nationals themselves or to supporting human resource development (HRD) processes to strengthen extension institutionally. In addition, the Bank has a Senior Training Specialist whose time is allocated 100 percent to directly train extension staff in Bank-supported projects in SSA. The Specialist’s work started in 1987 in two countries and now extends to most SSA countries upon request from nationals. In collaboration with other Bank staff, the Specialist conducts regional and national workshops on a variety of topics that deal primarily with either managing extension services or extension methodology.

The combined costs of the Senior Training Specialist and 75 percent of the agricultural services specialists amounts to a contribution of nearly $600,000 by the Bank to training and HRD activities for extension services in SSA. This figure equates to four staff years, or to 0.08 percent of the $700 million the Bank is investing in extension and other agricultural services; a rather small contribution given the size of the investment.

Orientation workshops

Initial workshops offered by Bank staff orient all extension staff to changes involving restructuring, expanding and decentralizing extension services. These workshops cover:
- The newly restructured organization;
- The principles and features of the T&V management system and methodology;
- Job descriptions and qualifications, and
- Working tools of extension.

Subsequent workshops

Follow-on workshops focus on knowledge and skills needed for different staff roles and programmatic features such as:
- Monthly technical review meetings;
- Fortnightly training sessions;
- Training of contact farmer groups;
- Functional training of subject matter specialists and supervisors;
- Functional training of regional managers; and
- Monitoring and evaluation.

Much of this training helps strengthen the institution's capacity to provide regular, quality in-service training. PRT funds can be used to finance the participation of extension staff in these workshops held at national and local levels. Staff of other donor-supported projects and the private sector are invited as trainees and resource persons. Workshops held regionally also provide opportunities to learn from the experiences of other countries and to network among colleagues. Networks among extensionists within and between countries in SSA was identified by African participants at the 1997 FAO-sponsored extension workshop held in Cape Coast, Ghana, as a key missing ingredient to
both their professionalization and to getting relevant training to their staff and new technologies to farmers.

Extension staff in Bank-sponsored workshops participate in developing detailed training guides based on experiences in their countries. These guides include criteria and indicators for assessing quality and cost-effectiveness of key operational extension features. Participants adapt them to their specific country situations to improve the material's relevancy and quality. Their adaptations help reduce the costs of operational features which enhances the sustainability of extension services. Training modules for different levels of extension staff have been developed on at least twenty-seven topics, including technical as well as operational topics.

As the initial challenges to reorient and equip staff posed by the restructurings of extension services diminish, Bank workshops increasingly focus on: (a) training of trainers; (b) training of human resource managers; (c) training of supervisors and subject matter specialists; and (d) participatory diagnostics working with farmer groups and organizations. Guides are produced for trainers and human resource managers in French and English to conduct training needs assessments, devise training plans, and train other trainers within their extension service.

The Senior Training Specialist requires that in-country trainers be identified and closely involved in planning and facilitating workshops to develop their skills to train others. Thousands of extension staff from the countries were trained in Africa in Bank-sponsored workshops; at least 6,000 have been trained directly by the Senior Training Specialist in the last ten years. While the efforts described above are bearing fruit, significant levels of follow-on training are necessary.

Key Issues

The many concerns raised by the Bank in developing human resources for effective and sustainable extension services can be distilled to the following three issues most fundamental to their development:

*Systems of agricultural education in SSA are critically weak and weakening*

In-service training is not meant to substitute for a basic agricultural education but to build on one. Unless pre-service agricultural education institutions in SSA dramatically improve their basic training of agricultural personnel, extension services will need to continually devote scarce resources to remedial training in attempts to offset these deficiencies.

*Training needs to be tied to clear-cut objectives for institutional strengthening*

Each item of training must be used as a strategically placed investment to develop extension's human resources. These investments must be guided by effective and rational human resource management policies that use project funds to strengthen institutional capacities rather than cater to individual interests or become the sole means to reward good performers.
Training needs to be leveraged through staff incentives

Incentives and career development programs are necessary to motivate staff to use their training to help achieve clearly defined institutional goals and desired impacts.

Addressing the above issues adequately is essential to:
• Realizing long-term positive returns to training investments; and to
• Building strong and sustainable extension services.
These three issues are discussed below.

Weak Systems of Agricultural Education in SSA

Those conducting in-service training find it challenging to appropriately orient training material when the levels of education and experience of agents and supervisors vary widely. Because many field-level agents and supervisors lack a basic agricultural education, they lack the foundation on which in-service training could build.

Raising the educational requirements of new recruits, however, does not guarantee that they have the expected knowledge and skills commensurate with their educational levels. Most agricultural education institutions in SSA are not adequately equipping their graduates with the knowledge and practical skills needed by employers. Educational weaknesses are found not only among frontline staff but among supervisors, a major constraint to improving the performance and attitudes of frontline staff.

Consequently, PRT budgets are used to address these deficiencies through remedial in-service training. But in-service training is not intended to be remedial and substitute for a basic agricultural education. Its purpose is to deepen and update the basics. For example, three days or even three weeks of training in animal husbandry cannot substitute for three years of study and practice.

A looming pipeline problem emerges in Sub-Saharan Africa. While the number of agricultural education institutions established throughout SSA are not inadequate, the capacities of most of these institutions, even once premier universities (such as Makerere University, the University of Ghana at Legon, the University of Ibadan) are inadequate to prepare, to retain or offer continuing education and in-service training. Unless agricultural colleges and universities in SSA are drastically improved, poorly-prepared recruits will continue to enter the services and significant funds will be required for decades of remedial training. Donors are not planning to pay indefinitely for this training.

Financing issues

While governments are paying significant amounts for education and services, they get little in return. First, they finance institutions of agricultural education that produce poorly-educated graduates. The government then pays salaries and other recurrent costs of staff but gets marginal performance due in part to the poor education of employees. The extension service provides in-service training but again gets marginal returns as staff
lack the basic agricultural education foundation on which in-service training is to build. Consequently, extension services pay again to provide remedial training in efforts to stop-gap these educational deficiencies. Bank loans that are currently used to finance much of the remedial training are expected to diminish. The question arises whether governments should continue to ignore or tolerate such inefficiencies when resources are scarce. Will governments struggling to finance recurrent costs be willing and able to pay for remedial training, training that will likely be required indefinitely if systems of agricultural education in SSA continually weaken? If governments cease to fund training, extension programs in SSA will not be sustainable.

The World Bank would like to see both the cost-effectiveness and relevance of training improve through the use of in-country institutions and locally-hired consultants. When these are not available, then training resources within SSA should be accessed. The Bank prefers not to finance education and training of extension staff outside of Africa that is, should or could be available in SSA. Moreover, Africa’s colleges and universities are missing opportunities to further benefit from project funding when training is procured outside SSA. Approximately $50 million per year of Bank-provided funds is used to educate Africans in non-African universities (Mattocks 1996). Spending these financial resources within Africa could help to strengthen programs and facilities, and to develop new ones.

Parallel to the concerns regarding the capacities and willingness of governments to continue financing extension and research services is the concern to finance regular in-service training. More cost-effective means of training need to be explored, such as flexible work and study arrangements and initiatives like those in Guinea where training on key topics is regularly taken to agents in the field with minimal disruption to field activities and delivered by their best trainers in a cost-effective way. Extension administrators and managers need to take full advantage of the project-related training funds to strengthen both in-country and regional education and training resources for future needs.

Weaknesses in institutions of agricultural education affecting graduates are in two major areas: agricultural curricula, and teaching-learning processes. These affect both pre-service education and institutional capacity to provide quality and relevant in-service training.

**Agricultural curricula**

Curricula require revamping to provide both theoretical and practical pre-service education and in-service training to meet current and future demands for trained agricultural personnel for public and private organizations. The learning needs and learning styles of farmers, who are the end-users of extension services, should be central in decisions on content and format. Employers of graduates and farmers should be involved in redesign processes. Without realigning curricula, agricultural colleges in Uganda, for example, will continue to specialize those with only a secondary education
for three years in areas for which current or projected future jobs are few. Meanwhile, demands for recruits broadly trained in agriculture go unmet.

Curricula content and learning facilities should be continually reviewed. Overview boards comprising well-chosen private sector and public sector representatives could provide significant feedback on the quality of graduates and on emerging needs. Periodic surveys of employers and graduate tracer studies can provide informative guidance in this process. Mechanisms need to be established for continuing dialogue between agricultural education institutions and those employing their graduates, particularly the institutions providing agricultural services.

Agricultural curricula reform must address both technical content and extension methodology - they are of equal importance. An agent who is technically competent but cannot communicate is handicapped as is an agent who can communicate but lacks relevant information.

A trend to upgrade colleges to universities without data indicating demand for more B.Sc. degree holders rather than certificate and diploma holders (e.g. Kenya, Ghana, Uganda) is of concern to Bank staff. Similarly, the entry requirements of colleges are increasingly restrictive in some institutions (e.g. Bukalasa College in Uganda) thus constraining the entry of rural youth. Yet, their rural backgrounds are a distinct advantage to extension services.

**Technical content**

Extension services require personnel with a basic level of practical education in agriculture, such as the basics of crop production, animal husbandry, agricultural mechanization and fisheries, on which in-service training can build. Students should develop a basic understanding of integrated systems in agriculture, such as integrated crop and livestock production; natural resources management, especially soil and water conservation; agroforestry; and integrated pest management. A basic agricultural education should include post-harvest technology, such as storage, preservation, and value-added agricultural products; marketing; and record keeping. Agents cannot help farmers move from subsistence to commercial agriculture without basic knowledge and skills in farm management and record keeping, and in marketing raw and value-added products.

**Extension methodology**

Inadequately trained field level agents have difficulty in doing more than repeating standardized and simple extension messages. Yet, agents are now expected to use participatory group techniques to diagnose problems and develop solutions using local knowledge and resources. These demands require that students learn basic theory in the major disciplines on which extension science is built: adult education, rural sociology, anthropology and communication. To complement these intellectual underpinnings, they need skills in:

* Listening to and working with farmers of different ages and gender;*
• Working with farmers as individuals, as groups and formal organizations;
• Situation analysis, problem diagnosis, and problem-solving;
• On-farm experimentation; and
• Facilitating farmer-to-farmer learning.

Links among extension, education and research

Building linkages among extension, research and farmers are frequently discussed, researched and promoted. However, these linkages typically exclude institutions of education while unrealistically expecting these institutions to provide high-quality education and in-service training relevant to the needs of extension and research. Mechanisms for regular dialogue and planning are needed between the senior administrators and HRD managers of extension, education and research and to farmer organizations to improve the relevancy of both pre-service education and in-service training to the changing knowledge and skills mixes required of extension and research staff. Mechanisms are also needed to foster frequent interaction among faculty, researchers and extensionists. For example, staff exchange programs and sabbatical arrangements could allow staff to work in each other’s institutions to mutually improve their respective services. A researcher could teach and work on curricula with faculty in colleges and universities, while a faculty member could work within a research institution. The faculty member could help improve the pedagogical skills of researchers who train extension SMSs as well as gain insights useful to improving curricula and to counseling students regarding jobs in agricultural services.

Pedagogical skills of faculty

Faculty need to be strengthened pedagogically in order to help students develop new knowledge and skills. They must concern themselves with creatively facilitating learning rather than teaching. Teaching by lecture method is among the easiest, least costly and hence most abused forms of teaching. But learning through lectures is minimal. To actively engage learners in learning processes requires that faculty themselves learn new pedagogical principles and develop new skills. To enhance learning requires creative effort on the part of faculty, and the use of learning facilities, especially libraries and school farms.

Need for practical training

Classroom learning needs to be complemented with practical, experiential learning to develop requisite skills in extension methodology and in practical agriculture. These skills mentioned above are better learned by seeing them in action. Therefore, faculty need to model and demonstrate these skills rather than merely lecture on them. Students need to see that faculty respect and involve student knowledge and experience in learning processes to better equip students to do so with farmers. Since farmers are practically oriented, students of extension need to acquire practical skills. Role plays, group work, peer evaluation and practicals in villages help students develop new understanding and skills of extension methodologies. Creative externship and internship opportunities are valuable learning tools during diploma and degree studies. For example, the B.Sc.
Both farmers and students are poorly served when students graduate without practical skills in production agriculture. Operational school farms that generate profits and supply food for student meals are a great learning resource as Egerton University in Kenya has experienced. Functioning school farms where students work with livestock, crops, fisheries, animal traction and agricultural machinery, as well as the physical and financial management will produce graduates more confident to work directly with farmers. Graduates with these experiences are more prepared to help farmers become market-oriented producers than they could through lectures or books.

Most learning facilities such as school farms and libraries in SSA badly need rehabilitating. Living conditions for students, particularly female students, need improving. To bring more women into extension work necessitates that institutions of agricultural education enroll and accommodate women.

**Providers of in-service training**

Stronger institutions of agricultural learning can also provide quality in-service training, an under-exploited market for Africa’s agricultural colleges and universities. This market has traditionally been tapped by institutions and consultants in the northern hemisphere. Training could be offered on campus or taken in the field. Training that is well designed and implemented can demand a fair price. There is also a dearth of well designed, practical learning materials relevant to field workers in public and private organizations. Additionally, involvement of faculty with the work force has the advantage of helping faculty develop more relevant pre-service education.

Comprehensive efforts to strengthen systems of agricultural education should consider that colleges and universities could potentially offer continuing agricultural education programs to serve the vast in-service training needs of public and private sector organizations and individuals in agriculture. For example, the Center for Continuing Agricultural Education at Makerere University was established in 1993 by the faculty of the Department of Agricultural Extension Education with support from the World Bank; the Department of Agricultural Extension Education itself was established with USAID assistance about 1990. The pioneering efforts at Makerere will yield lessons valuable to
others trying to strengthen learning opportunities for those in agricultural services as well as producers and processors. Such centers could become financially sustainable, after initial start-up investments to help them develop, market and implement demand-derived courses.

Flexible work study arrangements offered by such centers could allow individualized learning programs for select staff, particularly SMSs. Frequently, degree and short course training programs remove staff at crucial times of the agricultural calendar. For example, SMSs are sent to courses outside the country for months at a time leaving no one to train field-level staff and supervisors on crucial production aspects in a timely manner. Additionally, these training courses may include topics of little relevance to the extensionist's work. Training arrangements could be made in which the extensionist works part-time and studies part-time. A learning program could be designed cooperatively by the extensionist with an extension trainer, and selected educator(s) or research specialist(s) or both. Extension staff in such learning programs could keep some level of their field-work active and stay connected to the field situation that prompted their learning need.

Current World Bank support to agricultural education

The Bank currently supports agricultural education through sub-components in extension/research projects in Ghana, Uganda, Mauritania, Mali, Chad, Madagascar, Côte d'Ivoire, Cameroon and The Gambia. This support is usually directed at specific institutions of learning and selected weaknesses in those institutions rather than addressing the system of agricultural education comprehensively. Unfortunately, progress is generally marginal, and counterpart funds are often lacking. For example, the National Extension Project in Uganda provides support to physically rehabilitate and improve academic programs at Bukalasa Agricultural College; the rehabilitation of facilities have started only as the project is closing. The Ghana National Extension Project provides support to five agricultural colleges for basic learning facilities (e.g. books, teaching aids, lab and farm equipment) and to renovate dormitories and expand those for women. While the in-service training budget is well-utilized, the relatively significant support provided in the project to strengthen agricultural education is still largely untapped.

Even if pre-service education and in-service training are of the highest quality this does not necessarily translate into capacity building or results in the field. The next section addresses the institutional capacity necessary to effectively manage human resources and thus help realize returns to training investments.

Training for Institutional Strengthening

Bank staff supervising extension projects find that training is not consistently used to achieve institutional objectives but rather the objectives of individuals. Training, however, must be treated as a strategic investment in people to strengthen the institution if extension services are to become more self-sufficient. The ultimate purpose of all training activities is to strengthen the capacity of field level agents who directly work with farmers.
To properly orient training activities, extension services must first have a clear mission (or goals) with stated objectives to achieve that mission. Mission or goal statements must be based on the learning needs of various types of farmers and agricultural enterprises. Objectives should outline the specific impacts of extension on the rural economy. Clearly-defined institutional objectives need to be understood at all levels right through to field level staff. The objectives should be used to determine the required functional areas and staff roles to achieve them. The qualifications and skills-mix necessary for each position can be determined. These can be compared with the current staffing situation and skills mix. Individual qualifications must be appropriately matched with job descriptions. Staffing gaps and the corresponding skills needed then become more apparent. Hiring plans can be formulated, redundancies dealt with, and the needs for new knowledge and skills prioritized. Training plans can then be designed to address institution-wide needs on a priority basis. Each training program should be tied to clear and measurable institutional objectives, such as specific staff performance attributes or increases in commodity output. These are human resource management (HRM) processes that require a policy framework to guide hiring and training plans. HRM policies need to be widely known, transparent and adhered to throughout the institution. Without effective policies, investments in training are unlikely to strengthen the institution.

**Need for human resources management policies**

Like other financial investments, investments in training require thorough and rigorous analytical work guided by rational HRM policies that invest the right kinds of training in the right people at the right time. Training investments need to be monitored and evaluated for impact. Are there measurable changes in staff performance or in commodity output as a result of training? Higher-level staff, especially in more centralized systems, often use the lion's share of the training budget while learning needs of field level agents remain unmet. Evaluation processes need to be repeated periodically to make the institution dynamic, responsive, and proactive in achieving its mission. There is little evidence that the Bank or extension services are evaluating the impacts that training specifically is having on institutional objectives.

Just as institutional goals and objectives must be clear, so must the objectives of each training program be clear-cut and their attainment measurable. If each training program is not tied to relevant, clear-cut performance objectives or agricultural impacts or both, training tends to be meaningless and routine.

**World Bank assistance in human resources management and training**

These important HRM processes require capable human resources managers. Training in HRM has been provided widely to managers in almost every extension project. Many have gone outside Africa for training at considerable expense. However, little of the management training is implemented, sometimes due to institutional and political barriers. Most senior managers still lack knowledge and skills in strategic planning. To better develop HRM capacity the Bank requires:
• Training needs assessment during project preparation;
• Training plans in the first stage of project implementation; and
• Training plans submitted on annual or semi-annual basis for Bank approval.

Institutional capacity in the basics of training needs assessment and training plan design is being developed by World Bank staff resident in Africa. The training topics currently emphasized by Bank staff include human resources management, training needs assessments, training plan design and the training of trainers. Training workshops in these topics have been held for participants from eighteen countries. Those trained train regional and district trainers in their countries. Project-related training funds are judiciously used to train promising training managers and allow them to attend short courses in Africa and outside to improve their knowledge, skills and confidence in both managing and developing human resources. Some level of progress is evident in almost every extension service receiving Bank support, particularly in Guinea, Benin, Cameroon, and Mali.

The Bank’s Economic Development Institute (EDI) offers Training of Trainers in a variety of management areas through its Agricultural Management Training for Africa (AMTA) program. It provides resources for improving African project management capacities through its Performance Improvement Planning (PIP) Workshops. These resources, however, are under-utilized by most extension projects.

**Leverage Training through Staff Incentives**

Training alone does not improve performance. To realize a economically justifiable return to training investments requires institutional incentives. To utilize new knowledge and skills, staff need requisite materials and support. At a minimum, staff need regular payments of salaries, transportation and adequate living conditions. Bank staff report that some agents still go on with field-work even without these most basic incentives. With the right incentives, the contribution of all staff could be greatly improved.

Training, particularly foreign training, is used in most countries to reward staff who perform well. Long-term studies are prized for both the individual monetary benefits they might carry as well as the opportunities an advanced degree-holder may have to move into administrative work with improved salary and living conditions. Using PRT for this purpose does not often move the right staff into the right positions that will utilize their knowledge and skills. Using PRT as the major reward and recognition mechanism indicates that the institution has not yet developed a sustainable means of rewarding staff to strengthen the institution.

**Need for career development programs**

In addition to HRM policies that match individual capabilities with staff positions, extension services need visible, systematic career development programs that reward good performance and discourage the opposite. Salary increases are needed within job levels to reward those who perform well. Currently, good field-level agents remain at the same salary unless they move into administrative positions which do not necessarily
match their qualification nor make good use of their field skills. Hiring and firing needs to be based on qualifications and job performance. Farmer input can be incorporated into evaluating extension agent performance. For example, Côte d'Ivoire instituted a partially privatized extension service with representatives of farmer organizations on its Board of Directors. Farmer feedback mechanisms are being developed on agent performance. As Ghana restructures its extension services, select technical assistants with low education levels but excellent performance records are being provided further educational opportunities rather than being removed from service.

Awards, recognition and competitive grants based on merit are motivational mechanisms that stimulate staff performance in industrial countries. There is no evidence to suggest that they would not do the same in SSA. Competitive grants could be made available for extensionists in combination with researchers, educators or farmer organizations to test new ideas, conduct adaptive research and more. Such opportunities also instill an attitude of responsibility for one's own continued learning and for learning with farmers. They help build networks between educators, extensionists, researchers and farmers.

Conclusion

More training is not a substitute for sound systems of agricultural education, human resources management and performance incentives. Many training investments in SSA have never seen effective returns (Berkman 1992). This will continue to be the case unless staff are motivated through rational and effective HRM policies clearly linked to well-defined institutional goals and objectives, and through incentive programs that motivate and reward performance. Unless systems of agricultural education receive serious attention by African governments, their countries will not realize agriculture's potential to expand their economies.

Strengthening systems of agricultural education in SSA requires a long-term effort led by African governments with donor assistance. A variety of bilateral and multilateral agencies are already trying to strengthen selected institutions of agricultural education. But it appears that these often disparate and somewhat piecemeal efforts do not comprehensively address national or regional systems of agricultural education. They do not reflect sustained government commitment. The gravity of the situation needs to be strongly conveyed so that policymakers realize both the criticality of strong systems of agricultural education in SSA to overall economic development and the near-crisis state of these systems. Various studies on agricultural education in SSA completed over the last two decades need to be gathered, reviewed and used to inform government leaders of the current state of affairs with possible recommendations for action. For example, survey work on the current status of agricultural education in the light of projected demands for trained personnel in the public and private sectors in seven Francophone West African countries was completed by a joint World Bank/FAO cooperative program (FAO 1994). The report recommended a regional approach to strengthen a set of institutions, each in different domains of agricultural education. Strengthening the abilities within agricultural ministries to administer competent agricultural education institutions will be
required rather than moving institutions of agricultural education into already overburdened ministries of education. Linkages between research, extension and education would be even more difficult to establish by such a move and thereby further undercut the abilities of agricultural education institutions to adequately prepare trained personnel.

The three fundamental issues addressed above need to be raised to new levels of awareness and priority among African policymakers and donor institutions. Extension managers who understand the seriousness of these issues need to exert pressure upwards to demand the political will requisite for action to address them. Donors could sponsor forums at national and regional levels among the policymakers and administrators who can effect change on these issues.

For example, regional roundtables could be held in Africa among the national governments and the donors to discuss new modes of cooperation in agricultural education. Stock needs to be taken of what has been tried to avoid repeating what does not work and get on with what is working and where we see breakthroughs happening. Studies already done and those under way could provide important information on the present and future demands and supply of different types of trained agricultural personnel by country. Efforts to truly strengthen systems of agricultural education in SSA will likely require a thorough, comprehensive approach and a long-term commitment from both senior government officials in policy and finance as well as major donors.

AGRICULTURAL RESEARCH

The main strength of the Bank-supported extension systems in SSA is its linkage with research. This section describes the importance of research and lists the major concerns that research services in SSA need to address. Then, the current status of agricultural research in SSA is described in terms of its shortcomings and achievements. Many of these shortcomings can be overcome by effectively engaging farmers in the research process, a subject of which is discussed in the subsequent text.

Introduction

In all SSA countries, developing a vibrant agricultural sector depends vitally on the development and adoption of new technology. Sustained and rapid economic development in SSA, improved food security and poverty alleviation require an annual growth rate of 4 percent to 6 percent in agriculture (Cleaver and Schreiber 1994). However, in most SSA countries, accelerating agricultural growth to these levels is posing a major challenge. The World Bank’s strategies to support the SSA countries address this challenge. Agricultural Research and Extension are often important sub-programs of ASIPs which are supported by all the donors. The private sector is encouraged to play a more significant role in financing agricultural technology development in many countries in the SSA.

Past increases in agricultural production in SSA resulted from expanding the amount of land cultivated. There is not much scope for increasing the area under cultivation.
Future increases in agricultural production need to result from increasing the productivity of land and labor. This requires the generation of effective and efficient agricultural technologies. Governments of the SSA should also adopt appropriate policies, if farmers are to find it profitable to adopt these technologies. These technologies and the policies should address the following areas of key concern.

- Both the productivity and sustainability of production systems in the fragile environments that extend across much of SSA need to be improved, particularly to achieve sustainable soil fertility and moisture management.
- Food security through greater responsiveness of research to policies, market conditions and consumption trends.
- Creating greater opportunities for farmers to diversify their production by focusing research on new cash crops and markets, both internal and foreign.
- Agricultural research which takes into account the criteria which enter into the farmer's decision-making process, such as, the risk element, cost of inputs, market access and prices.
- Monitoring the effects of new technology on production, costs, farm incomes and exports and conducting benefit/cost analysis.

**Current Status of Agricultural Research**

Governments in SSA have invested heavily in their NARSs during the last two decades. In addition, bilateral donors, the World Bank and other multilateral donors have provided considerable assistance to facilitate agricultural technology generation and transfer, particularly through improving research infrastructure and the human resource base. The present status in the key areas are given in Table 2. Although some progress has been made especially in the first six areas, much remains to be done in putting agricultural research in SSA on a sound, sustainable basis and in making the NARS more effective in addressing the technology demands for a more productive and sustainable agriculture.

**Table 2. Achievements and shortfalls of the NARS**

<table>
<thead>
<tr>
<th>Area</th>
<th>Present status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resource development and training</td>
<td>Impressive achievements, but, many of the best scientists are leaving the national systems</td>
</tr>
<tr>
<td>Agricultural research organization and management</td>
<td>Significant improvement but frequent policy change, financial uncertainty and rapid staff turn over place research managers in a difficult position</td>
</tr>
<tr>
<td>Rehabilitation of research</td>
<td>Reasonably successful but there are many research centers with poor infrastructure</td>
</tr>
</tbody>
</table>
Closer client participation in priority setting

Considerable progress made

Research output in terms of technology adoption and increased, more efficient production

Some evidence of success, particularly in genetic improvement

Allocation by governments of a dependable budget for non-salary operating costs

Increasingly difficult

Identifying alternative sources of financing for agricultural research through the private sector

Achievements in cash crops such as, tea and coffee, but not in other crops

Improved donor coordination

Limited progress in some countries

Attaining a rational salary/operational costs balance

Deteriorating in many countries

Improved staff service conditions

Largely unsuccessful and getting worse in many countries

There are large differences in the size and capacity of the African NARS and in the way they are organized: from departments of the Ministry of Agriculture to semi-autonomous entities with their own Boards. Some countries have shown a sustained commitment to improving the strength of their NARS, while others have only just initiated efforts to create a reasonable enabling environment. A few countries practice private sector financing of some agricultural research, particularly for cash crops such as coffee and tea; in others, this is still evolving. Some SSA countries are so small and have such severe resource constraints that they cannot afford a large complex NARS. These should be encouraged to greatly increase collaboration with regional and international centers and to focus exclusively on adaptive research. Thus, there can be no general prescriptions and the solutions must be designed to meet actual country needs and fit nationally available resources.

The intensity of the involvement of the Bank and other donors with agricultural research in SSA varies greatly - in some countries it is just starting and in others, it ranges from the initial support to semi-autonomous research organizations to the preparation and implementation of second-stage projects in a long-term program. In several SSA countries, donors have made reasonable progress in the last decade in supporting research infrastructure and human resource capacity.

In many countries in the region, large gains can be made in the efficiency with which resources, including financial resources, are used in agricultural research. The pace of technology development in these countries can be accelerated if:

- Research management and planning are strengthened;
- Research is better focused on a limited number of the high priority topics with good probability of early impact;
- Funding is adequate, and timely and sustained over a sufficient period of time to produce results;
- NARSs more effectively link with IARCs through collaborative regional research programs;
- The private sector (especially farmer organizations and NGOs) and agricultural universities are encouraged to greatly increase their involvement in research formulation, funding and implementation and;
- Information systems and technology dissemination are more effectively organized;
- Donor support is better coordinated;
- Available resources are directed towards the real needs of farm families; and
- Efforts intensified to utilize and if necessary adapt, available technology from elsewhere

Key reasons for low research productivity in NARS

The two key reasons for low research productivity in SSA are:
- Non-adherence to the research master plan when prepared; and
- Inadequate salaries and operating funds.
These are discussed below.

National Agricultural Research Master Plan

Most projects require that a National Agricultural Research Master Plan (NARM) be prepared to set broad long-term priorities for agricultural research. These plans were either incomplete, or not adhered to. Many of them were prepared with little input from intended beneficiaries. Many NARMs are not followed up with specific research action plans that focus on the most important technical questions within each identified priority area that require urgent resolution in specific agro-ecological zones.

Salaries and operating funds

Governments have not provided adequate salaries, appropriate incentives and the essential operating funds in a consistent and timely manner, particularly when implementing structural adjustment programs (ISNAR 1995), resulting in frequent disruption of activities and inefficient use of resources. The relevance and applicability of research results have been severely affected. Agricultural research is often under-funded to the point where non-salary operating budgets fail to meet the minimum requirements of effective programs. In some cases these budgets are as low as 30 percent of that required for high-quality applied research. The ratio between budgets for staff salaries and the operational costs of research is exceedingly high due to the high numbers of support staff compared to scientists.

Other reasons

Other reasons for the shortfall in research productivity in SSA are as follows.
- Excessive reliance on technical assistance.
• Inadequate exchange of information on agricultural technology within and between countries in the region.
• Inadequate linkages with research systems outside the region.
• Insufficient effort to involve the private sector in financing agricultural research, especially in the export crops.
• Poor attention to higher agricultural education.

The factors described in the text above have made it difficult for the NARSs to address priority research topics, particularly the key food and export crops, livestock and natural resource conservation and biodiversity, and research on problems that cut across national boundaries such as soil and water conservation, agroforestry, integrated pest management, farm equipment, post-harvest handling and processing, product marketing, fisheries and technology needs of women farmers.

Pre-requisites to higher research productivity

Studies of successful agricultural research in SSA have shown that important prerequisites for research productivity and impact are (Jain 1992):
• Direction and focus of research efforts;
• Well-qualified staff working in a supportive environment which includes adequate remuneration with performance-oriented incentives, well-equipped facilities and timely flow of operating funds;
• "Information access," i.e. up-to-date literature and linkages with advanced research institutions, including the IARCs;
• Appropriate decentralization with responsibility for research program formulation and implementation delegated to regional centers serving specific agro-ecological zones;
• Close and continual interaction between researchers and the beneficiaries of research such as farmers, extension staff and processors; and
• Research staff continuity.

Involving farmers in research

Involving farmers in research is a recognized manner of increasing research productivity. Farming systems research (FSR) and on-farm research (OFR) were introduced in the early 1970s to help researchers better understand farmers’ technology needs. Since then, researchers have substantially improved the understanding of production systems, and are better able to identify the gaps in existing technologies which farmers would find relevant to their needs. Three points emerge from analyzing their successes and limitations.
• Farmer involvement was invited too late in what was a linear technology development process. Their input was only at the testing and adapting stage of technology development rather than in the initial stage of identifying priority research questions.
• Initiatives come from researchers, not farmers, who are given a reactive rather than a proactive role; farmers should be actively involved in the definition of research problems.
• Even in FSR, farmers have little power, if any, in getting research and extension to focus their attention on their (farmers') problems. In many countries, agricultural research remains too centralized. Responsibility is insufficiently delegated resulting in a ‘top-down’ approach that fails to understand and respond to client needs.

**Emergence of a global agricultural research system**

A global agricultural research system is emerging through the efforts of NARS in both developing and industrial countries and by the International Research Centers (Petit 1996). During the past five years, several regional research organizations have been established in SSA to address regional issues and to improve collaboration among the participating NARSs. New approaches are also being developed to improve linkages between research and extension and to more closely involve clients in technology development processes.

**Impact of Agricultural Research**

Despite the shortcomings described above, a series of recent agricultural research impact assessments in Africa report rates of return up to 135 percent (Crawford and Oehmke 1993; USAID 1993). The collaborative efforts between governments and donors have had a significant impact on agricultural productivity and the development of some crops in some countries in the region. However, more effective approaches need to be found because agricultural research in all but a few SSA countries has failed to achieve the extent of technology generation sufficient to cope with the demands of rapidly increasing populations, a deteriorating natural environment, and overall economic growth.

Research can play a significant role in realizing three potential sources of agricultural growth in the medium term (three to ten years) in most SSA countries and they must be developed simultaneously.

**Using available technology and resources more efficiently**

The most immediate prospect is to arrest the recent declines in productivity by capturing the gains possible from available, “proven” technology within the present farming systems. This can be achieved through:

• Increasing the area cultivated or “extensification”;

• Improvement in the incentive structure by further improving the policy environment; and

• Greater effort in on-farm adaptive research, better extension, easier access to credit and faster payments for cash crops, particularly in countries where ASIPs are actively in place.

For several SSA countries which currently find themselves in the cereal productivity range below 1.5 tons per hectare (for example, Benin, Cameroon, Ethiopia, Nigeria, Sierra Leone), this “extensification” or “tightening of the slack in the system” may raise yields to between 1.5 and 2.0 tons per hectare, which are the levels currently achieved in the high-potential areas of Kenya, Zambia, and Tanzania.
**Bringing about rapid technical change**

The second source of productivity increases would come improving the performance of existing farming units by bringing about rapid technical changes through the identification and adaptation of new crops, varieties, better farming practices, improved resource conservation techniques, etc. There is also potential to borrow new technologies, particularly those suitable for semi-arid areas and adopt them to local situations, as substantial gains would be possible from non-traditional crops such as oilseeds and cotton. This could enable many SSA countries to achieve a sustained and significant growth of between 4 and 5 percent (Plucknett 1991).

**Commercialization**

The third source of growth would come increasing the value-added component of agriculture in the high-potential areas by transforming the farms situated in these areas into commercial enterprises. Such a transformation of agriculture would require a shift away from food crops grown for consumption towards higher profit enterprises such as dairy, horticulture, coffee, tea, sugarcane, pyrethrum, and cotton. This will imply improving the quality of services in these areas. Historical experience in Africa suggests that it is the mutually beneficial interplay between technological change and a shift to higher-value added commodities that offers hope for the agricultural sector to provide the impetus for economic growth. To facilitate such change, the NARSs must become more aggressive in doing both upstream and downstream research. They must take greater initiative in selecting proven technologies from elsewhere and test and adapt them locally. Research on commercial crops should, in due course, be given to the private sector.

**Producer Organizations**

In several West African countries informal producers' organizations (POs) have developed (Collion and Rondot 1998). POs are effective in developing and adapting technologies, and getting new technologies to their members. Therefore, some research and extension services are seeking the involvement of POs at various stages of technology design and transfer processes. The partnerships evolving among POs, research and extension services help these services to become more demand-driven and beneficiary-oriented. These partnerships also help to decentralize research and extension services. In industrial countries, such partnerships have been critical to enhance the effectiveness of government services. Farmer participatory research and extension is defined in Box 9.

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**Box 9. What is farmer participatory research and extension?**

Farmer participatory research and extension is an approach which seeks to improve the efficiency of agricultural research and extension by involving farmers themselves in the identification of their problems, proposing solutions and testing or executing those solutions. It builds on farmers' 'indigenous technical knowledge' which can valuably be combined with researchers' and extensionists' insights. It does not assume that farmers have complete understanding of all their problems, but seeks synthesis of farmers' and technicians' knowledge and understanding (Woolley and others 1994).
POs can help the technology generation and transfer process through:

- Providing an organizational base for analyzing constraints, pooling knowledge and aggregating demand for technology;
- Exerting pressure on research and extension institutions to work within a commonly-defined agenda through participation in program planning, monitoring and evaluation;
- Participating in adaptive research, testing and evaluation, and lobbying for increasing the scale of on-farm adaptive research;
- Providing feedback on the impact of technologies on farmers’ fields;
- Increasing their members’ exposure to new technologies; and
- Promoting an enabling environment for technology uptake (access to inputs, credit and support for marketing).

To make the role of POs more effective, additional resources will be required for activities relating to research-extension-farmer linkages (e.g. training, on-farm trials, demonstrations). Seed multiplication and distribution processes need to be developed in collaboration between research, extension and farmers to provide seed not available through the ‘formal’ seed sub-sector, to farmers and other interested parties for further multiplication, distribution and sale to local communities.

The Available Technology Debate

Some claim that yields in Africa could be many times the present figures, if only the available technology were applied by the farmers. This argument is often used to support the view that further investment in NARSs is futile. However, attempts to introduce new technology into African agriculture in the past thirty years have often been disappointing, because it was frequently not relevant to the farmers’ situation (World Bank 1989). Farmers lacked the capital, land and water resources and labor to appropriately use the available technologies. Moreover, government price and marketing policies often made the technologies economically unviable.

Technologies are certainly available to:

- Increase the area under cultivation by tractors;
- Increase yields through the use of fertilizers and pesticides; and
- Overcome many of the farmer’s most pressing technological constraints

But, all too often, economic and financial factors render this technology impracticable for smallholders in rural areas. While many can readily appreciate that tractors are an available option but not practicable for small-scale African subsistence farmers, what is less well appreciated is that other, apparently simpler technologies can also be equally difficult for them to adopt. Timely cultivation, planting and weeding can have a striking impact on yields, and farmers know about them, but for many farm families where males are working in the cities and which face severe labor constraints at critical points in the crop cycle, that technology is often not practicable. Hence the need for research to evolve technologies relevant for each category of farmers (Carr 1989).

A study by Winrock International on the agricultural potential of mid-Africa comes to a much more optimistic conclusion about the viability of existing agricultural technology
Agriculture does not need to wait for decades of research before productivity gains can be realized. Research can focus on long-term needs, while substantial short-run production increases can be achieved through more readily available means.” In many cases, improved seeds and practices not only exist at research stations, but are widely used in farmers’ fields. For many crops, currently available varieties already incorporate significant improved genetic material originated at IARCs and NARS. In particular, existing varieties of maize, wheat, rice, sorghum, cassava, and other common crops have shown high responses to fertilizers.

Even if a broad range of technologies are available, agricultural research must not be neglected. In fact, the availability of a broad range of technologies makes it all the more necessary to adapt them to local farming situations. Further, as mentioned above, it is possible to achieve impact on agricultural productivity in a short term over a wide range of commodities through borrowing and adaptation of available know-how. This requires well-supported, efficient and effective NARSs.

**DONOR COLLABORATION IN AGRICULTURAL EXTENSION IN SSA**

This section describes the efforts of the donors supporting agricultural extension in SSA to consult with each other by holding informal consultations and workshops. It observes that over the past two decades, donors have moved closer to each other and are now actively collaborating in strengthening agricultural extension in SSA.

**Field Assistance Provided by the World Bank**

Since the World Bank started supporting national extension programs in the early 1980s, it has positioned staff with expertise in agricultural services at its Resident Missions. In 1997 there were 26 such staff, assisting the governments in the implementation of national programs in agricultural services. Increasingly, they are also assisting the countries implement ASIPs and develop their seed systems.

There are two main differences between the staff hired by the countries to provide TA and the Bank agricultural services staff who provide implementation assistance to the countries. First, the Bank field staff are part of the Bank Resident Missions in the countries and do not have implementation responsibilities, as do TA staff. Second, since they are employed by the Bank and therefore have considerable flexibility in their work, they are able to work across sub-sectors and projects. On the other hand, TAs are recruited under specific projects, have Terms of Reference (TOR) under the projects and their contractual responsibilities are confined to these Terms of Reference.

In fact, the flexibility that the agricultural services specialists enjoy also gives them opportunities to forge institutional links between separate extension services, such as services for field crops and tree crops. As more countries combine separate extension services into one unified extension service, and as national extension staff become more deeply involved in implementing extension reforms, the responsibilities of the
agricultural services specialists would broaden to include more subject matter areas such as cash crops, livestock and fisheries.

**Collaboration Between the National Extension System, Private Sector and NGOs**

Almost all extension projects in the SSA are supported by the Bank or other donors. They are implemented by the governments, local agencies or NGOs. The main benefit of having these projects under the umbrella of a national extension program is that the field staff (particularly the expatriate TA) of these projects function in a complementary manner. For example, they train staff outside of their specific project area. There are many examples of effective collaboration in the field between the Bank, bilateral donors and NGOs. A study of such collaboration in agricultural extension was undertaken in a few SSA countries. Some of the observations of this study are given in Annex 5.

In due course, as more and more staff of extension projects function in a complementary manner, even if it means functioning outside of their project areas, the differences between the Bank field staff and the TA will become blurred. This trend should be encouraged by the donor community.  

**Workshops on Agricultural Services Organized by the World Bank and Other Donors**

The Bank-sponsored workshops on extension and research are helping bring Bank staff and the national staff together for an exchange of experiences and discuss specific issues. Initial workshops were held on a regional basis at Ibadan, Nigeria (January 1989), Bouaké, Côte d'Ivoire (October 1990) and Kisumu, Kenya (December 1990). These were followed by workshops in Lilongwe, Malawi (February 1991), Accra, Ghana and Abidjan, Côte d'Ivoire (January 1993) and Accra (July 1995). An account of these workshops is given in Annex 6.

Extension workshops were also organized by other donors starting with the workshop organized by the Centre Technique de Cooperation Agricole et Rurale (CTA), in Yaounde, Cameroon in 1994, followed by a series of Informal Donor Consultations on agricultural extension, beginning with the workshop organized by the Swiss Development Cooperation (SDC) in 1995 at Neuchatel. These are also described in Annex 6.
ROAD AHEAD

3. ISSUES FOR THE FUTURE

AGRICULTURAL EXTENSION

Extension services in SSA are faced with a serious and ironical dilemma. As the issues which extension must address become more complex and the expectations of its services from the clients and beneficiaries increase, donor support to extension and the availability of funds from governments are diminishing. The key future issues facing extension, including the complexities, expectations and financing issues, and the opportunities inherent in them, are discussed in this section.

Complexity of Future Issues

Future problems faced by extension systems are likely to be more complex than in the past when they were expected to bring about increased production on farmers' fields. But now it is expected that they be both institutionally and financially sustainable and that extension recommendations to address concerns regarding environment, natural resources and bio-diversity. The new expectations will place a new responsibility also on the research systems. These expectations will increase in the future.

Proliferation of ministries dealing with subjects related to agriculture

As the technological content of each area increases, the consequent increased specialization leads to the fragmentation of agriculture ministries, national agricultural research systems, international institutions and donor organizations into a number of specialized units and departments. For example, some years ago, in many countries there was one ministry (or department) handling all subjects related to agriculture - now there are ministries (or departments) of crops, livestock, horticulture, fisheries, etc. In some countries there are also ministries (or departments) of environment and natural resources. Sometimes, such a proliferation is the result of bureaucratic or political pressure. Very often, it is the result of increasing specialization in these new areas, and a feeling that they may not get the requisite attention unless a separate ministry (or department) is set up to pay special attention to them. Such fragmentation occurs precisely when the various services delivered at the farm level need to be better coordinated than before.

Need to involve communities

Many issues in future will pertain to the community level while some will continue to be at the individual farmer level. The latter will become more complex than before mainly because of technological advances.

Individual farmer level

At the individual farmer level, extension would need to address complex farming systems issues involving intercropping, agroforestry, livestock and fisheries. Due to
technological advances leading, among other things, to the evolution of more location-specific technologies, extension should develop capacity to adapt technology to specific farmer conditions.

The main problem arises from the fragmentation of the ministries concerned, since most extension systems in the SSA are in the public sector. These ministries (or departments) often tend to argue that the FEWs of the unified extension system are not competent enough to attend to the complexities of the technologies in each of the subject matter areas and each of them would therefore prefer to have their own extension service (one each for crops, livestock, fisheries and so on) rather than work through a common extension service. Carried to its logical conclusion, this would mean an extension service for each of the various subject matter areas. The farmers, on the other hand, would prefer all their extension needs to be met by one extension agent. Having separate extension services is not a solution to the problem which arises due to the defective agricultural education systems and inadequate training. A key solution is to better train extension agents at both the pre-service and in-service levels to deal with the whole farming enterprise, and importantly to backstop them with high-quality technical specialists. This will give confidence not only among farmers but also among the user departments.

Community level

Issues relating to Natural Resources Management (NRM) are best addressed at the community level as the practices of one farmer are apt to impact on many others. In future, as awareness of environmental considerations and NRM increases, the extension systems would be expected to tackle issues relating to these issues. In these areas it is even more critical for extension systems to:

- Involve communities and farmers closely with implementing extension recommendations;
- Innovate and adapt technologies in the “field,” since what would be available from research would be only the approach and a bundle of feasible technologies; and
- Communicate with communities more effectively.

In West Africa, where there are increasing concerns over land degradation, extension methodologies focus increasingly on communities. The efforts made in the 1970s and 1980s to tackle this problem were not particularly successful as they did not involve the local communities in decision-making and management. The new generation of NRM projects initiated by the governments, donors and NGOs ensure local community participation in the identification, development and implementation of NRM projects, while building institutional capacity for effective resource use planning and human resource development (World Bank 1998). Box 10 gives examples from Burkina Faso, Benin, and Mali.

The impact of recommendations regarding NRM are longer-term in nature. Therefore, criteria, time-frames and participants used to evaluate the impact of extension messages on NRM need to be different than those for annual crops. The issue of management of NRM projects came up for discussion at the workshops held at Accra and Abidjan in
1993. The participants at Abidjan representing the Francophone West African countries discussed the managerial problems of NRM projects and pointed out why it was difficult to integrate natural resource management (NRM) with extension. They said: “First, staff working in natural resource management projects and those in field extension differed in their perspectives (entire watersheds as against farmers’ plots) and had different time horizons (several years as against single seasons). NRM approaches the problem from the point of view of the whole village, or even a group of villages, whereas extension approaches it from the level of contact farmer groups. The impact of NRM messages, which have implications for the long term, do not also lend themselves easily to assessment by the monitoring and evaluation units of extension (which report on the rate of adoption by farmers of extension messages over the last crop season)” (Bagchee 1994).

In Burkina Faso, the Environmental Management project is based on the gestion des terroirs (GT) community-based land management approach developed in pilot programs supported by a range of NGOs and donors. The GT approach associates groups and communities with a traditionally recognized land area. It helps communities acquire effective skills and develop the local institutions necessary to implement ecologically sustainable land and natural resource management plans. Donors and other stakeholders agree on the need for incorporating several elements important for the sustainability of the project, notably environmental education (at all levels), land use laws and the decentralization of land management to the village level, and the development of income-generating projects falling within the mandate of the project.

The gestion des terroirs approach has been incorporated into the West African Community Based NRM and Wildlife Management Project in Burkina Faso, Côte d’Ivoire, funded jointly by the Global Environment Facility and the Belgian government, and many other NRM projects in the area.

In Benin, the Natural Resource Management project undertook to assist the government in the management of river basins, reform of land use laws, management of classified forest, wildlife management, institutional support for land use forestry, the effective use of cartography, training and public awareness building activities. The project has put at the government’s disposal a set of indicators and experiences that can be used to evaluate pilot activities and mainstream them through national development programs.

In Mali, the focus of the community-based efforts was to introduce a rational land use system and to halt and reverse the process of degradation of the natural resource base (soil, water, and natural vegetation) which was the greatest threat to agricultural growth. More effective monitoring systems enhanced the institutional capacity of the Ministry of Agriculture, Livestock and Environment. The village-level activities have been integrated into the government’s new decentralized land use framework. As with the Burkina Faso project, there has been a significant increase in implementation rates following the adoption of improved strategies to better involve a wider range of partners.


The difference between the management of the NRM projects and that of the ADPs is worth noting. Even though both are close to farmers and both operate in resource-poor areas, in ADP all decisions are made by the project administrators and rural communities are not effectively involved in decision-making, whereas in NRM the local communities are actively involved at every stage of project implementation. In both cases, almost all
services are provided by government agencies, as the private sector is generally not attracted to the areas where these projects operate. But, because in NRM projects the local communities are actively involved, there is a greater chance of their being sustainable, with the local communities coming forward to cost-share the various services under the projects.

**Financing Issues**

*Financing of extension by governments*

At current levels of funding for extension, many governments in the region will not be able to fund the recurrent costs of extension adequately in future. This topic received serious attention by the Bank and administrators of agricultural services in SSA at the Accra workshop in 1995. Participants analyzed the three main reasons that government (counterpart) funds committed initially for the extension service, when the Bank-supported project was prepared, are later unavailable (Amuah 1995). The first reason is a "source problem." Ministries of agriculture (MOA) often undertake additional commitments after Bank-supported extension projects begin, and later find their funds inadequate to cover all their commitments. Second, the funds the MOA receives from the Ministry of Finance are not conserved and its uses prioritized. Third, financial management within MOAs are seriously weak. When funds are adequate, their disbursement to the field is usually delayed. Recurrent costs are unmet; staff do not regularly receive their salaries, if at all, and field work suffers. A typical example is Côte d'Ivoire where funds are adequate at the headquarters level, but their flow to the field to pay recurrent and operating costs is very slow. Weak accounts and audit systems in most extension services also lead to delays in cash flow. Government accounting and audit systems need to be improved to facilitate disbursements and discourage the frequent misuse of funds. The source problem, due mainly to weak capacity in MOAs to prioritize expenditures, are compounded by a "pipeline" problem arising mainly from poor financial management. There are two possible solutions to this problem:

- Privatizing extension services now; and
- Continuing public support to extension, but involving local communities at every stage of project management, such as the management system obtaining in the NRM projects

*Need for public extension*

Given the generally low levels of agricultural productivity in Africa, particularly in food crops, it is hard to imagine how government can afford not to support extension and research. The main argument in favor of privatization of extension in SSA, is that most governments have difficulty in funding the recurrent costs of public sector extension (Antholt 1994). This issue was discussed at the Accra-Abidjan workshops. It was the concluded that privatization efforts should start with input distribution services, particularly seed production and distribution, rather than from research and extension services. In extension, privatization should start from the cash crop or commodity side, not from generalized extension for foodcrops, small-scale and integrated farming systems. (Bagchee 1994:43)
There is a generally accepted sequence of privatization of agricultural services. Seed production and sale, and fertilizer distribution are generally the earliest agricultural services to be privatized, followed by credit; research and extension are generally the last. Credit and input services, which are still run by parastatals in much of SSA, can be more readily privatized if government policies encourage rather than hinder their privatization. If policies restrictive to their privatization were removed, then governments could free up resources presently used to finance credit, inputs and other services, and apply these resources to financing extension and research.

Research and extension are public goods which government should provide. Resources should therefore be found for this activity, and it is the responsibility of the Bank and the donors to help governments to find internal resources to fund this activity. Donors and others who prescribe that SSA countries should privatize these services are prescribing that which has not worked even in many industrial countries; nor have they been tried on a large scale in any country in the region. “In both Japan and the United States much of the technical change has been produced by public sector institutions. These institutions - state (or prefecture) and federal (or national) agricultural experiment stations - obtained their resources in the political market place and allocated their resources through bureaucratic mechanisms” (Ruttan 1987:60).

It is therefore important to ensure availability of public funds for research and extension, and create conditions for these services to be sustainable. These conditions will include association of beneficiaries with program planning and delivery. With such association, there is a good likelihood of the beneficiaries eventually expressing their willingness to share the costs of research and extension with the governments. This will increase the chances of the willingness of governments to bear their share of the costs. Beneficiaries sharing the costs of research and extension with governments will also increase the sustainability of these services.

Research and extension often lose out in government bureaucratic battles for funds. Even though government funds allocated for research and extension are inadequate to meet their recurrent costs, it does not necessarily mean that these are low-priority services. Processes to prioritize resource allocations and strategic planning are weak in many SSA countries. Donors can help countries to address these weaknesses by examining the MOA budgets with national administrators in a three step process.

- Determine which activities presently carried out in the public sector are non-essential, and eliminate budgetary support to these activities as well as to subsidies and subventions to parastatals.
- Select those services, such as credit and inputs, which can be privatized, reform policies to encourage their privatization, and gradually eliminate budgetary support to them.
- Determine specific actions to be taken to improve financial management of the MOA.
Increasing globalization and market orientation

When growing burley tobacco in Malawi was deregulated, farmers became interested in what is happening in other parts of the world about tobacco. For example they wanted to know the percentage of tobacco production and exports from Malawi to the corresponding global figures. Kenyan coffee farmers wanted to know a few years ago, why they were being paid much less than the world prices by the Coffee Board. As trade in cereals and cash crops is increasingly deregulated and privatized, such questions will increase. Extension agents are expected to provide not only technological advice, but information on a wide range of market-related topics. This requires not only more training but also SMS support to frontline extension staff in new subject matter areas.

Agricultural Education and Training

The future issues for extension services have critical implications for the training of extension staff. More will be expected of today’s extension agents than possibly ever before. Increased and dynamic demands for knowledge and skills necessitate an increased requirement of responsive pre-service education and in-service training. These demands call for deep and systematic improvements in systems of agricultural education in SSA.

New Demands on Extension Managers

More demands on field level staff and supervisors imply more demands on those managing extension’s human resources. Developing and maintaining strong and responsive in-service training programs requires dynamic and effective managers and trainers of extension’s human resources. Managers must learn to stay ahead of the information and technology needs of rural communities and proactively prepare staff to meet new challenges. Managers need to learn to find and utilize quality training resources as well as stimulate demand for quality public and private training resources.

Sustainable Agriculture and Natural Resource Management

Mounting population pressure, especially in urban areas, demands that Africa’s agricultural productive capacity be enhanced while its natural resource base is conserved. Extension services can play a key role in helping farmers understand agricultural and natural resource management issues, and how their practices affect and are affected by these issues. This role necessitates that extensionists at all levels need training on these issues and in causes of non-sustainability. The interdependencies of agriculture with the natural resource base, biodiversity, soil and water quality, and human health need to be learned by extensionists. Then extension staff can help rural communities understand these issues and help them to examine where changes can and should be made.

Marketing

Even Africa’s most remote farmers are increasingly affected by changes in global markets, particularly as countries liberalize prices and privatize trade and marketing. As Africans increasingly urbanize, demands for raw and processed agricultural products within and between countries increase. To help farmers capture new market opportunities for raw and value-added agricultural products requires that extensionists gain knowledge
and skills in emerging product areas, farm management and marketing. Agents need to be trained and mobilized to help urban and peri-urban agriculturalists, as well as those in rural areas, capture new opportunities. Extension services can help mobilize and equip women, especially lower income female-headed households, to identify and pursue niche urban markets.

**Rural Youth**

While women in agriculture have received increasing attention, rural youth are largely neglected, even though more than half of SSA’s population is under the age of fifteen and this number is increasing. The exodus of rural youth to urban areas jeopardizes the sustainability of agriculture as an economic activity, which is still labor-intensive in SSA, and the viability of rural communities. Stemming their exodus requires creating both agriculture-related training and employment opportunities. Programs in industrial countries that help develop the possibility of rural-based livelihoods for rural youth are absent in Africa. For example, the agricultural strength of the U.S. has in part been developed by attending to rural youth primarily through 4-H programs and Future Farmers of America organizations. Vocational agriculture and mechanical skills are taught in secondary schools. Teachers are trained and licensed in vocational agriculture as a profession by land grant universities in the U.S. These programs help students expand their knowledge, skills, interests and, importantly, pride in agriculture. In contrast, rural living and agriculture is what rural youth want to escape. Working on the school plot is used as a disciplinary tool. Agriculture is not commonly taught in rural secondary schools. Studying agriculture in post-secondary institutions is a last resort when opportunities in other subject areas are lacking.

**Access to Electronic Information**

Increasingly information is shared electronically and yet Africa’s abilities to ‘log on’ are, unfortunately, well behind most other developing regions of the world. Distance learning opportunities are emerging as electronic means of communicating increase. For example, FAO uses electronic mail to network among those developing training materials in South and Southeast Asia. Each trainee is provided a mentor who monitors and guides their learning process in developing extension materials. The program also includes an electronic peer review process.

**Conclusion**

Making training more cost-effective also requires effective human resource managers and policies who train the right people in the right areas to enhance institutional capacity in a timely and least disruptive manner. Incentives to perform and utilize training will improve the cost-effectiveness of the training budget.
AGRICULTURAL RESEARCH

Sub-Regional Efforts

Many countries in the region are small and cannot support agricultural research on their own. It is therefore necessary for them to come together and undertake agricultural research in partnership with each other. Many of the key institutional weaknesses and scientific issues are similar in the NARS of most countries in the SSA. The pooling of scientists for research on common problems, and exchanges of experience and cooperation among countries with common agro-ecological conditions can be a more efficient use of donor support than that provided by individual NARS. Examples of such sub-regional collaboration in agricultural research are:

- Southern African countries: The Southern African Center for Cooperation in Agricultural Research and Training (SACCAR);
- Sahelian countries: Institut du Sahel (INSAH);
- Countries in the Humid and Sub-Humid Zones of West and Central Africa: Conference des Responsables de Recherche Agronomique Africains (CORAF); and

The political commitment needed for sub-regional collaboration in agricultural research may be more easily generated if the donors visibly support it. Fortunately, the donors have supported the design and implementation of ‘Frameworks for Action’ (FFA) on reform and sub-regional collaboration in agricultural research among NARSs in the SSA, through the Special Program on African Agricultural Research (SPAAR). Three such FFAs have now been formulated by the regional organizations for Southern Africa, Eastern and Central Africa and the Sahel.

The main objectives of the FFA are:

- To arrive at a consensus on the necessary actions to reform and strengthen the NARSs, and how agreed actions can best be implemented; and
- To improve the quality, relevance and cost-effectiveness of national agricultural research, by exploiting opportunities for scientists in different countries to closely collaborate on similar problems.

The essential elements of FFA are given in Annex 7.

The FFA concepts are supported by the national governments, bilateral and multilateral donors, and regional organizations, and they are expected to be implemented by the NARSs. Successful implementation of the FFAs requires the cooperation and commitment of the countries of the region, SPAAR, IARCs, the African agricultural universities and private sector institutions. They need to agree on an implementation schedule and the agencies responsible for specific actions. The sub-regional groups have made substantial progress in several areas, such as:

- The development of shared systems to exchange information between NARS;
- Reinforcement of existing networks, often in concert with IARCs;
- The establishment of new networks on agricultural policy; and
Management of the natural resources of East African Highlands
Closer cooperation between NARS is needed to resolve key constraints of common farming systems that extend beyond national boundaries. A major challenge in the future is to achieve a sub-regional approach to technology development.

Priorities for the Donors

Agricultural research requires much greater advocacy by the donor community. They should pay more attention to emphasizing the vital role of technology development in economic development to SSA policymakers. For the Bank to more effectively assist the NARSs, the Bank must form closer strategic alliances and partnerships with those who support international agricultural research.

Within the Bank, there is need for a more active role for the agricultural research specialists of the Bank to:

- Participate in the sub-sector discussions with governments;
- Make effective contributions to discussions on Country Assistance Strategies (CASs);
- Ensure that agricultural technology generation and dissemination become the core elements of ASIPs.

This requires greatly increased efforts to clearly identify the most likely sources of growth in agriculture and the resulting priorities for technology development.

To justify a comprehensive joint-donor/World Bank support to NARSs, the dialogues with the countries should confirm country commitment to:

- Concrete measures to ensure adequate and dependable operating budgets;
- Key research system efficiency measures;
- Measures to reduce research costs to the government, such as the rationalization of center networks, and the reduction of non-scientific staff of the NARS;
- Cost-recovery from the beneficiaries where feasible;
- Active participation in regional research cooperation; and
- Encouragement of private sector research.
4. FROM AGRICULTURAL TO RURAL DEVELOPMENT

Since 1996, there have been two important developments which indicate that rural development is back again on the agenda of the World Bank. The first has been the World Food Summit held in Rome on Nov. 13-17, 1996 at which the President of the World Bank stressed the World Bank's commitment to focus on agricultural and rural development. The second has been the publication of the World Bank's sector strategy paper, Rural Development: From Vision to Action (World Bank 1997). It is clear that the Bank’s support to extension and research reforms in SSA will evolve into components of a comprehensive rural development anchored in national programs with multi-dimensional linkages, and increased beneficiary participation.

This section gives the components of rural development and discusses, in the light of the lessons learned from IRDP and national programs, the strategy for the design of rural development programs. The section also recapitulates, wherever necessary, the earlier discussion in the paper.

The Components of Rural Development

Rural development is essentially the development of the goods and services sectors of the rural economy. The dominant sector in the rural areas in SSA producing goods is agriculture, and the main services sectors are rural health, nutrition and education. "A Bank Group strategy for rural economy improvement, while having agricultural growth at its core, involves much more, including growth and employment in the rural non-farm sector, rural infrastructure, environment, health, population, nutrition, and education". (World Bank 1997). As technology advances and development progresses, increasingly more goods and services are needed.

Early Rural Development Projects and the Growth of National Programs

Focus on rural development started in the early 1970s and was the result of a realization that the agricultural development projects of that period did not address the problems of the rural poor. The Bank response was support to IRDPs and ADPs, which were described earlier in this paper. It was seen that the main factor which influenced the design of these projects was the need for a coordinated implementation of the various components which cut across many sectors, and that such a coordination was not achieved. Disenchantment with the IRDPs and ADPs led the Bank to support national programs. These programs were started in agricultural extension and research, and in due course, in other sectors as well, such as health, roads and education.

Stages in the Development of Institutions for Rural Development

The experience so far with the development of national programs in agriculture indicates that there are definite stages in the evolution of institutions for rural development. These are shown in the Table 3.
Table 3. Stages in the evolution of institutions for rural development

<table>
<thead>
<tr>
<th>Stage</th>
<th>Characteristics of the program</th>
<th>Status</th>
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| Stage 1 | • introduction of simple, well understood management systems and methodological approaches  
          • regular contact of the service providers with the beneficiaries  
          • selective use of external consultants (only in highly specialized areas) and an emphasis on local capacity building  
          • national programs  
          • linkages with technology and other institutions and with other levels of administration | • governments are the generally the only providers of most services in the rural areas  
          • countries put in place national programs and bring under the umbrella of these programs various service providers, such as private sector, NGOs  
          • project units set up under donor-assisted projects begin to function as parts of national programs  
          • managerial sustainability is high as the programs are implemented by existing institutions  
          • financial sustainability is low as many projects under the national programs depend upon donor financing or government budgetary allocation |
| Stage 2 | • financial, administrative and political decentralization of the management of the programs  
          • accountability of the program administration to beneficiaries | • multiplicity of service providers  
          • beneficiaries give the provision of services on contract to service providers  
          • financial sustainability is much higher than in the earlier stage; even though the funds mostly come from the public exchequer, there is a greater chance of beneficiaries running the program with their own funds if the public funding ceases |
| Stage 3 | • cost-sharing  
          • beneficiary ownership of the programs  
          • privatization | • managerial and financial sustainability high |

Recent Developments

The recent developments in extension and research have been towards greater decentralization and the association of beneficiaries with the planning and implementation of programs. Many examples are given in this paper. They demonstrate that it is possible, within the national program framework, to have different organizational, managerial and methodological options. One of the major lessons which the recent developments offer is that coordination is seldom achieved from 'above' and we now know that there are far greater chances of achieving coordination if the beneficiaries are effectively associated with the planning and implementation of the project.
Interaction Between Technology and Institutional Development

A review of the evolution of the national extension and research programs suggests that the introduction of simple and well-understood organizational, managerial and methodological changes, particularly, regular interaction with farmers, is a prerequisite to the development of technologies relevant to them. Just as these changes induce technological changes, the latter induce organizational, managerial and methodological changes; for example, the development of interactive computer programs have minimized the need for face-to-face extension in industrial countries. There is thus a close relationship between technology on the one hand and the organizational, managerial and methodological changes on the other (Hayami and Ruttan 1985 and Ruttan 1987).

To illustrate this point, the extension organization considered adequate prior to the Green Revolution in the Punjab, India was inadequate during the Green Revolution period. What was considered adequate during the Green Revolution in the North Indian plains was not regarded as adequate in the Deccan Plateau. An example from the SSA is the organization of agricultural education institutions, which, being divorced from mainstream agricultural research and periodic contact with extension services, and therefore, with farmers, is an example of how an inappropriate organizational set-up could inhibit the development of technology.

In view of the close relationship between technology on one hand and the organizational, managerial and methodological aspects on the other, it is necessary to ensure that the rural development institutions have the necessary linkages with technology institutions.

Strategy for Future Rural Development Programs

The evolution of rural development since the early 1970s and the lessons learnt from the implementation of national programs indicate that the strategy for future rural development programs should incorporate the elements of institutional, financial and environmental sustainability and coordination. This strategy comprises organization of services such that:

- The good aspects of the national program model are preserved;
- The institutions providing these services are institutionally and financially sustainable;
- They are accountable to the beneficiaries; and
- The latter are effectively involved in program planning and implementation, so that they can exert a "pull force" that leads to more effective and coordinated action on the part of the providers of various services which comprise the rural development program.

The most feasible option before development professionals while designing rural development programs would be to focus on the organizational, managerial and methodological aspects of each service, leaving it to the beneficiaries to bring about the necessary degree of inter-sectoral coordination. There is therefore no need to have the
services in the rural sectors delivered in an integrated manner through special institutions created for the purpose. Ironically enough, integration of services is best achieved through differentiation of institutions. After a survey of many IRD initiatives, Hayami and Ruttan postulate five generalizations, of which the first one is: "Rural development program activities must be organized around activities and services that have relatively well-defined technologies or methodologies and objectives. It is important to rural communities that the technologies, methodologies, and services needed to improve rural welfare become simultaneously available but not necessarily administratively integrated (emphases added) (Hayami and Ruttan 1985: 413).

World Bank Rural Development Sector Strategy Paper

The recent World Bank Rural Development Sector Strategy Paper (World Bank 1997: 27) recognizes the difficulty in overcoming inter-sectoral barriers to achieve rural development: "The planning, execution, and financing of rural programs and services must be highly decentralized and participatory. To be truly sustainable, projects and programs must match the preferences and resources of the people who will benefit. Local people have the knowledge and skills to manage the complexities associated with heterogeneity. Community-based approaches ensure that the projects match local desires and use local skills and knowledge. Many Bank-assisted projects and programs failed in the past because project management was excessively centralized" (italics in original).

Responsibility of Donors

Donors should recognize that development programs follow an evolutionary path; those programs that are flexible and consistent with evolutionary trends survive. It is the responsibility of the Bank and the donors to help the countries put in place programs that are consistent with these trends and nudge the programs along the evolutionary path. This implies that they:

- Support the development of a strategy in each sub-sector in agriculture and support national programs in these sub-sectors, ensuring the necessary linkage with technology;
- Avoid piecemeal schemes unrelated to the mainstream institutions in each sub-sector;
- Support the strengthening of systems of education and training in Africa; and
- Encourage the growth of evolutionary trends in the delivery services, as in the case of extension and research.
ANNEX 1. THE STATUS OF AGRICULTURAL EXTENSION IN SENEGAL AND NIGER
WHEN THE BANK SUPPORTED EXTENSION REFORMS WERE INTRODUCED

When the Bank-supported extension reforms were introduced in SSA, many countries in the region had several different kinds of extension providers, each following a different management and methodological option. This annex details the examples of Senegal and Niger.

SENEGAL

In Senegal, agricultural extension services were previously provided by several ministries and parastatals. The manner in which these providers of extension were brought under the umbrella of the extension department is described here.

Institutional Structure

Previous Status

The two principal ministries which provided extension services were the Ministry of Rural Development (MDR) and the Ministry of Social Development (MDS) which operated field activities through their departments of agriculture and livestock, respectively. Other providers of agricultural extension services were the numerous parastatal executing agencies: SAED - irrigated farming production in the Senegal and Falémée River valleys; SODEFIDEX - cotton production in eastern Senegal; SODEVA - operations in the Groundnut Basin; SOMIVAC - regional development planning in the southern part of Senegal; SODAGRI - irrigation development in the south-eastern part of Senegal.

Present Status

Since the Bank-supported National Extension Services Project (PNVA) began in 1990, the institutional structure for extension delivery has been placed under one umbrella department, namely, the Extension Management Unit which spans both the Ministries of Rural Development and Livestock. All other ministries which had previously fielded separate extension services now operate under the extension services managed by the Extension Management Unit. Although some parastatals have been privatized, the extension activities of those that did not privatize (SAED, SODEVA, SODEFIDEX and DERBAC) also work under the same Extension Management Unit providing a unified government extension service.
Organization

Previous Status

The MDR's Department of Agriculture (DA) and the MRA's Department of Livestock (DE) both ran separate extension operations in the field. The DA and DE were represented in each province by two provincial inspectors whose administrative area, the inspectorate, was further sub-divided into sectors on the district or departement level. Field staff were located at the department or village level. Each of the parastatals operated its own extension service on the specific crop or crops it was charged to oversee in their Lettres de Mission from the government.

Present Status

Organizationally, the present situation is almost the same as the previous one except that extension is now unified. The PNVA Extension Management Unit has also incorporated the Institut Senegalais de la Recherche Agronomique (National Research Institute of Senegal) as part of its overall management of the extension service, thereby building a direct link to the research institutions involved in agricultural and livestock research.

Management

Previous Status

The management of the government and parastatal extension services shared common weaknesses: no regular program of field visits (often due to a lack of funding), inadequate supervision by field managers, lack of regular training schedules for field staff and poor linkages with regional research centers.

Present Status

The PNVA supports the T&V management system. The goals of regular training and visit cycles for the field staff of all the ministries as well as the constant farmer feedback for extension and research activities have produced successful partnerships with many stakeholders in Senegal, who have switched over to the T&V management system.

Methodology

Previous Status

The general methodological approach used by the agricultural extension service in Senegal was an input and credit service which focused primarily on single cash crops such as groundnuts and cotton. Although the extension services of the crop parastatals provided farmers with highly-trained field staff and timely input access, each of the five parastatals covered only 10-20 percent of the total farming population in their respective
regions. Each parastatal acted as a separate entity, fielding its own extension staff and not coordinating activities in the field with the others.

**Present Status**

FEWs participate in regular training sessions, establish contact with farmers’ groups and use demonstration plots to communicate new technologies to their contact farmers. Farmer input in determining the research agendas of the regional and national research institutes as well as farmer feedback on the relevance of extension messages occurs regularly due to the clear lines of communication established by the PNVA.

**Niger**

**Previous Status**

Up to 1985, The Ministry of Rural Development (MDR) was responsible for agricultural and livestock extension, as well as production, research and training activities. The MDR had three operational departments that were involved in extension services: Direction des Services de l’Agriculture, Direction de l’Elevage et des Industries Animales and Direction du Génie Rural.

Niger was divided into seven départements which in turn were sub-divided into thirty-five arrondissements. A district is in turn split into several cantons comprising several villages. In 1985, the former Direction des Services de l’Agriculture and Direction de l’Elevage et des Industries Animales became two separate ministries, Ministère de l’Agriculture (MINAG) and Ministère des Ressources Animales (MRA). At the national level, extension services were under the responsibility of the Directorate of Agricultural Production (DOA) and the Directorate of Livestock (DOE) of the MINAG and the MRA, respectively. Each of the directorates was represented at the regional and district levels. In September 1987, the two ministries were reorganized again to become the Ministry of Agriculture and Environment and the Ministry of Livestock and Water Resources.

Although each department and district was represented by a departmental director and district chief, extension activities were minimal in the field. In fact, aside from externally-financed development projects, extension field staff did not exist or had limited activity and efficiency. Extension services in Niger were not fully operational because of managerial shortcomings.

First, extension activities were limited to input distribution and monitoring agricultural activities, harvests and infestations. Advice to farmers focused on a few irrigated crops such as rice, groundnuts and cowpea. Also, visits by extension agents were rare and irregular, with practically no follow-up. This situation is explained by the lack of funding for transport, fuel and general operational costs, as well as inadequate training and education field staff. Although extension agents often received training at
school, they received little practical experience in the field, and were therefore not aware of the constraints faced by producers.

Second, the services delivered to the farmers were not always relevant or pertinent to their needs and the resources available to them. For instance, the only activity concerning extension of new technologies was limited to a few demonstrations which were often not adapted to farmers’ needs. Extension agents delivered messages determined by a hierarchical organization, and were unable to respond to the farmer’s problems or real needs. In addition, the extension agents were supervising of research trials on farmers’ fields, but had no influence in the planning or evaluation of these trials. Livestock extension was largely limited to activities related to animal health improvement, prevention of epidemics, inspection of meat and meat products and collection of data concerning cattle marketing.

Present status

In 1988, the Bank became involved in extension activities in Niger through the Programme de Renforcement des Services d’Appui à l’Agriculture (PRSAA), which was a pilot project. The PRSAA is part of the ongoing Small Rural Operations Project which also provides support to the government’s ongoing decentralization policy.

During its initial stages, the pilot extension project was limited to three départements, namely Dosso, Tahoua and Tillabéri and focused only on crops. In 1990, livestock extension activities were tested in the district of Doutchi, Filingué and Birni N’Konni cantons within the above-mentioned départements.

Results of the Pilot Project

The impact on production was obvious just after one year. The control plots yielded significantly more than the demonstration plots; the increase varied from 26 percent (groundnuts in Tillabéry region) to 300 percent (sorghum in Tahoua region). In livestock extension, the results were promising with training sessions held regularly, and extension programs providing messages based on a traditional analysis of stockraiser practices.

The overall results include greater responsibility on the part of extension workers and better organization of field agents’ work. Some of the reforms to the extension service involved:

• Efficient time management and rational planning of activities; and
• Regular contact between farmers and extension workers.

The main outcome of this pilot phase is the development of local capabilities resulting from experience exchanges between managers, technical staff and agents.

Organizational Changes Brought About by the PRSAA
In December 1989, another reorganization took place. The two previous ministries, namely the Ministry of Agriculture and Environment and the Ministry of Livestock and Water Resources were merged to become the Ministry of Agriculture and Livestock (MAE). The Directorate of Agriculture (DOA) and the Directorate of Livestock and Animal Industries (DEIA) were constituted under the MAE to deliver extension services to farmers and livestock producers. In addition, the Directorate of Environment under the Ministry of Hydraulics and Environment delivers extension services. As before, each of the directorates has regional directors and district chiefs.

Expansion of the pilot program throughout the country

Encouraged by the pilot project’s favorable results (satisfactory adoption rates and substantial yield increases on test plots), the government decided, in 1992, to expand the PRSAA to progressively cover most of Niger’s agricultural lands. In the initial period of this expansion, the efficiency of extension was hampered by an unclear hierarchy. The regional directors did not report to the central directors of agriculture and of livestock in Niamey. Similarly, the district chiefs were also fairly independent. In addition, field staff were frequently transferred from one district to the other without consulting the directorate in Niamey and the farmers concerned. The problem centered around the parallel hierarchical structures of the civil service officers and political officers in each département. This situation occurred mainly because each department was governed by a préfecture. Therefore, any decision taken by the central directors of agriculture and livestock had first to be approved by the préfecture. The relationship between the departmental and central directors was more technical than administrative. The same is the situation within the district which is governed by a sous-prefêt.

The organizational structure of extension services in Niger remains the same as at the beginning of the PRSAA but its managerial component has changed. To improve the efficiency of extension services, human and physical resources were provided to the farmer at the regional and national levels. Also, staff at all levels are trained regularly and continuously with a system of fortnightly, monthly and annual training sessions. Finally, the link between extension and research has been strengthened.

First, extension activities have been progressively expanded throughout Niger since 1993. The T&V extension system was introduced and its coverage gradually expanded; From 1994 to 1995, the number of villages covered by the extension service has increased from 2,443 to 3,324.

Under the T&V extension system, there are two levels of training: one at the level of the SMS who are regularly trained by research; and the second at the level of the FEWs who are regularly trained by the SMS. In Senegal, these are called formations de base and formations de quinzaine. In 1995, there were 53 formation de base and 246 formations de quinzaine. During these training sessions, extension agents raise issues which have been brought to their attention by the farmers regarding their field problems or other needs.
ANNEX 2. EXTENSION TYPOLOGIES

The classification of the different characteristics of an agricultural extension system into: institutional, organizational, managerial, and methodological is shown in the following table. Each characteristic is assigned a letter A, B, C, or D. Within each characteristic, there are different options (1, 2 . . . n) and, based upon these options, various extension typologies can be formed which represent the different types of extension systems. These options are not exhaustive. In Ghana, which has multiple providers of extension, the typology for the national extension program will be: A1, A3, A5, B1, B4, B6-7, B9, C1-6, C9, D1-3, D5, D10. In Uganda, the options change to: A1-5, B2, B4, B6, B8-9, C1-9, D1-3, D6-7, D9-10. The main areas of emphasis of the T&V system of extension have been in the managerial and methodological aspects which have been put in bold in Table A2.1. Different extension systems may share some of the same options.

Table A2.1. Different aspects of agricultural extension, and
the options available within each

<table>
<thead>
<tr>
<th>A. Institutional</th>
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<tr>
<td>A1. Government</td>
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<td>A2. Parastatal</td>
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<tr>
<td>A3. Private sector (e.g. input suppliers)</td>
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<td>A4. NGOs; church groups</td>
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<td>A5. Cooperatives and farmer organizations</td>
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<th>B. Organizational</th>
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<tr>
<td>B1. Single line of command from the national Head of Extension to the Frontline Extension Worker (FEW)</td>
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<td>B2. Organization which is decentralized upto to the regional or district levels</td>
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<td>B3. Location of subject matter specialists (SMS) within Department of Extension</td>
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<tr>
<td>B4. Location of SMSs in the respective subject matter departments</td>
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<td>B5. Separate ministries of agriculture and livestock have their own extension departments</td>
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<td>B6. The extension department spans several related ministries to provide service for agriculture, livestock, fisheries, etc. (unified extension)</td>
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<td>B7. Number of extension agents based on the number of farm families served</td>
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<td>B8. Number of extension agents based on the area served</td>
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<td>B9. Many administrative levels within the extension organization</td>
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<td>B10. Few administrative levels within the extension organization</td>
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<td>B11. Extension services covering limited geographic areas rather than the whole country</td>
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<th>C. Managerial</th>
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<tr>
<td>C1. Regularity of visits and training</td>
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<td>C2. Participation of SMSs in training frontline extension staff</td>
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<tr>
<td>C3. Regular SMS workshops with research</td>
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</table>
C4. Regular supervision.
C5. Ad-hoc training and workshops on specific subjects
C6. Extension only - non-extension functions (e.g. credit recovery and inputs) are handled by specialized institutions mostly in the private or cooperative sector, or by farmer organizations.
C7. Institutional training of farmers in Farmers’ Training Centers
C8. Unstructured visits to farmers’ fields; field days
C9. Participation of the various providers of extension in each other’s training programs

D. Methodological

D1. Face-to-face extension
D2. Unified extension for all crops and livestock, fisheries etc. that is, the entire farming system
D3. Involvement of farmers with on-farm research and field trials
D4. Use of mass media
D5. Single crop extension, generally for export and high value crops
D6. Demonstration plots
D7. Field days
D8. Cost recovery
D9. Topics covered by extension - technology, markets, prices, credit and input availability etc.
D10. Participative diagnostic analysis of farming systems
ANNEX 3. ILLUSTRATIONS OF VARIOUS CHARACTERISTICS OF EXTENSION

ON-SITE TRAINING OF SMSs IN GUINEA

Interactive on-site training for subject matter specialists (SMS) developed by the SNPRV in Guinea provides an example of what is possible if the extension methodology contains the ‘face-to-face’ element. Pre-service university agricultural training programs in Guinea focus on theoretical issues which are often far removed from the actual practice of extension in the country and do not prepare future SMSs and extension workers to meet the challenges which they will face in the field. In-service training, which is expected to make up for the deficiencies in pre-service training, was also often inadequate and did not provide for the regular and systematic training of the SMSs and field extension workers on topics relevant to farmers. In addition, the training sessions for the SMSs were often held in the regional city which did not allow for hands-on training on farmers’ fields. The quality of training, relevance of training topics, and retention of the training by field SMSs were all causing concern to the SNPRV.

In response to these concerns, the SNPRV management developed the interactive on-site training program. The national staff decided that an international vegetable production specialist would hold training sessions in the field with the SMSs. In addition, a national SMS in vegetable production was assigned to assist the international specialist. The national SMS was in charge of setting the training schedule and writing a training manual of the training program. Some other innovations introduced in the SMS training were as follows:

- Instead of training over forty SMS in vegetable production over a period of three to four days, only thirteen SMSs undergo an intensive two-week training program.
- Out of the thirteen SMSs trained, not all move on to become trainers for the other SMSs. Based upon their performance during the training program, only six are chosen to continue as training specialists in vegetable production.
- Training does not take place in a classroom but on a farmer’s vegetable field. In the field, the specialist can combine a hands-on training approach with theoretical issues in vegetable production for a small group of students. This teaching method has proved to be a highly effective and retention of training material by the SMSs is very high.
- Due to the length of the training program, students learn about the whole spectrum of issues associated with vegetable production such as irrigation methods, soil and plant protection, and post-harvest technologies.

Once the training program for the SMS was completed, the six new training specialists in vegetable production formed a strong cadre in the national service, which established training programs for the other SMSs in the country. This method was found to be cost-effective since expenses such as per diems and traveling costs were restricted to the thirteen SMSs initially selected as trainers. Also, the outlay for an international
vegetable specialist was a one-time cost since the intensity of training for the thirteen SMSs allowed the final cadre of six national trainers to continue without the continual support of the specialist.

IMPLEMENTING ON-FARM RAPID DIAGNOSTICS IN GUINEA

Within an extension system based on T&V management principles, there is ample room for flexibility in terms of methodological content. The pilot project for on-farm rapid diagnostics in Guinea reflects a distinctive farming systems approach. The pilot project was developed to improve the ability of the SNPRV to address recurring problems from the field (e.g. non-adoption of specific messages, labor and input constraints, etc.). This pilot project is a collaborative effort by the Agricultural Research Institute of Guinea and the SNPRV to strengthen institutional linkages among researchers, extensionists and farmers.

The on-farm rapid diagnosis is based upon a systemic ‘whole farm’ approach in which all farm activities are studied and their relationships analyzed. This includes farming practices and techniques as well as socio-economic constraints and intra-household labor and resource issues. The main objective of the on-farm rapid diagnosis pilot project is to train the national researchers and extensionists in participatory diagnostic approaches. This helps the researchers and extensionists to identify the most important crop and livestock systems of production in the area and to assess the types of constraints which face a majority of the farmers in the region. From a series of farm visits, appropriate solutions to these constraints are developed with the input of farmers. By adopting such an approach, more relevant and useful technological packages have been developed for the farmers. A team comprising one member of the regional research team, two SMSs, and two research specialists in areas such as agriculture, plant protection, livestock and post-harvest technologies is constituted to study the socio-economic constraints of farm-family systems and the local crop and livestock practices and their rationale. This team has been very successful in obtaining the active participation of the farm family in the identification of constraints.

THE FUNCTIONING OF RESEARCH-EXTENSION LINKAGE IN GHANA

Ghana provides a good example of the importance of researchers visiting farmers’ fields along with extension staff. At a meeting of the Research-Extension Liaison Committee (RELC) for the Upper East and West regions, participating farmers and field extension workers identified the need to address the chronic food shortages which occur during the months of November and December when most families are waiting to harvest their long-term millet crop. Researchers worked with SMSs to conduct field research on a variety of short-duration millet which was already available at the regional research center. On-station trials confirmed the adaptability of this variety to the agro-ecological conditions found throughout the region. Planted in early May and harvested in July, this variety of millet had a maturity duration of sixty-five to seventy days. Harvesting of this
crop would provide farmers with the necessary food supplies to last until the major millet harvest in December.

An important follow-up to the on-station trials were the on-farm adaptive trials which were conducted by the SMSs and the researchers from the region. During these field trials, farmers raised several issues regarding the adaptability of this new variety of millet. First, researchers responded to the farmers' concerns about the palatability of the new variety by growing several strains of the Manganara seed and allowing farmers to choose the variety with the best taste to them. Second, farmers were demanding advice on how to produce the necessary amount of organic fertilizer for the new variety; SMSs and FEW were able to provide these farmers with start-up credit and advice on how to manage livestock for organic fertilizer production through active collaboration with IFAD. By taking into account farmers' concerns regarding the palatability of the grain and its higher fertilizer requirements, researchers and SMSs adapted the new variety to fit the needs of the farmers. The success of this new variety is due to the collective efforts of farmers, researchers and extensionists. Each group contributed crucial elements towards a successful formula for technology generation and adoption.

**Extension in the Democratic Republic of Congo**

The example of the Democratic Republic of Congo (DRC), formerly called Zaire, illustrates how a government-run and managed extension system can be enabled to be sustainable, which is the first step towards further improvements in all the aspects of extension, and how a public sector extension system can collaborate with other providers. It also shows that sustainability is the direct result of the service proving itself useful to the clients.

The national agricultural extension service (SNVA) in DRC employs some 2,428 public and private sector staff at all levels and is represented in all the eleven regions of the country through sixteen coordination offices. The SNVA collaborates in extension, research and training with some 130 institutions, including regional inspectorates for agriculture and rural development, private companies, projects and services and NGOs. Work and responsibilities on the ground are organized in such a way as to ensure that there is minimum overlap and duplication. Extension advice is provided to some 350,000 farmers (of whom 45 percent are women), belonging to more than 17,000 contact groups. Of these contact groups, over 1,100 are farmer organizations with specialized activities. For example, 200 of the 840 agricultural or livestock associations are specialized in seed production. One hundred and seventy women’s groups are specialized in mainly post-harvest activities. More than fifty technical messages, in support of twenty-three major crop or livestock activities have been introduced to all the eleven regions over the past year. In addition to technical recommendations, these messages have included improved agro-forestry techniques, use of green manure, seed production, introduction of improved livestock, improved artisan forges and post-harvest processing. Fields trials have fallen from a peak total of 977 and 796 in 1992 and 1993 respectively to 184 in 1995, largely due to the collapse of the national agricultural research system. Bank support was withdrawn in 1992 to this program. Training has increased annually from 5,160 person
days in 1990 to 43,011 in 1995, with 80 percent of the training provided to frontline staff and SMSs.

Incremental production from the adoption of technical recommendations in livestock and crop husbandry is estimated at the foodgram equivalent of 200,000 tons per year. Annual operating costs of the service is estimated at US$3.5 per family. Since 1989, the UNDP has financed US$6.8 million of program costs and the government is estimated to have contributed the equivalent of US$5.9 million, mainly in counterpart funds and local salaries.

Farmer confidence in the service has been restored over the past two years (1994-95). The SNVA is now planning to establish a service which will be more dynamic and self-sustainable and is pursuing a number of options including the provision of extension services by farmers associations, specialization of the activities of farmers groups and associations and the creation of self-financing agricultural extension companies. Inadequate public funding levels over the past years has driven this public service, like health and education in DRC, to look for private domestically-funded solutions.

Like many national extension systems, the SNVA has had to address the problem of how to adapt the technical recommendations to the priority needs of farmers. The service has introduced a system of diagnosis of field problems based on a methodology developed by an FAO consultant. DRC would certainly benefit from the experience of other African countries in involving farmers in technology generation.
ANNEX 4. EXAMPLES OF FARMER INPUT IN TECHNOLOGY GENERATION

SUDAN

Due to regular interaction in the farmers, extension has succeeded in bringing research closer to the field. Researchers have come to realize that they gain by listening to farmers, and by making their research more responsive to farmers’ needs. Now their relationship is based on dialogue with farmers and field agents. Adoption rates for new varieties and new practices have increased substantially since research scientists introduced their new approach to field trials and field demonstrations in the Rahad region of the Sudan.

The strategy for on-farm demonstrations and field trials has changed. Demonstration plots are evenly distributed geographically, to place them within reach of targeted farmer groups. For example, four farmers with dispersed plots were selected in each block to demonstrate the use of correct application of the full package for wheat production -- seed rate, fertilizer dose, pest and weed control, and irrigation. Researchers are now establishing field experiments on the farmers’ lands, instead of at the research stations.

Increased Adoption Rates

Sudan has reported that the association of farmers with technology generation has resulted in larger adoption rates as the following examples show.

- Although eleven new varieties of sorghum had been developed during the 1970s and 1980s, none had been introduced to farmers until 1987. The emphasis on farmers’ problems in the agendas of research institutes has led to the introduction of these varieties to farmer with compatible cultural practices. Nearly 40 percent of the area under sorghum is now planted with these high-yielding varieties and sorghum yields have more than doubled. Plans have also been made to introduce new hybrid varieties.

- Over 50 percent of farmers in the region have adopted recommended planting densities for groundnuts, and over 60 percent are now planting within the recommended date. Nearly a third of farmers have adopted ‘green ridging’ techniques.

- Adoption rates for several recommended practices in cotton have shown impressive increases since the start of the extension program. The recommended sowing date has been adopted by more than 90 percent of farmers, thinning by over 70 percent, early picking by 40 percent, and the replacement of long furrow irrigation by short furrow irrigation, by nearly 90 percent.

- Although wheat is a new crop in Rahad, it was introduced with the backing of the extension service, with the result that most farmers have adopted the recommended package of practices. The area under wheat cultivation has quadrupled in three years.

- Several horticultural crops have been introduced to farmers. Sweet potatoes have become quite popular and are now widely grown. Coriander and faba beans are
undergoing trials on contact farmers’ fields to determine their suitability for dissemination.

- Forestry, particularly social forestry and private commercial forestry, has spread under the T & V-based extension program. Nearly 1,800 hectares have been brought under forestry by the Rahad agriculture corporation, over 150 hectares have been planted by farmers on village common lands, and nearly 50 hectares were brought under commercial tree crops by enterprising farmers.
- Artificial insemination has been introduced in livestock production, and farmers have been encouraged to grow improved varieties of leguminous fodder as rotational crops. Larger milk yields are testimony to the success of these initiatives.

**Tanzania**

Grafting is a well-known technique in producing good planting materials in many crops, but the method is not common in cassava.

Mr. Mukibati, a farmer in Mwanza region, successfully grafted *Manihot glaziovii* on *Manihot esculenta* (these are two varieties of cassava). This technique now known as the Mukibati system, and the grafted cassava is known as Mukibati. This technique has proved to be very successful in Indonesia, and the Tanzanian research system is conducting trials of the technique in several villages.

During the 1994/95 growing season, farmers and schoolchildren in the three villages were trained in the selection of planting materials and grafting. Thereafter, trials were carried out in their villages. These trials have shown that Mukibati has the potential of yielding much more (sometimes six to ten times) than normal cassava. All farmers involved in the trials expressed their appreciation of the higher yields, plant canopy vigor, early maturity and tolerance to drought and pests.
ANNEX 5. FIELD COLLABORATION OF THE NATIONAL EXTENSION SYSTEMS WITH OTHER STAKEHOLDERS

Partnerships among NGOs, local organizations and government services arise out of the similar objectives that these organizations share in the field, and the practical advantages in sharing resources among institutions. Examples of such cooperation and collaboration are described below.

BURKINA FASO

The private sector in Burkina Faso has a number of linkage points with the national extension service (CRPA). The input distribution companies provide training and technical literature for extension agents in the use of their products. CRPA agents find the training extremely useful and more detailed than that conducted by SMSs. The private companies also closely monitor the extension contact points of the CRPA, always proposing the inclusion of themes that include the use of their products. They often pay for on-farm demonstrations conducted by CRPA agents, including the per diem of researchers and extension agents involved, and incentive payments to agents who are working with village groups in which the companies are interested.

In addition, some companies such as the recently privatized FLEXFASO, which is involved in producing and exporting fruit and legumes, have their own extension agents who work directly with village-based groups. In this example, as elsewhere, they maintain that they cannot leave farmer contact completely to the unified national extension service, because of the technical nature of the messages they need to pass on to farmers.

GHANA

Transfer of technology is an important component of any cooperation between government agents and donor-funded development agencies. The Larger Green Borer (LGB) invaded Ghana from its neighboring country, Togo. When farmers in the Volta Region of Ghana complained about LGB infestations, FEWs transmitted this information to the relevant technical department to begin the process of technology generation. The ODA had been funding research at the National Resources Institute, U.K. (NRI) when the Department of Agricultural Extension Services (DAES) approached them with the problem. A collaborative research-extension program was developed between DAES and NRI to identify and generate a plan for controlling the effects of LGB.

During the Rapid Rural Appraisal (RRA) phase of the LGB project, FEWs were instrumental in identifying local leaders and farmers to interview concerning the LGB infestation. Also, their understanding of the local customs and farming systems contributed to the design of the technological package developed to combat the LGB infestation. In addition, FEWs were trained by SMSs during the monthly technical
training meetings, in monitoring the spread of the LGB. The SMSs, in turn, had been trained by specialists funded by the ODA.

GUINEA

The Transhumance Project

Agricultural and pastoralist communities coexist within the regions of Moyenne Guinea. In the past, abundant land resources allowed the two groups to coexist in relative peace. Within the past decade, however, population pressure and the scarcity of arable land has forced agricultural communities to settle on more of the land once considered communal pasture land. Recently, conflicts have been reported between these two communities over land-use rights. During the day, pastoralists keep watch over their herds, but at night, cattle often wander into cultivated fields, destroying a large part of a farmers' crops. In response, farmers began to kill any cattle caught wandering on to their lands. Increasing tension between the agriculturists and pastoralists necessitated quick and effective action by the government.

The European Union (EU) and the Service National de la Promotion Rurale et de Vulgarisation (SNPRV) established the Transhumance Project (TRH) in the region of Moyenne Guinea. This project was designed to defuse the growing tension between the farming and pastoralist communities in those regions while providing farmers with new technologies which would improve their farming productivity. Two socio-economic issues had to be addressed to find an effective solution to this problem.

- Due to the lack of formal land ownership, pastoralists were unwilling to invest in any type of structure within which to keep their herds at night.
- Agriculturists did not feel that it was their responsibility to invest in such structures since they did not benefit from the cattle.

The FEWs from the SNPRV teamed up with TRH project staff to introduce a new building technique, the *parcs de nuit*, to the farming community. A *parc de nuit* is a livestock enclosure built from either barbed wire or natural materials such as thorny bushes. At night, cattle can be herded into these enclosures for protection and control.

Using materials provided by the TRH project, FEWs helped interested farmers to build *parc de nuit* enclosures on their land. The SNPRV provided the field staff for the project, while the TRH project provided building materials and the technical expertise to build the structures. The training sessions for the FEW were funded by the TRH staff while FEW staff salaries and operating expenses were covered by the government agency.

Once the demonstration enclosures were established, the results were convincing and spectacular. The cattle manure deposited in the enclosures enriched the land. Once the cattle left, the farmer planted rice on the same plot of land. Farmers reported annual yield increases from 1-1.5 tons per hectare to 5-6 tons per hectare. FEWs also trained farmers in collecting the manure to use in rice nurseries and vegetable gardens.
The partnership between the TRH project and the SNPRV was an equal partnership. Its success rested on contributions by different agencies involved in agricultural extension and research. Suggestions and improvements were made during the project by various field staff from the SNPRV (extension services) as well as researchers from IRAG (the National Agricultural Research Institute of Guinea). Members from IRAG and the SNPRV (extension services) conducted an analysis of this collaborative project. One recommendation from their analysis suggested using a local thorn bush for fencing material. These enclosures were called *haies vives*. The use of natural materials reduces the capital outlay by the farmer, which increases the accessibility of this project to a broader range of farmers.

Another contribution made by the SNPRV was the introduction of new, high-yielding rice varieties. Without this component, many farmers would not have realized the spectacular yield increases in their rice crops. Had farmers used the organic fertilizer on the local variety of rice, the yield increase would not have been as dramatic and the farmers would not have been prompted to make the enclosures. The TRH project benefited from the knowledge and technical skills of the extension agents while the national staff gained expertise and technical knowledge from the expatriate technical staff. This type of partnership improves the technical capacity of the national staff. It also supports practices which contribute to sustainable programs since the knowledge is transferred to national staff and does not leave when the project has been completed.

**The Sel Solaire Project**

In Baisse Guinea, the *Sel Solaire* project, funded by the French NGO, is a collaborative effort of the French with staff from the national extension service. Traditional salt harvesting involves boiling sea water in large containers over an open fire. The salt is sold on the local market, providing additional income to families during the dry season when income from agricultural production is low. To harvest enough salt, families collected firewood, depleting the wood supply in the region at an unsustainable rate. A more environmentally sound solution was needed.

Extension staff in the coastal areas were trained by technical experts hired by the NGO in a new salt reclamation process. The technology is powered by solar energy, thus eliminating the need for fuelwood. First, a large, shallow cement-like pool is constructed by the sea. The pool floor is slanted at an approximately 15° angle and a trough is impressed on the bottom of the pool so that it doubles on itself until it reaches the bottom corner of the pool. Then, as sea water is slowly poured into the upper corner of the trough, it winds its way down, slowly evaporating under the sun until there is a supersaturated solution at the bottom of the trough. Finally, a woven basket is lowered into the solution and salt is harvested. Using this technology, families still benefit from the additional income from the sale of salt reclaimed by this process, but do not have to expend as much labor and resources in collecting wood.
Agreements of the SNPRV with Various Development Projects

Many small-scale development projects are funded by donors and implemented by NGOs. These projects are often multisectoral, containing elements other than agricultural extension. To have a common approach in agricultural extension, the SNPRV has concluded fifteen Memoranda of Understanding with NGOs managing the various development projects throughout the country. These agreements allow the national extension service to benefit from the technical expertise and knowledge of various project staff while reducing the duplication of extension messages to farmers. The collaborative efforts among these various groups and the SNPRV illustrate how a plurality of institutions providing extension services can complement and reinforce each other.

Project DERIK

Before any national extension service was in place, GTZ was funding project DERIK in the Kissidougou district. Kissidougou was also one of the first districts covered by the SNPRV when it started. Through collaborative efforts and agreements between the SNPRV and project organizers, the extension staff from the project were transferred as FEWs to form the basis of the new national extension service in the Kissidougou district.

DERIK extension staff were highly qualified in forestry and environmental issues. To provide a competent unified extension service, the staff needed training in other basic extension techniques for crops such as rice, maize, and manioc. SMSs of the SNPRV trained DERIK staff to provide extension messages for all major crops in the region. GTZ financed the training of the new field extension staff in Kissidougou and designed a finance plan which provided the annual salaries of the new staff until other means of funding could be identified.

AFVP Rice Project

Establishing a unified extension system is the focus of the national extension service. To provide messages on specialized cash crops (such as coffee) for which the SNPRV does not have competent staff, it entered into collaborative arrangements with several regional government agencies and a French NGO, the French Volunteer Association for Progress (AFVP). An official Memorandum of Understanding (MOU) among the SNPRV, the AFVP and the other regional agencies outlined the specific objectives, means of intervention, stakeholders and funding agreed to before the pilot operations began. The components of the MOU operationalize the general objectives of increasing rice production in the region through assigning responsibilities and setting a rigorous agenda for all parties to follow.

The national management and AFVP project leaders made modifications regarding the FEW training schedules. The regular T&V schedule of the SNPRV was considerably modified to accommodate the rice production calendar. In some cases, fortnightly training schedules were compressed, i.e. held two or three times a week when the topics required continuing demonstrations and reinforcement by the SMSs. For example, since a good seedling nursery is crucial to producing healthy rice plants, FEWs, technical
specialists and farmers would meet up to three times a week to review nursery planting techniques and transplanting timetables. After the transplanting of seedlings, meetings were held twice a week to review irrigation, fertilization and pesticide management. This compressed schedule was maintained for a period of two months. Once the rice was harvested, the FEWs returned to their earlier schedule of visits to the farmers. The key to the success of the Rice Project was in the flexibility and cooperation of all parties involved.

**Project Relance (RC’2)**

RC’2 has been providing technical support and extension to coffee growers in a total area of 8,000 hectares in the N’zérékoré and Macenta regions. With the new collaborative effort, coffee growers in these regions as well as coffee growers in the Lola, Yomou and Gueckédou districts now receive service from the SNPRV. The objective of the collaborative effort was to expand the geographical scope of coverage while maintaining its sustainability and quality of service. The MOU for this project operationalizes these objectives by assigning clear lines of responsibility and delineating the scope of the project based on the capacity of each institutional partner (i.e. the SNPRV, RC’2 and the FNPCG).

The MOU outlines specific responsibilities and objectives for each partner. For example, the farmers’ organization is responsible for providing access to agricultural credit, inputs, seedlings and marketing support. The SNPRV is responsible for providing the technical knowledge associated with new varieties and for strengthening the linkages with the national research institute researchers. RC’2 is responsible for project funding and providing technical assistance when necessary.

**TANZANIA**

Within the Ministry of Agriculture, coordination meetings take place which include all heads of departments and the Permanent Secretary of Agriculture. The objective of these meetings is to facilitate information exchange and to encourage Permanent Secretaries and department heads to coordinate field activities. A formal inter-ministerial forum brings together the Permanent Secretaries from all ministries and is chaired by the Chief Secretary. The purpose of these meetings is to exchange agendas and to promote cooperation in the field activities of the various ministries. In the field, the linkages are less formal and extension field staff regularly collaborate with the staff from other organizations such as the Ministry of Natural Resources, NGOs, and donor projects.

Most input and marketing activities have been transferred from parastatals to the private sector following the reforms undertaken by the government. The extension service does not physically provide any inputs or credits to farmers. Instead, the extension field staff act as conduits to transfer information about market prices, input demand and supply availability among farmers and relevant private sectors. The agricultural sector’s responsiveness to world market fluctuations is strengthened by the extension service’s ability to collect production information and to present new technologies to farmers.
Linkages of the public sector extension systems and those supported by the bilateral donors, NGOs and the private sector are reinforced in two ways.

- The Ministry of Agriculture has established the National Extension Policy Guidelines which clearly outlines the operational details for any development agency which has an agricultural extension component.
- Periodic meetings are held with donors, NGOs and the private sector to exchange information on various projects in the field and to forge collaborative arrangements between these organizations and the national extension service.

The effective use of available resources in the field is ensured by including other NGOs and donor-supported agricultural development projects in the decision-making process. There are many examples in Tanzania where collaboration between various organizations and the national extension service has produced effective and sustainable solutions for smallholders.

**World Vision in the Dodoma District**

There are many active local and international NGOs in the Dodoma District. Each one cooperates with the extension service in various ways to maximize service to the farmers in the region. World Vision, for example, supplies sorghum seed, trains farmers on oxen-powered cultivation techniques and sells oxen equipment at reduced prices. Initially, in the Dodoma District, animal husbandry was not a widely accepted practice. World Vision volunteers worked with individual farmers to demonstrate the advantages of having oxen-drawn plows and weeders. The volunteers helped twenty interested farmers form a contact group. Then the local Village Extension Officer (VEO) requested that a Regional SMS in animal traction and husbandry come to the village to train this group.

World Vision paid for the food and lodging costs of the SMS, as well as the costs for a demonstration set of oxen and plows. Farmer extensionists were trained in planting, sowing and weeding with ox-drawn tools, and also in the care and feeding of the animals. Since 1989 over 320 farmers have been trained by this initial group of 20 farmers. The initial group of twenty farmers serve as auxiliary FEWs in animal traction and husbandry in the area, but are not officially connected with the extension service. While World Vision initially provided plows and weeders at 50 percent of the costs, now there is enough demand to pass 100 percent of the costs directly to the farmers. The next stage is to identify private producers and marketers of ox-drawn implements.

**Informal maize market**

INADES (*Internationale Africain du Développement Economique et Sociale*), an international NGO based in Abdijan, specializes in developing farmer training programs and forming farmer organizations. INADES staff encourage farmers to form groups not only based on agricultural interests but on any collective interest. INADES collaborates with the extension service to train FEWs on group formation techniques and the participative diagnosis of farmers’ constraints. INADES is committed to the idea of training, not simply as a transfer of knowledge and skills, but as a communication process.
that focuses on innovation and the exchange of information among different actors. The overall aim is to help farmers analyze their situation and build on it in order to meet their challenges.

MVIWATA is a unique initiative, started by farmers to help organize and expand the network of farmers’ groups. During a workshop held at the Sokoine University of Agriculture, farmers’ representatives decided to institutionalize the network of information exchange among farmers, farmers’ groups, research and extension. They agreed on a constitution, elected leaders and chose the name of their network - MVIWATA. Communication is encouraged using various media: written words, pictures, sound, drama, discussions, dance, songs and music. MVIWATA organizes workshops on themes selected by the members, where farmers, traders and government policymakers discuss issues important to farmers. One recent workshop focused on the changing role of the smallholder farmer in a free-enterprise economy. Another workshop discussed marketing issues.

MVIWATA, INADES and the regional extension service came together to motivate local farmers to organize an informal maize market near the main highway running from Dar-es-Salaam through Morogoro. Local maize farmers, through the farmers’ group network maintained by MVIWATA, organized a roadside maize market which they entirely control. Instead of waiting for traders to come to them individually, which was especially difficult in the rainy season, the traders could more easily get to them as a group. Trucks from Dar-es-Salaam come to this market to purchase grain for transport back to the main markets.

INADES started a training program in marketing based on the innovative marketing and organizational techniques of this maize market. INADES organizes field visits to this market. Participants study how it began, and collect information on market activities, its organization, and the problems it has faced. INADES has also made a video on this market, which is available to the mass media department of the extension service. Regional extension staff have also used the marketing principles of this market to encourage farmers in different regions to try this innovative approach.

Another collaborative effort between INADES and the extension service occurred in Morogoro and Koka, where the extension service partnered with INADES to contact farmer groups to demonstrate new seed varieties. By partnering with this NGO, FEWs can use the existing groups formed by INADES to deliver extension messages. Coordination of extension field activities with INADES requires direct lines of communication to the regional and zonal extension officers. According to INADES, the strengths of organizations like INADES are their innovativeness and creativity in the field. In addition, communication between organizations such as INADES and the government extension department are better at the regional than at the national level.
Collaboration with Sasakawa Global 2000

When SG2000 and the national extension service partner in the field, the results are dramatic. SG2000 supplies the resources and expertise to address farmers’ problems which the national extension service cannot yet provide. The national extension service brings the trained cadres of extension staff necessary to disseminating improved messages to a wider range of the farming population. Over a period of seven years, the SG2000 agricultural extension training program in Tanzania has reached over 3,200 small scale farmers in about 453 villages in 7 regions. The main vehicle of contact is the management training plot. Field extension staff from the Ministry instruct farmers in improved agronomic practices to optimize production within the farmer’s resources. According to SG2000, over 40,000 demonstration plots have been established in areas which cover approximately 80 percent of the country’s food production. Since collaboration between SG2000 and the national extension service began in July, 1995, the impact of SG2000 activities has greatly expanded in scope.

UGANDA

The National Agricultural Extension Project (NAEP) is strengthening coordination in the field among various donor-assisted projects and the national extension service by standardizing some of the procedural aspects of field work. For example, regional development projects such as the Northern Uganda Reconstruction Program and the Integrated Rural Development Project supported by the Danish Aid Agency, DANIDA, and the Cotton Sub-Sector Development Project supported by the World Bank, follow a common extension management system based on T&V. These donor-assisted projects utilize national extension staff for field-work and provide financial and logistical support for specific activities.

NAEP also piloted several initiatives involving major stakeholders in the field such as the National Agricultural Research Organization (NARO); Makerere University; the Management Training and Advisory Center; CARE-Uganda, Ltd.; the Uganda National Farmers Association; DANIDA, USAID and other bilateral donors; ActionAid; World Vision; AT-Uganda and SG2000.

NAEP institutionalized the process of involving stakeholders in the planning and implementation process by:

- Including them in pre-seasonal planning workshops;
- Inviting field staff from various donor-funded development projects to attend monthly training sessions and technical workshops;
- Selecting a contact person within the extension service to attend training programs initiated by other stakeholders;
- Intensifying formal and informal consultations between the various donor organizations;
- Encouraging joint field visits with staff from other ministries and organizations;
- Harmonizing and rationalizing resource allocation and use;
- Exploring options in cost-sharing some of the program costs with relevant stakeholders; and
- Initiating and planning pilot interventions together, sharing the results and applying successful strategies on a wider scale.

The national extension service's experiences with different development agencies and NGOs form the basis for institutional change. For example, DANIDA trained the FEWs in Rakai District on issues such as agroforestry, cooperatives and marketing techniques even though their project boundaries cover only a small portion of the total district. The national extension service in the Rakai District now offers a basket of messages which have been expanded to include these new techniques to farmers who fall outside of the DANIDA project boundaries. In another example, the national extension service has benefited from its collaboration with CARE-Uganda. CARE-Uganda has raised awareness of the importance of environmentally sustainable agronomic practices and has provided financial and technical support in training national SMSs. As a result, soil erosion and agroforestry are now standard training themes included in all annual training programs for national extension staff.
ANNEX 6. WORKSHOPS ON AGRICULTURAL EXTENSION ORGANIZED BY THE WORLD BANK AND OTHER DONOR ORGANIZATIONS

WORKSHOPS ON AGRICULTURAL SERVICES ORGANIZED BY THE WORLD BANK

Lilongwe Workshop - February 1991

Small-scale extension initiatives in Africa have been supported by the World Bank since the 1970s when it started financing integrated rural development projects serving agriculture. Following the shift in its emphasis from integrated rural development projects to the development of national institutions, the Bank’s support to reforms to national extension systems in Africa began in 1981 in Kenya. Since then, Bank-supported national extension programs have been started in much of SSA. Following extension reforms, reforms to the research management systems have also been introduced through Bank assisted national agricultural research programs in many SSA countries. A major thrust of these is the development of national agricultural research systems with strong linkages to extension. The Bank’s decision to go beyond extension and research and pay attention to management improvements in other agricultural services, such as seeds, credit, marketing etc. resulted in the World Bank’s Agricultural Services Initiative (ASI) in Africa in 1987.

The Bank has been holding extension workshops which helped bring Bank staff and national staff together for an exchange of experiences and to discuss specific issues. The initial workshops were on a regional basis and were held at Ibadan, Nigeria (January 1989), Bouake, Côte D’Ivoire (October 1990) and Kisumu, Kenya (December 1990). These workshops, particularly the last two, focused on specific topics such as training and research-extension linkages. They provided very useful fora for the participants to exchange ideas regarding the implementation of extension reforms.

These were followed by a workshop exclusively for Bank staff working in all SSA countries, held in Lilongwe, Malawi, in February 1991. This workshop was the first to focus on issues relating to extension and research and their role in facilitating the achievement of the agricultural growth targets of the Long-Term Perspective Study (World Bank 1989). The main topics discussed at this workshop were: research and extension management, training, and other issues to be addressed by the research and extension systems, such as orienting them to suit the specific needs of the socially and economically disadvantaged groups (e.g. rural women). The Lilongwe workshop was planned as a preparation for workshops proposed to be held two or three years later, bringing together representatives of the countries implementing extension programs. The proceedings of the Lilongwe workshop have been published (Venkatesan and Schwartz 1992).
Workshops at Accra and Abidjan - January 1993

As decided at the Lilongwe workshop, the participants at the next workshop included the senior extension and research staff members from African countries. It was held at Accra and Abidjan in January 1993. The Accra workshop was attended by twenty-seven staff from ten Anglophone countries; and the Abidjan workshop by forty-one from sixteen Francophone countries. A number of Bank staff, from headquarters as well as from the field also participated in the workshop. International organizations such as the International Service for National Agricultural Research (ISNAR) and the Special Program for African Agricultural Research (SPAAR) sent their representatives. The workshops also had the benefit of the participation of resource persons, who functioned as discussants in the plenary sessions, participated in the working group discussions, and brought an ‘outsider’s’ perspective to the proceedings.

Developments Between 1993 and 1995

Between 1993 and 1995, there were some important developments on the extension scene in SSA. First, the number of countries with extension programs supported by the Bank increased. Second, the results of an evaluation study of the impact of extension programs in Kenya and Burkina Faso, undertaken under the guidance of Professor R. Evenson of Yale University, became available (Bindlish and Evenson 1993a; Bindlish, Evenson and Gbetbouo, 1993b). These showed the excellent impact of extension on production, and also contained valuable operational lessons. Third, as countries moved into the second phase of national extension programs, many new challenges had to be faced. Management of the environment and support services for women farmers needed greater focus. These vastly increased the responsibilities and complexities of extension as it became increasingly interdisciplinary.

Entebbe Initiative

An important development which took place prior to the Accra Workshop of July 1995 was the ‘Entebbe Initiative’. A meeting of the World Bank’s Agricultural Division Chiefs of the region took place in Entebbe from January 31, 1994 through February 4, 1994. One of the important decisions at Entebbe was that the Bank should focus on supporting national programs in a few selected areas, of which research and extension are critical. The decisions taken at Entebbe provided the guiding principles to restructure the Africa Region’s agricultural program to focus on supporting a few key national programs and to emphasize results on the ground.

Accra Workshop - July 1995

The next workshop in the series was organized at Accra in July 1995. While some of the ‘perennials’ such as sustainability and recurrent cost funding were discussed at the workshop, the latter went far beyond its predecessors as regards:

- The inclusion of natural resource management and livestock issues in the ASI;
- Research management, particularly deciding research priorities and how farmers can be associated with the latter;
- The organization of national programs for agricultural services in other areas and the manner in which the World Bank can support them;
• The association of the NGOs with the Bank’s support; and
• Seed production and distribution issues.

The 1995 Accra workshop was a significant step towards broadening ASI beyond agricultural extension and research. The broadening of the initiative recognizes that the effectiveness of agricultural extension will be enhanced considerably if extension reforms are accompanied by reforms to the management systems in other services, as well as policy reforms. Thus, the fundamental justification of the ASI is to create an environment that would lead to the provision of efficient services needed by farmers. These services include research and extension, rural infrastructure, credit, improving farmers’ access to inputs such as seed, fertilizers, and means of production such as farm implements.

The main recommendations of the workshop are given in the attachment to this Annex. The two principal areas of consensus were:
• Focus on a few selected national programs; financing of time-slices of these national programs; and
• Streamlining of documentation, eliminating avoidable paper work.

WORKSHOPS ORGANIZED BY DONOR ORGANIZATIONS

From the beginning of the Bank’s involvement with agricultural services in SSA, the necessity was felt for a donor forum to exchange their experiences with agricultural services generally and extension in particular. This section describes the workshops or informal consultations organized by the donors.

Informal Consultations About Extension Among Donors

The first major initiative in this direction came from the SDC which organized a workshop in Neuchatel (Switzerland) in July 1995. Since then, a number of important donors who support agricultural development in SSA have been working together to improve their collaboration regarding their support to agricultural extension systems.

Neuchatel 1995

The Neuchatel consultation contributed positively to improving understanding among donor agencies dealing with extension in SSA in two major ways. First, it gave the donor agencies a forum for articulating their perspectives and policies regarding extension. Second, it provided an opportunity for donors to discuss avenues for collaboration at the field level.

There was agreement among the donors who participated in this Consultation that agricultural extension systems will have to face the following major challenges in the years to come.
• Dealing with the increasing complexity of extension topics.
• Adjusting to rapidly-changing political, economic and social conditions.
• Buffering the effects of reduced public investment for extension services.
  assuring replicability of pilot experiences, achieving large scale impact and enhancing the
  participation of farmers and farmers’ groups and associations in the generation and
  transmission of technology.

* Key decisions taken at Neuchatel

The key decisions taken at Neuchatel are given below. The discussions at the first
meeting in Neuchatel have been brought out (SDC 1995).

Ownership and governance of agricultural extension

• Extension systems (ES) must be looked at in the broader context of agricultural and
  rural services. It is important to consider the political implications of the organization
  of extension systems. ES must foster decentralized decision-making and the
  empowerment of the poor. Given the crucial role of women in African agriculture,
  extension must contribute actively to gender-balanced development.
• It is necessary to ensure country ownership and move away from “donor-driven
  projects and programs”. Country ownership means ownership of the ES by a wide
  range of governmental, private and other non-governmental entities, in the long term
  preferably farmer organizations and private businesses.
• Donors should replace the “project approach” with a “program approach”. Extension
  programs may be developed at the national level and could incorporate a limited set
  of methodological and organizational approaches identified by the stakeholders.

Evaluation of extension systems

• Focus on “results on the ground”. Extension is a means to an end. The outputs of
  extension include technical messages, farm and cooperative management counseling,
  exchange of information about market opportunities and limitation and exchange of
  knowledge about environmental issues. Farmers’ knowledge is considered an
  extremely valuable but yet widely untapped sources of technical and social
  innovation.
• Develop systems that allow the evaluation of extension staff by farmers.

Human resource development

• Promote greater use of African human resources, through progressively eliminating
  the use of expatriate staff which perpetuates dependency on foreign expertise.
• Donors should agree to sustain and enhance existing formal and on-the-job training
  facilities for African professional at all levels of extension systems (field level staff,
  management staff, specialized staff). Particular emphasis needs to be placed on the
  training and recruitment of women and on a combined training of social and technical
  competence.

Donor coordination

• Donor coordination is the responsibility of the countries and may be done within the
  framework of existing and future regional coordination mechanisms.
Donors will maintain a regular dialogue based on the priorities established by the African partners and the experiences drawn from successful extension activities.

**Rome 1996**

The Second Informal Consultation organized by IFAD took place in Rome on October 8-9, 1996. This consultation was broadened to include more donor agencies and representatives of NGOs active in the field in SSA (such as AFRICARE, CARE, SG-2000). The debate was no longer on whether T&V was good or bad, as it was realized that the ongoing debate was becoming sterile. Rather, the focus was on how to develop services that are based on pluralism, which are demand-driven and result-oriented.

**Key decisions taken at Rome**

Overwhelmingly, the participants viewed extension in the broader context of agricultural development in rural areas and linkages with policy considerations and other key sectors such as marketing, rural finance, and rural roads. The participants increasingly recognized that projects/programs must be country-driven (country ownership and commitment is of paramount importance) and that partnership must include all stakeholders. Further, it was widely accepted that the move toward pluralism and a decentralized, participative approach requires greater flexibility and adaptability of systems providing extension services to the farming population.

Many participants felt that new operations should give more attention to:
- Financial sustainability of extension services through cost recovery, cost effectiveness, and accountability;
- The evolution of extension services over a fifteen to twenty year period, defining clearly the role of the public and private sectors and farmers groups or associations;
- Expansion and modernization of information and knowledge systems reflecting changing socio-economic conditions and demand for services;
- Association of extension with other services such as factor and product marketing, rural finance and rural infrastructure; and
- Results in terms of productivity gains, agriculture growth, increase in farm incomes, and poverty reduction.

Discussions on improving farmer-research-extension linkages, training, and capacity building concentrated mainly on problems and what needed to be accomplished. The participants had limited inputs in identifying solutions; in other words, more work was needed to focus on identifying what works at the field level. Throughout the discussions, the participants were unable to identify cases that demonstrate how and why things worked well in certain areas and failed in other areas. There was a need to identify success stories through objective analysis based on results on the ground.

The meeting agreed that the donor agencies and NGOs would continue to collaborate (through beneficiary assessments, training programs, evaluation of ongoing extension programs, community-based extension systems, integration of NRM into extension services) in Mali, Ethiopia, Uganda, Malawi, Guinea, and Madagascar but that better
mechanisms needed to be developed for such collaboration. The participants decided to have the next workshop in Ghana focusing on human resource development in October 1997. This workshop would be organized by the FAO.

Cape Coast 1997

The main themes of the workshop were:

- Innovative and cost effective training of extension staff is key to improving the performance and competence of agricultural extension staff in Africa; and
- Pluralistic and participatory agricultural extension should be given a chance to improve the funding, coverage, performance, stability and impact of agricultural extension systems in Africa.

This was the first workshop focusing on the subject of agricultural education and training. In most countries, this subject is with many ministries - the main ones being: Ministry of Education (Universities), the Ministry of Agriculture (Agricultural Schools and Diploma Awarding Colleges) and the Ministry of Economic Planning (or its equivalent). All the decisions-makers in the countries were not present at the workshop; those who were present were the ‘affected’ organizations - i.e. research and extension departments. The workshop was, however, very useful in identifying their requirements. Hopefully, the next workshop will come closer towards overcoming the present constraints.

Discussions at Cape Coast

Two major issues presented by the countries represented were as follows:

- Systems of agricultural education in Africa are weak and need major revamping in their curricula, teaching-learning processes, and learning facilities.
- There is a need to develop the means to exchange ideas and experiences between national extension services.

A steering committee was formed to develop a plan of action to address these two issues. A terms of reference for the steering committee were finalized at the workshop, along with the options to be considered to address the above issues.

The issues discussed at the workshop were as follows:

- Evolutionary nature of extension: Many things in extension are evolutionary and matters such as cost recovery should not be imposed before their time; one has to keep an open mind and introduce the new concepts when the occasion demands.
- Responsibility of donors and the Bank: Donors and the Bank should, while dealing with the countries, themselves practice what they recommend that countries should practice with regard to their farmers: respond to their pull factor and not push anything; introduce all changes in a transparent, participatory manner.

The key decisions of the informal consultation were:

- For the present, the Swiss would coordinate the donor group;
• The main conclusions of the workshop will be followed up an ‘action taken’ report will be placed before the informal group at the next meeting.

Workshops Organized by the CTA in Cameroon and Wageningen

In response to requests from many countries (particularly those in Central Africa) the CTA organized an International Workshop in Cameroon in January 1994 (CTA 1995). As a follow-up to the Cameroon workshop, the CTA proposed to sponsor a Participatory Action Research (PAR) Workshop in selected countries in Africa, with the objective of providing guidelines on how to progressively disengage governments while increasingly involving the private sector, including NGOs, in the provision of extension services. The first workshop in Wageningen, The Netherlands, was sponsored by the CTA in February 1996 to discuss the various aspects of PAR proposed to be undertaken in selected countries under the guidance of the Wageningen Agricultural University (WAU). PAR aims to study three extension systems from each of the selected countries.

• The ‘mainstream’ i.e. national extension system
• Extension system adopted by an NGO
• ‘Commercial’ extension system, and on the basis of this study, evolve new extension strategies.

Key decisions at Wageningen

The key decisions of the Wageningen workshop were as follows:
• The Action Research would be started in Mali, Kenya, Ghana, Cameroon, Benin and Zimbabwe.
• In each country, both the national coordinator and the team members would be nationals.
• In order to ensure a high degree of country participation, each country would get clearance from the government for this Action Research program.
• The Action Research would be part of the national extension systems of the countries and would not have the attributes of a ‘project’ separate from the nation extension program.

Follow-up to the Wageningen workshop

A steering committee was set up to consider and comment on the PAR proposals received from the various selected countries. This steering committee met on April 21 - 22, 1997. In the presentations of their proposals the countries made the following points.
• Which extension system is more expensive would depend upon many factors, importantly, the state of agriculture, the number of farm families covered by extension, and the human resource development involved.
• It is difficult to compare unified extension provided by the governments with the crop based extension provided by many parastatals and private companies.
• The World Bank should adopt a flexible policy towards the handling of inputs by extension agents.
• There is no doubt that the present extension systems adopted by the governments have developed professionalism in staff.
- Farmers' input into technology generation and transfer is increasing - a point made by the representative of Mali; and there is also increasing linkage between government extension and extension provided by NGOs.
- There are about twenty-six extension approaches in Zimbabwe, and there is need to reduce the number.

The third meeting in Wageningen organized by the CTA was held on June 22 - 25, 1997. At this meeting, the PAR proposals received from Ghana, Zimbabwe and Nigeria and some of the case studies which were to be presented at the Informal Consultation in Ghana (October, 1997) were discussed.

- Integrated pest management in rice in Indonesia.
- Lessons from the British (DFID) funded research and extension projects in Africa.
- Lessons from the participatory extension projects assisted by the SDC in Africa.

It was clear that the objective of the PAR is not to install a parallel extension system, but to study the different extension systems and find out what elements of these systems are worth copying.

It was also decided that the two main streams of donor forums for discussing extension issues - namely the Informal Consultation (initiated by the SDC) and the CTA initiative - would be combined beginning with the subsequent Informal Donor Consultation in Ghana in October, 1997.
### ATTACHMENT TO ANNEX 6. MAIN RECOMMENDATIONS OF THE 1995 ACCRA WORKSHOP

<table>
<thead>
<tr>
<th>Item</th>
<th>Problem Areas</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Institutional Arrangements</td>
<td>• Status of SMS</td>
<td>• Ensure that SMSs are located within extension services or strengthen dialogue between extension and SMS department</td>
</tr>
<tr>
<td></td>
<td>• Financial management</td>
<td>• Conduct review of financial management systems of extension program and implement training of local managers</td>
</tr>
<tr>
<td></td>
<td>• Role of the NGOs</td>
<td>• Conduct review of capacity of NGOs in each country</td>
</tr>
<tr>
<td>B. Research/Ext./Farmers Linkages</td>
<td>• Farmers input in Technology Development and Transfer (TDT) process</td>
<td>• Revitalize workshops between farmers, extension agents and researchers, using participatory methods</td>
</tr>
<tr>
<td></td>
<td>• Instruments for facilitating linkages</td>
<td>a) decentralize responsibility and resources to local level</td>
</tr>
<tr>
<td></td>
<td>• Resources in dealing with participatory approach</td>
<td>b) institutionalize regional research planning committee linked to the national planning system</td>
</tr>
<tr>
<td></td>
<td>• National research planning process</td>
<td>c) promote multi-country workshops to exchange ideas, best practices, and develop skills on participatory diagnosis, research prioritizing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Concentrate on: Benin, Guinea, Mali, Malawi, Tanzania, Côte d’Ivoire and Burkina Faso</td>
</tr>
<tr>
<td>C. Human Resources Development Mgmt.</td>
<td>• Diagnostic skills and participatory diagnostic</td>
<td>• Organize three regional workshops</td>
</tr>
<tr>
<td>Item</td>
<td>Problem Areas</td>
<td>Actions</td>
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<tr>
<td>------</td>
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</tr>
<tr>
<td></td>
<td>method</td>
<td>• Guinea, Benin, Madagascar in FY 96; other workshops in Tanzania, Malawi in FY97</td>
</tr>
<tr>
<td></td>
<td>• Training plans and module for critical needs</td>
<td>• Sponsor regional workshops for training &amp; human resources managers (Mali, Oct. 95)</td>
</tr>
<tr>
<td></td>
<td>• Community skills development capabilities</td>
<td>• Process implementation and training module, Mali, 1995</td>
</tr>
<tr>
<td></td>
<td>• Qualified graduates in agricultural education and extension</td>
<td>• Focus on agricultural components under ongoing research and extension projects (Ghana, Uganda, Madagascar, Mozambique)</td>
</tr>
</tbody>
</table>

### D. Financial Sustainability & Donor Coordination

**Financial Sustainability**

- **Fiscal burden**
  - Promote private sector involvement
    a) input supply firms and processing companies
    b) farmers’ organizations and NGOs
- **Trade barriers**
  - Reduce legal and non-legal barriers to importation of technologies
- **Empowerment of beneficiaries**
  - Equip farmers to influence research and extension programs
- **Civil service reform**
  - Contract personnel and services and privatize animal health services
- **World Bank financing**
  - Finance up to 100 percent of incremental recurrent costs with a decline projected over the long-term (beyond normal 5 to 6 years project period)

**Donor Coordination**

- Ensure that donor coordination is county’s responsibility but maintain dialogue with other donors
<table>
<thead>
<tr>
<th>Item</th>
<th>Problem Areas</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRM</td>
<td></td>
<td>• Integrate more fully into ASI soil and water conservation practices and tree planting in private, communal, and public lands and improve technical messages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Implement a program to integrate the lessons already available from NRM operations (1995)</td>
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<tr>
<td></td>
<td></td>
<td>• Replicate best practices in soil and water management and support pilot operations</td>
</tr>
<tr>
<td>Input Supply</td>
<td>Low use of fertilizer</td>
<td>• Revisit fertilizer subsidy question and determine appropriate response, reflecting African reality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consider complementary role for public and private sectors in input supply and support to farmers</td>
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<tr>
<td></td>
<td></td>
<td>• Support public sector involvement in areas where private sector is unable or unwilling to participate</td>
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</tbody>
</table>
# Agricultural Program - Action Plan

<table>
<thead>
<tr>
<th>Item</th>
<th>Problem Areas</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Documentation</td>
<td>• Memorandum for the President (MOP) and SAR do not add value to the client</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduce documentation and apply time savings to implementation support to clients</td>
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<tr>
<td></td>
<td></td>
<td>• Use Guinea model as appropriate</td>
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<tr>
<td>2.</td>
<td>Core National Program</td>
<td>• Many areas require attention</td>
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<td></td>
<td></td>
<td>• Focus on consensus program: research, extension, animal health and national resources management, plus 1 or 2 other areas</td>
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<td></td>
<td></td>
<td>• Make Long Term Programs consistent with core areas of focus</td>
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<td></td>
<td></td>
<td>• Finance only time-slices of long term national programs</td>
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<tr>
<td>3.</td>
<td>Alignment of Headquarters (HQ) and Field Staff (FS)</td>
<td>• Field staff (FS) integrate various programs on the ground, HQ staff more staff focus</td>
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<tr>
<td></td>
<td></td>
<td>• Ensure team work at HQ focusing on programs</td>
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<td></td>
<td></td>
<td>• Ensure that HQ and FS make one joint visit annually</td>
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<tr>
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<td></td>
<td>• Promote concentration of efforts for Local Staff (LS) who should spend more time in the field</td>
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<tr>
<td></td>
<td></td>
<td>• Develop Terms of Reference for LS by December 1995 for responsibility and work program</td>
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</table>
ANNEX 7. KEY ELEMENTS OF FRAMEWORKS FOR ACTION

The FFAs prepared by the sub-regional research organizations were mentioned earlier. This Annex gives their essential elements which have been endorsed by SPAAR.

Master Plans and Priority Setting

The FFAs see the necessity for designing or adjusting national agricultural research master plans and strategies to better reflect national agricultural development trends, opportunities and objectives, and for taking into account the desirability of having sub-regional programs spanning several countries. Common factors in the lists of priorities of the national plans can form the basis for identifying potential areas for such sub-regional cooperation in research. Each NARS would also need to substantially reinforce capacity for agricultural policy analysis, for decision-making on research thrusts in each agro-ecological zone, and for the monitoring and evaluation of research effectiveness and impact.

Linkages with Beneficiaries

Ensuring a demand-driven and gender-responsive research agenda would imply:

- Including the users of research results namely, farmers and their organizations, extension services, seed companies, product processors, input manufacturers and suppliers, as stakeholders in determining the focus of major research efforts
- A decentralized NARS with formal institutional links with the clients of research.

Emphasis will therefore be placed on reinforcing the national networks of agro-ecologically-based regional research centers and on scientists' involvement in FSR or OFR.

Research Resource Management

Improving the institutional structures by facilitating the development and implementation of systems for research management and operation would imply:

- Adherence to recognized national research priorities, including for projects coordinated in a multi-country, that is, sub-regional context;
- Responsibility of individual researchers or research teams to address significant client production constraints;
- Establishment of monitoring and evaluation capacity;
- Personnel management procedures aimed at retaining a motivated corps of scientists; and
- Putting in place arrangements for management autonomy, financial control, transparency and strict accountability.

This also often involves the establishment of an advisory group or Board with responsibility for policy formulation, research program review, resource allocation, and monitoring and auditing. Simultaneous with this, it is necessary to broaden the institutional base of the NARSs to optimize the use of all available resources. A
pluralistic approach to research will draw substantially on the relative strengths of other public institutions including the universities, and of the private sector including NGOs, processing industries, seed companies and export organizations.

**Finance**

An important prerequisite for coordinating and integrating all sources of funds for publicly-financed agricultural research is the establishment of consolidated funding mechanisms (CFM) and research funds for each NARS, supported jointly by donors and the governments. These funds should be adequate to ensure dependable and timely recurrent funding for key priority programs of the National Agricultural Research Master Plan and, in the future, of programs coordinated in the sub-region. In most countries, staff redeployment, downsizing and research center network rationalization are also planned simultaneously with the establishment of CFMs.

**International Collaboration**

Establishing or gradually strengthening the cooperative agricultural research programs that are interdisciplinary in nature, and coordinated at the sub-regional level, will include an attempt to streamline and minimize duplication of current research networks. New programs are to complement and build on the experience of the existing research networks backstopped by the IARCs which are constrained by a lack of dependable long-term funding and weak regional institutional structures. This would involve among others:

- Assigning lead responsibility for regional programs to specific NARS Centers;
- Putting collaborative programs of key priority on a sound long-term financial footing through a regional body representing donors and governments; and
- Designing more effective systems for knowledge communication and information exchange.

**Staff Development and Training**

Establishing long-range human resource development objectives on the basis of agreed national strategies and regional needs would imply revised recruitment criteria for scientific staff. Long-term national personnel training plans will need to be developed to provide the basis for a regional agricultural education and training strategy, taking account of the existing capacity of agricultural universities and other training institutions.
ENDNOTES

1 In this paper IRDP includes ADP unless otherwise specified.

2 Governments, in most situations, are ultimately responsible for providing or catalysing the provision of rural services. For convenience, the functions of the government are delegated to various units, e.g. ministries; these are called “agencies” as they are the agents of the principal which is the government. These ministries, in turn, delegate their functions either to autonomous units (called parastatals) or to departments or to project entities. These are also covered by the term “agencies.” In short, an “agency” is an individual or an institution exercising the authority and having the responsibilities of the principal.

3 Howell (1988) and Moris (1991) give exhaustive references to books and articles on the T&V system of extension.

4 This term includes Bank, donor and national staff responsible for development programs.

5 The terms “clients” and “beneficiaries” occur often in this paper. The Bank’s use of the term clients usually refers to governments to whom loans are made. The meaning of the term “beneficiaries” generates debate. One view is that the governments are the beneficiaries. Another view is that beneficiaries are specified in the project objectives, that is, the segment of the population whom the project intends to benefit ultimately. This paper embraces the latter view. Therefore, beneficiaries of projects in agricultural research and extension are generally farmers.


7 See also a discussion of integration in World Bank 1988:6.

8 This diminishing faith in bureaucracy to bring about rural transformation and the failure to secure local participation were mainly responsible for the decline of the Indian Community Development program (Holdcroft 1984). Despite its links to the state and national agencies, its gradual atrophy was chiefly due to the lack of a management system which would ensure its periodic interaction with the beneficiaries and their involvement in its planning and implementation at the local level.

9 Rural Development projects included both IRDPs and ADPs.

10 “A project is generally understood to mean (a) a well defined range of activities which lend themselves to rather precise specification of objectives to planning, financing, and implementing within an organized unit and which have a clear beginning; (b) a set of targets by which to judge their performance; and (c) an orderly specified end” (Lele 1975: 7).

11 The SG 2000 Program is a partnership of two NGOs: Sasakawa Africa Association, whose president is the Nobel Laureate, Dr. Norman Borlaug and the Global 2000 Program of the Carter Center, whose chairman is former President Jimmy Carter. Its mission is to accelerate the adoption of higher-yielding technologies in SSA that will increase the income of small-scale farmers and reduce the cost of food for consumers.

12 A national program in any sector must take into account the factors relevant to that sector.
For more information on ASIPs see Harrold and Associates (1995) and Okidegbe (1997).

The meaning and scope of unification was discussed at the 1993 Accra-Abidjan workshop. This workshop is described in Annex 6. The workshop recommended to “strengthen the recently established unified national extension systems (as opposed to crop-specific services)” (Bagchee 1994:2). The workshop went on to say: “The other aspect is ‘unifying’ the extension services of the different government departments for soil conservation, crop husbandry, tree-crops, livestock, etc. What is envisaged here is that there will be only one cadre of frontline staff advising the farmers; they will be backstopped by subject matter specialists (SMSs) from different technical departments, such as crop husbandry, animal husbandry, forestry, and so on” (Bagchee 1994:23).

See for example CTA (1995:1).

This preference has been expressed by farmers to the Bank field staff during the latter’s field visits. They have also been expressed by the countries (Bagchee 1994).

Where to locate livestock SMSs is often discussed. It is not possible to discuss extension in SSA without discussing how to assist farmers raise their livestock productivity. Capacity must be developed to enable the unified extension service to provide advise to (i) dairy farmers, (ii) pig farmers, (iii) poultry farmers, (iv) small ruminant producers, and (v) cattle (beef) farmers. For each category mentioned, the service must be capable of providing up-to-date advice, information and training on various subjects, such as: (i) breeds and breeding, (ii) feed and forage production (including pasture production and management); (iii) nutrition and feeding; (iv) animal health; (v) animal husbandry housing and management; and (vi) marketing. In the case of dairying, it should also be capable of providing information on hygienic milk production and handling. Furthermore, the service must have the capacity to handle farm management issues and provide farmers with information on enterprise costs and benefits, which is fundamental to sound decision making and efficient use of resources. In order to ensure that technical standards are not compromised, the livestock department (or ministry) should provide subject matter support to extension, instead of the extension service providing it through livestock experts on secondment to it from the livestock department. This subject was discussed by SSA extension administrators at the Accra-Abidjan workshops in 1993, and instances of both kinds of administrative arrangements obtaining in SSA countries were cited. However, no consensus emerged (Bagchee 1994:32). The subject came up for discussion again in the workshop held at Accra in July 1995. Many participants felt that it might not be feasible in all situations to redeploy the SMSs to the Department of Extension Services. It is necessary to establish linkages between the host ministry or department or institutions on the one hand, and the extension service on the other. All that matters is that they execute their tasks in the framework of the extension system. The closer they are to the front line, the more effective and productive they will be. The interaction between the SMSs, wherever they may be located, and the extension service has to be in the implementation, that is, at field level. While administratively they may be in different ministries (or in different departments of the same ministry), their daily work is primarily determined and performed in the field.

This part of the paper borrows heavily from Venkatesan (1997). The various aspects of an extension system described here apply generally to any service.

Howell (1988) and Moris (1991) provide extensive references on T&V system of extension. Only references to important contributions in the recent past concerning some features of T&V
are given here. See also Venkatesan and Schwartz (1992), Schwartz and Kampen (1992), Bagchee (1994).

20 Many of these issues as well as of the managerial and methodological issues are discussed in Moris (1991:63).

21 The regularity of training and visit implicit in the management of T&V has been compared with the regularity of the availability of services in other successful examples of rural development (Mascarenhas 1993).

22 In some countries (e.g. Ghana) the responsibility for M&E is given to a central ministry different from the ministry or department implementing the program. This central ministry undertakes M&E of not only agricultural programs but those in other sectors as well.

23 In the workshop in Wageningen, The Netherlands, on April 21 and 22 1997, (see Annex 6) Professor Neils Röling defined “extension approach” as “a coherent theory of a way to facilitate farmer learning of (desired) practices and the concomitant institutional support and conducive context of policy and services.”


25 Much of the management concern of any institution in the corporate sector revolves around the managerial changes needed to facilitate the desired types of interaction between the institution and the clients.

26 SNPRV stands for Service Nationale de Promotion Rurale et de Vulgarisation which is the national extension service in Guinea.

27 The question of whether or not extension should be actively involved in the formation of farmers’ groups is discussed in Venkatesan and Schwartz (1992:60). See also Stringfellow and others (1997) for a very interesting discussion of the limitations of farmers’ groups and the responsibilities of donor agencies and NGOs in more focus on promoting farmer cooperation.

28 Human resource development refers to activities and processes that help the extension workforce to become more productive and the institution more self-sufficient. Activities that can help develop human resources include mentoring, on-the-job training, job-related training courses, diploma and degree studies, individualized learning programs, internships, work attachments, seminars, workshops, study tours, conferences, counseling, advising and tutoring. As human resources and thereby institutional capacity develop, the need for technical assistance diminishes.

29 The Bank has previously supported extension services in Nigeria, the Central African Republic, Togo, Republic of Congo, Gabon, Rwanda, Burundi, The Comores, (the former) Zaire, Zimbabwe, and Zambia. These projects had closed by the third quarter of 1997 and are not included in Table 1.

30 “Education” in this paper refers primarily to long-term studies leading to a certificate, diploma or degree. It implies both theoretical and practical aspects of education. Training refers generally to short-term studies on more specific topics usually emphasizing practical over theoretical aspects.
The Gambia Agricultural Services Project is a notable exception. The Gambia does not have an agricultural university. However, the project has not utilized African universities as start up documents had intended.

Some countries, however, should be commended for their innovative efforts to provide remedial training such as Guinea where the SNPRV (an agency which provides extension service) has developed cost-effective, relevant and high-quality modes of training.

The University of Cape Coast, Ghana, included farmers when designing their Mid-Career B.Sc. Degree program in agricultural extension education.

For example, Finland is assisting two diploma-level institutions in Mozambique. The Swiss are supporting a number of institutions. The Sasakawa Foundation is providing support to the University of Cape Coast, Ghana, to Makerere University, Uganda, and to Alemaya University of Agriculture, Ethiopia to design mid-career B.Sc. programs in extension.

A systems view considers the role of and opportunities for agricultural education from primary through post-graduate-levels. It would also consider important social variables (for example, gender and urban versus rural upbringings) to determine factors that facilitate or impede interest in, entrance into and completion of agricultural education programs.

Those countries in the World Bank/FAO study were Niger, Chad, Burkina Faso, Mali, Mauritania, Senegal, and Côte d'Ivoire.

The use of conservation tillage and other available techniques in a few countries, such as Zambia, Tanzania and Mozambique allow significant expansion of the area cultivated (Elwell and Rook 1996).

Donor initiative in the establishment of four Multi-Donor Hubs and Spokes Systems (MDHS) in Sub-Saharan Africa (SSA) to increase the development impact of donor assistance and build national capacity for rural development is an example of this trend. The MDHS will provide donors with an additional instrument for sourcing high-quality technical support consisting of international and local experts for sustainable rural development based on strategies developed in a participatory manner involving all stakeholders (government, civil society and donors). This new way of doing business will allow donors to respond more rapidly to the needs of diverse clients and to solve problems quickly. Further, it will allow donors to work together more effectively in product development, project implementation, policy dialogue, and technical assistance. Finally, the MDHS will promote regional cooperation and cross-country work coordination and sharing of experiences and knowledge on rural development issues, programs, and best practices.

CTA has been set up by the European Union (EU).

One example is the use of methyl bromide (a toxic chemical) in many countries, including the U.S. to minimize the harmful effects of soil borne diseases on high-value horticulture crops such as strawberries. Apart from causing harm to those who handle it, the chemical is considered to cause damage to the ozone layer. It will be much easier to wean farmers away from the use of this chemical if research comes up with an alternative which costs farmers less, and is equally effective.
There are studies demonstrating the cost effectiveness of extension (Feder and Slade 1984; Feder and others 1985, 1987; Bindlish, Evenson and Gbetibouo 1993a and 1993b) in India and Africa.

For more details on the factors which have blunted the effectiveness of NARS see World Bank 1996, Purcell and Anderson 1997.

Re-engineering, which many private sector companies have started, is a recognition of the fact that changes in technology call for appropriate management changes.

French equivalent of a district; sometimes the term refers to a region which is one level above a district; districts are then called arrondissement.

The British funding agency, earlier called ODA and now called DFID.

The English translation of this French name for the national extension agency is “National Rural Development and Agricultural Extension Service.”

This is the abbreviation of the Kiswahili name of the organization ‘Mtandao wa Vikundi vya Wakulima Tanzania’ (Farmers’ Group Network of Tanzania).


The ongoing T&V debate is beginning to get rather sterile as it tends to focus on issues which do not conform to realities in the field. Extension is a very practical and empirical activity, and the superiority of one system over another should be tested in the field and with regard to the “fit” of the system to farmers’ needs, and not in seminars and conferences. The typologies presented earlier in the paper provide for sufficient flexibility to design systems to suit different agro-climatic zones and agricultural situations. What is important is to design a management and methodological framework from the farmers’ perspective, and to focus on empirical issues as they emanate from the field.
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