

Strategic Issues for Agricultural Research and Extension in the New Century of Development Challenge

「開発に向けての新しい世紀における農業研究・普及活動の戦略的課題」

Jock R. Anderson, Consultant to World Bank, Washington, DC

要約

1990年代半ば以降ドナー・コミュニティにおいて貧困削減に再び焦点があたるようになったが、これは当然農業関連の開発事業、特に農業研究に強い動機を与えるものであった。緑の革命の時代だけに限らず、アジア・ラテンアメリカにおいて農業分野で研究を主体とする進展が始まった1960年代半ば以降の時代を通じて、農業研究は貧困削減に向けた最も効果的な公共投資の一つであった。農業研究は農業（および農民）の生産性の向上に寄与する点で効果がある。農業調査研究および普及活動は大まかに言って公共財であり、それらは生産性の向上を促進する鍵となる。すなわち農業調査研究は、より生産性の上がる技術（例えば改良穀物品種、より優れた農業実践）を生み出すための原動力であり、普及活動は農民がこのような技術の習得を支援し、その支援により農民が利益を生むようなかたちでその技術を用い、その結果としてしばしばその技術をより適当なものに改良したりもする。今日のこの分野の中心的な課題は既存の制度的なメカニズムに密接に結びついており、そのメカニズムを日々変化している環境に如何に適合させるか、および緑の革命を経験していない多くの開発途上国に如何に行き渡らせることができるかにある。

本文中には数多くのウェブサイトが紹介されており、リソース集としても大変有用である。（著者であるジョック・アンダーソン博士はオーストラリアのニューイングランド大学、世界銀行において長期にわたり農業開発分野で貢献した経済学者である。）

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1. Introduction and Objectives

These notes are part of an endeavor of the International Development Research Institute (IDRI) of FASID to develop a website on Development Assistance Key Information System (DAKIS). This system is intended to provide easily accessible information to Japanese professionals, academics, policy-makers involved in international development.

Agricultural investment in general, of which concerns about agricultural research and extension are a small but important part, is a key area for development in the developing world, where poverty is predominantly still a rural phenomenon. The major development agencies, including the multilateral development banks, have tended to neglect agriculture through the 1990s, largely for reasons of past difficulties and lack of achieving the success intended, but recently there has been something of a turnaround, wherein the absolute necessity of agricultural and rural development is re-recognized and, accordingly, new investment activities are now being actively planned, with renewed and close attention to learning from the lessons of past experience.

Reflecting the particular knowledge and experience of the author of these notes, some of which is reported in Anderson (1994, not available on the Web), they are unashamedly biased towards World Bank sources, and the author is sincerely grateful to his colleagues for their work on which he has drawn. The World Bank these days describes itself as a “knowledge bank”, in which considerable effort and resource allocation are directed to garnering relevant knowledge and experience in accessible forms. One of these endeavors, completed in March 2004, is the compilation of an *Agriculture Investment Sourcebook*, managed by Derek Byerlee and published by the Bank’s Agriculture and Rural Development Department, available at www.worldbank.org/agsourcebook with agricultural research being handled in Chapter 2, and agricultural extension in Chapter 3. A busy reader could thus merely visit that site to gain ready access to contemporary advice on this field. The author of the present notes was a member of the team that produced the *Sourcebook* and so may be somewhat prejudiced in feeling that it is a highly useful guide to good practice. Each chapter has a thematic overview, focused essays on important issues, and profiles of recent innovative activities in particular developing countries. The *Sourcebook* runs to over 500 pages. For the sake of brevity, repetition of material in the *Sourcebook* is avoided here.

The re-energized focus of donor communities on poverty reduction since the mid-1990s naturally has strong implications for agricultural development work, especially for agricultural research, which has consistently been found to be one of the most effective public investments for poverty reduction, not only through the Green Revolution, but also in the decades that have followed that research-dependent advance that began in Asia and Latin America in the mid-1960s. The essence of the effectiveness is gains in productivity of farms (and farmers). Agricultural research and extension, largely public goods and mostly but decreasingly publicly funded, are the key means of facilitating such gains; the first for generating more productive technologies (e.g., improved crop varieties and better farming practices), and the second for helping farmers to learn about these technologies and thus profitably adopt and often also adapt them. The issues today that are central to these notes are bound up in the institutional mechanisms that have been put in place and their adaptability to changing circumstances and the failure of the Green Revolution to reach many parts of the developing world.

1.1 Other relevant sites

Several cogent studies (including especially a review by Hazell and Haddad (2001)) have recently been assembled in a CD by the International Food Policy Research Institute (IFPRI), a research center of the Consultative Group on International Agricultural Research (CGIAR) www.cgiar.org, as system strongly supported by the Government of Japan and some 40 other governments, co-sponsored by the World Bank among other key multilateral agencies. IFPRI is headquartered in Washington, DC. The CD mentioned is:

Adato, M. and Meinzen-Dick, R. (eds.) 2003 *Impacts of Agricultural Research on Poverty: Results of an IFPRI-Led Project of the CGIAR Science Council's Standing Panel on Impact Assessment*. CD produced by IFPRI, Washington, DC.

The website for the CD files is www.ifpri.org then go to [IFPRI Home](#) >> [Research and Outreach](#) >> [Research Themes](#)

DSGD/EPTD/FCND Research Theme Impact of Agricultural Research on Poverty (IARP) and select from among the papers listed.

Mention of the CGIAR here would be incomplete without noting the key assistance role played in the field of these notes by another international agricultural research center within the CGIAR system, namely the International Service for National Agricultural Research (ISNAR), which (as of April 2004) has been folded into IFPRI as a Program, with elements located in Addis Ababa, Ethiopia as well as Washington, DC. ISNAR has championed the development of “agricultural institutional innovation systems”, which is a modern way of considering the traditional fields of research and extension and beyond. These ideas and many others relevant to the topics under review here can be visited at the ISNAR web site: www.isnar.cgiar.org

2. Agricultural Knowledge and Information Systems: A Useful Conceptual Framework

One instructive framework for considering agricultural research and extension issues in a coherent way is as an Agricultural Knowledge and Information System (AKIS). This framework was articulated in a joint effort between staff of the World Bank (present author included) and the Food and Agriculture Organization (FAO) in the late 1990s.

Within FAO, this initiative is known as AKIS/RD, i.e., AKIS for Rural Development, as noted at: <http://www.fao.org/sd/EXdirect/EXre0027.htm>, and the 2002 document setting out strategic vision and guiding principles is available with permission at:

<ftp://ftp.fao.org/SD/SDR/SDRE/AKIS.pdf>

and without permission and not in full color at:

<http://Inweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AKISResearchExtension>

An AKIS is a system of people and institutions that generates, transfers, and utilizes agricultural knowledge and information. Such a system is characterized by its key subsystems: agricultural research, agricultural extension, and agricultural education. Farmers, their needs and opportunities, drive education, extension, and research, and for each they provide direct input into design, funding, priority setting, execution, and evaluation. Investments in agricultural knowledge and information systems are of increasing importance to address needs of rural people and assure future food security and environmental sustainability. The donor community increasingly supports client-country investment in agricultural research, a small amount in education, and a decreasing amount in extension. The framework can be visited at:

<http://Inweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AKISforRuralDevelopmentStrategicVisionandGuidingPrinciples/>

The important links between agricultural research and extension and poverty reduction can also be overviewed at:

[http://Inweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AgriculturalKnowledgeandInformationSystemsandPovertyReduction/\\$FILE/Akis_and_poverty.pdf](http://Inweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AgriculturalKnowledgeandInformationSystemsandPovertyReduction/$FILE/Akis_and_poverty.pdf)

3. Research

The evolution of agricultural research in less-developed countries has a long and complex history, well described in many sources, such as Pardey, Roseboom and Anderson (1991, not available on the Web). The roots were put down in the industrializing countries of Europe, Japan and the USA more than a century ago, and the idea was transplanted in the now-developing world usually as part of colonial administration, initially primarily to foster productivity in the fledgling export crop sector.

Only much later, mostly in the decolonialization phase of the 1950s and 1960s, did attention of agricultural researchers become directed to food and subsistence crops. Fears of major hunger problems in Asia especially spurred focused development assistance to institutionalizing agricultural research systems in the developing world, manifested in the Green Revolution of India, Mexico, the Philippines, Colombia and many other developing countries, but not all. Successes in this era did however, spark efforts to replicate such effects in many countries through active support by bilateral donors as well as Multilateral Development Banks (MDBs). There was consequently a rapid expansion of what came to be known as national agricultural research systems (NARSs).

Over the past twenty years, for instance, the World Bank has financed over US\$2.0 billion of investment in agricultural research in developing countries. Returns on this investment have generally been high and much of the success in meeting global food needs can be attributed to these investments. Still, in many countries productivity of research programs is low and a consensus has now emerged on the need for pluralistic NARSs as a preferred base for agricultural technology generation. Such research systems must be demand-driven with closer linkages to clients, must become more efficient, and must develop sustainable sources of financing. There is thus much that the donor community has still to do to assist developing countries in strengthening their agricultural research systems. Views of the most critical development policy issues, along with summaries of past and present investments through World Bank projects, are available at:

<http://lnweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AKISResearchExtensionResearch>

Some of the most worrying trends pertain to the funding of research in developing countries, which naturally also relates directly to staffing and training issues as well. An excellent source for an overview of investment in agricultural science is Pardey and Beintema (2001) available at:

<http://www.ifpri.org/pubs/fpr/fpr31.pdf>

Typically, developing countries are spending something less than 0.5% of AgGDP on agricultural research, less by a factor of 4 or 5 the intensity with which OECD countries invest in public research, yet not matched by the considerable expenditures by the private sector that is happening in those industrial countries. This constitutes significant underinvestment in the production of key public goods that can be so significant in reducing poverty. It is clearly a major development challenge. Recently updated information on research investment is available at:

<http://www.asti.cgiar.org/>

and for most Sub-Saharan Africa countries specific ally at:

<http://www.asti.cgiar.org/pubs-africa.htm>

3.1 The changing environment for research

The environment for agricultural research in the 2000s has changed in many respects. There are several important dimensions. First, the economic environment has featured shifts in government priorities to focusing on public good provision and withdrawing the state from markets that function well on a private basis. Commodity markets too have featured many changes with the continuing decline in the international prices for staples, volatile markets for several items important to many developing country exporters, such as coffee and cocoa, and booming markets for some non-traditional export crops such as flowers. The science environment too has changed in many significant ways, some of which relate to the public-private balance in research investment. Most notably, is what is sometimes referred to as “New biology”, often involving transgenic modifications of crops and livestock, and thus controversial in many parts of the world, with consequences for research policy as well as trade policy and ultimately the welfare of many citizens of both rich and poor countries. Views on all this are highly diverse; consider for instance, those of a UN specialized agency, the FAO, at :

<http://www.fao.org/biotech/index.asp?lang=en>

There is much discussion of this available also on the World Bank AKIS site and the IFPRI site (provided above), arguing the pros and cons, but emphasizing the globally negative distributional consequences of developing countries being left further behind the rich world if they are in some way denied access to these new technologies, whether by trade policies against genetically modified

organisms (GMOs), inadequate protection of intellectual property rights (IPRs), or sheer incompetent public policy and underinvestment. The important policy issues regarding biosafety are extensively addressed at the ISNAR Biotechnology Service at <http://www.isnar.cgiar.org/ibs.htm>

But there are many other new technologies that are of major potential significance. One area of great potential, but yet largely unrealized because of highly limited internet connectivity in the more remote areas of most developing countries, is information and communication technologies (ICTs). Given the critical importance of spillovers in the international transfer of technology, ICTs have a huge role to play in better facilitating such transfer to countries, regions and more local areas not yet taking advantage of various technical advances. To get ahead in increasing rural incomes, such areas will have to boost productivity and intensify farming systems, and new technologies will be vital in driving such processes.

3.2 Key contemporary issues in research

Current issues deserving attention are many, and include: sustainably reversing the funding crisis, building political support for public-sector research, broadening funding sources, establishment of research foundations and opening up the possibilities for private-sector engagement in agricultural R&D, clarifying the role of donors and international development banks in sensibly supporting worthy initiatives, assisting national systems to do a better job of refining research strategies and priorities, which in many cases will be part of a broader effort to develop national technology policy. Identifying priorities is an important step but implementing them effectively is another rather more complicated matter.

Other issues are of a wider and more strategic nature, such as improving the client orientation of agricultural research, and increasing the efficiency and efficacy of research systems. There are also many organizational issues that typically need careful attention, including:

- Efficient and effective use of competitive grants
- Human resource management to increase institutional effectiveness
- Downsizing bloated national systems where past donor-supported efforts in concert with government personnel rigidities have led to unsustainable situations
- Enhancing external complementarities of national R&D, such as through stronger links to CGIAR Centers and possibly new links to strong national systems in the developing world
- Improving complementarities for technology transfer via links to changing extension delivery systems
- Globalization and technology spillins

These diverse issues are explored in many places that are readily accessible such as the World Bank AKIS site introduced above, some further links to which are:

- [Biotechnology](#)
- [Competitive Grants](#)
- [Gender and Research](#)
- [International Agricultural Research](#)
- [Investment in Research](#)
- [IPRs and Genetic Resources Policy](#)
- [Monitoring and Evaluation](#)
- [National Agricultural Research Institutes](#)
- [National Research Coordination & Strategies](#)

- [Natural Resources Management Research](#)
- [Policy Frameworks](#)
- [Poverty and Research](#)
- [Priority Setting](#)
- [Private Sector Financing](#)
- [Private Sector Research](#)
- [Producer Organizations in Research](#)
- [Regional Associations](#)
- [Returns on Investment](#)
- [Social Science Research](#)
- [Sustainable Financing](#)
- [Technology Transfer](#)
- [University Research](#)
- [Competitive Funding of Agricultural Research in the World Bank: Lessons and Challenges, 2000 \(55KB PDF\)](#)
- [Lending by the World Bank for Agricultural Research: A Review of the Years 1981 through 1987, May 1990](#)
- [Revitalizing Agricultural Research in the Sahel: A Proposed Framework for Action, 1993](#)
- [Strengthening National Agricultural Research Systems in Eastern and Central Africa: A Framework for Action, 1995](#)
- [Strengthening National Agricultural Research Systems in the Humid and Sub-humid Zones of West and Central Africa: A Framework for Action, 1996](#)
Particular mention should be made of a wide-ranging description of many of the topics introduced above, namely a 1998 paper by Derek Byerlee and Gary E. Alex, Environmentally and Socially Sustainable Development Series, Rural Development Report No: 17413, available at:
- [Strengthening National Agricultural Research Systems: Policy Issues and Good Practice, 1998](#)

As noted above, other relevant materials are available from ISNAR: a continuing research based service in the CGIAR:

<http://www.isnar.cgiar.org/topics.htm>

Many relevant publications are available for downloading, such as:

<http://www.isnar.cgiar.org/publications/pdf/rr-24.pdf>

A Review of Key Issues and Recent Experiences in Reforming Agricultural Research in Africa S. Chema, E. Gilbert, J. Roseboom Research Report No. 24, 2003.

and <http://www.isnar.cgiar.org/publications/planning-book.htm>

Other pertinent materials there include:

- [Assessing Agricultural Research: Towards Consensus on a Framework for Performance and Impact Assessment, October 1998](#)

- [Cost Effectiveness Analysis: A Tool for UNESCO, February 1997 \(UNESCO\)](#)
- [Developing and Presenting Performance Measures for Research Programs, 1995 \(US Research Roundtable\)](#) (19KB PDF)
- [DREAM: A Tool for Evaluating the Effects of Agricultural R & D, 0000 \(IFPRI\)](#)
- [Environmental Performance Indicators: A Second Edition Note, October 1999](#)
- [INFORM: An Information Service for Agricultural Research Management, October 1995 \(ISNAR\)](#)
- [Monitoring and Evaluating Agricultural Research: A Sourcebook, 1993 \(CAB International\)](#)
- [Participatory Rural Appraisal and Planning Workbook, 1999 \(IIRR\)](#)
- [Sixty-two Reasons for Avoiding Evaluation in the United Nations System, January 1991 \(UNESCO\)](#)
- [Technology Generation Adaptation Adoption and Impact: Towards a Framework for Understanding and Increasing Research Impact, 1997 \(64KB PDF\)](#)

4. Extension

A good starting point is *The Evolution of Agricultural Extension in Less-developed Countries: Improving agricultural extension. A reference manual*. Edited by Burton E. Swanson, Robert P. Bentz and Andrew J. Sofranko (eds.) Prepared under the guidance of the Extension, Education and Communication Service Research, Extension and Training Division Sustainable Development Department, Food and Agriculture Organization of the United Nations, Rome, 1997 Reprinted 1998. Part I - Overview of extension in agricultural and rural development sets out much of the history, especially Chapter 1 - The history, development, and future of agricultural extension, by Gwyn E. Jones and Chris Garforth, University of Reading, available at:

[Chapter 1 - The history, development, and future of agricultural extension](#)

[Chapter 2 - Alternative approaches to organizing extension](#)

[Extension goals](#)

[Alternative ways of organizing extension](#)

[Present and future role of extension staff](#)

[References](#)

[Chapter 3 - The context of extension in agricultural and rural development](#)

[A systems perspective](#)

[Macro-factors](#)

[Institutional factors](#)

[Concluding observations](#)

[References](#)

4.1 Agricultural extension in World Bank operations and knowledge management

A large collection of reference materials on agricultural extension is available on the World Bank AKIS site:

<http://Inweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AKISResearchExtensionExtension>

Extension and rural information services provide rural people access to the knowledge and information they need to increase productivity and sustainability of their production systems and improve quality of life and livelihoods. Over the past twenty years, the World Bank has financed over US\$3 billion of investment in agricultural extension.

As noted in the above introduction to the AKIS concept, a consensus has emerged on the need to develop agricultural extension systems as institutionally pluralistic networks of institutions providing varied information and innovation services to rural peoples. Such extension systems must be demand-driven with closer linkages to clients, must become more efficient, and must develop more sustainable sources of financing. Extension Topics elaborated upon at this rich site include:

- [Approaches to Extension](#)
- [Contracting Extension](#)
- [Decentralizing Extension](#)
- [Environment and NRM](#)
- [Farmer-Led Extension](#)
- [Gender Equity](#)
- [ICTs in Extension](#)

- [Investment in Extension](#)
- [Monitoring & Evaluation](#)
- [National Vision & Strategy](#)
- [NGOs in Extension](#)
- [Participatory Extension](#)
- [Private Extension Services](#)
- [Private Financing](#)
- [Producer Organizations](#)
- [Public Financing](#)
- [Reaching the Poor](#)
- [Research Linkages](#)
- [Results-Oriented Management](#)
- [Returns on Investment](#)
- [Training Extensionists](#)
- [Universities and Extension](#)

As well, materials assembled for a November 11-15, 2002 conference: **New Approaches to Extension: A Workshop for Practitioners** are available at:

<http://Inweb18.worldbank.org/ESSD/ardext.nsf/26ByDocName/AKISResearchExtensionExtensionNewApproachestoExtensionWorkshop-ProceedingsandCaseStudies>

“Against a backdrop of changing public policies and other pressures forcing fundamental change in public extension services, the World Bank, USAID, and the Neuchatel Group convened a workshop of about 70 extension experts to review recent approaches to revitalizing extension services. The workshop sought to provide supporters and implementers of rural development programs with an opportunity to discuss and identify commonalities in their approaches to agricultural extension. Presentations and sub-group sessions are organized around three areas: 1. Reform of extension systems to meet new challenges and promote sustainable livelihoods for the rural poor; 2. New approaches to delivery of pro-poor extension and information services for rural development — new ways of linking demand and delivery; 3. Role of the public sector — institutional and policy framework for support to pro-poor extension. Workshop discussions were enriched by 43 cases studies of recent approaches to reform of extension systems.” The materials available are:

- [A History of Extension at USAID, November 2002](#) (432KB PDF)
- [AUSTRALIA: Social Capital and Natural Resource Management: The Case of the Australian Landcare Movement, November 2002](#) (391KB PDF)
- [BANGLADESH: Agricultural Extension of Bangladesh: A Case of Reform Initiatives, November 2002](#) (579KB PDF)
- [BENIN: Benin's Faster and Less Costly Community Development, November 2002](#) (380KB PDF)
- [CHINA: Financing of Extension: Lessons from China, November 2002](#) (369KB PDF)
- [DENMARK: The Role of Extension in Rural Development: The role of livestock advisory service and skills development, exemplified by a case study of the historic development in Denmark,](#)

[November 2002](#) (574KB PDF)

- [EAST AFRICA: Catalytic Action for the Emergence of the Farmer-Demand-Driven Extension: Experience from East Africa, November 2002](#) (458KB PDF)
- [EGYPT: How much does it cost to introduce participatory extension approaches in Public Extension services? Some experiences from Egypt, November 2002](#) (471KB PDF)
- [ESTONIA: Advisory Services Market Development in Estonia: fluctuation between privatization and public sector reform, November 2002](#) (543KB PDF)
- [Extension and Rural Development - Converging Views on Institutional Approaches? Workshop Summary, November 2002](#) (1,004KB PDF)
- [Financial participation between fancy and reality, November 2002](#) (23,348KB PDF)
- [GERMANY: Public Goods and Privatized Extension - the rocky road towards agro-environmental extension, November 2002](#) (431KB PDF)
- [GERMANY: The Introduction of Semi-privatised Extension Circles in the German State of Baden-Wurttemberg, November 2002](#) (532KB PDF)
- [GHANA: Reforms in the Ghanaian Extension System, November 2002](#) (483KB PDF)
- [Guide for Supporting Pro-Poor Extension Through Policy Reform, November 2002](#) (540KB PDF)
- [HONDURAS: Fondo para Productores de Ladera: Public Funding for a Private Extension System for the Hillside Farmers of Honduras, November 2002](#) (586KB PDF)
- [KENYA: Supporting the Demand for Change:Recent Project Experience with Farmer Learning Grants in Kenya, November 2002](#) (414KB PDF)
- [MALAWI: National Smallholder Farmers' Association of Malawi \(NASFAM\), November 2002](#) (395KB PDF)
- [MALI: The Business of Extension Reform: Cotton in Mali, November 2002](#) (364KB PDF)
- [MOZAMBIQUE: Building African Models of Agricultural Extension: A Case Study of Mozambique, November 2002](#) (436KB PDF)
- [NEPAL: Projectization in the Context of Extension Reform in Nepal, November 2002](#) (390KB PDF)
- [NICARAGUA: The Nicaragua Agricultural Technology Project, November 2002](#) (419KB PDF)
- [NIGER: Market-Based Irrigation Reform for Smallholder Farmers in Niger, November 2002](#) (747KB PDF)
- [PAKISTAN: Privatization and the Crisis of Agricultural Extension in Pakistan:Caveat Emptor, November 2002](#) (460KB PDF)
- [PHILIPPINES AND INDONESIA: Fiscal Sustainability of the Farmer Field School Approach in the Philippines and Indonesia , November 2002](#) (546KB PDF)
- [PORTUGAL: Extension Reform in Portugal: A Case Study Illustrated by the Experience of the Interior North, November 2002](#) (448KB PDF)
- [RUSSIA: Innovative ICT Approaches for Development of Rural Information and Advisory Services in Transition Economies, November 2002](#) (511KB PDF)
- [Sasakawa Global 2000 Extension Efforts in Africa, November 2002](#) (449KB PDF)

- [SOROTI DISTRICT, UGANDA: Evolution of Extension Approaches in Soroti District, Uganda, November 2002](#) (445KB PDF)
- [SOUTH AFRICA: A Public/Private Partnership for Extension Delivery in South Africa, November 2002](#) (417KB PDF)
- [TANZANIA: Comparative Study of Participatory Approaches to Contextual Farmer Learning, November 2002](#) (386KB PDF)
- [TRINIDAD AND TOBAGO: Case Study of the Decentralization of the Extension Services in Trinidad, November 2002](#) (405KB PDF)
- [UGANDA: Evolution of Extension - farmer relationship in Uganda, November 2002](#) (566KB PDF)
- [UGANDA: The Role of Extension in Rural Development-The Ugandan National Agriculture Advisory Services \(NAADS\), November 2002](#) (889KB PDF)
- [UNITED KINGDOM: ADAS and the Privatization of Advisory Services in England and Wales, November 2002](#) (406KB PDF)
- [URUGUAY: The Reform of the Public Sector Agricultural Extension in Uruguay, November 2002](#) (389KB PDF)
- [USA: Establishing Rural Development Extension in the United States, November 2002](#) (395KB PDF)
- [VENEZUELA: Reforming National Extension:The Recent Experience of Venezuela, November 2002](#) (418KB PDF)
- [VIETNAM: Extension, Poverty and Vulnerability in Vietnam, November 2002](#) (533KB PDF)
- [WEST AFRICA: Adapting Agricultural Extension to the Changing Rural Development Context in West Africa, November 2002](#) (507KB PDF)
- [WEST AFRICA: Farmer Fields Schools as an Extension Strategy: A West African Experience, November 2002](#) (416KB PDF)
- [WEST AFRICA: Management Advice for Family Farms in West Africa:Roke of Producers' Organizations in the Delivery of Sustainable Agricultural Extension Services, November 2002](#) (684KB PDF)
- [World Bank Support for Agricultural Extension:Current Approaches and The World Bank Portfolio in Africa](#) (449KB PDF)
- [ZIMBABWE: Transformation of Agricultural Extension Under Participatory District Planning: Comparative experience in Shurugwi and Gwanda Districts, Zimbabwe, November 2002](#) (407KB PDF)

Much of the Bank experience up to the mid-1990s is reviewed by Purcell and Anderson (1997) available at:

- [Agricultural Extension and Research: Achievements and Problems in National Systems, 1997](#)
Other relevant reports are also to be found at this site, including the following:
- [Agricultural Extension in Africa, 1994](#)
- [Agricultural Extension: A Step beyond the Next Step, 1994](#)
- [Agricultural Extension: Generic Challenges and Some Ingredients for Solutions, 1999](#)
- [Aid and Agricultural Extension: Evidence from the World Bank and Other Donors, April 1989](#)

- [Getting Ready for the Twenty-First Century: Technical Change and Institutional Modernization in Agriculture, 1994](#)
- [Rural Extension and Advisory Services: New Directions](#) (812KB PDF)

4.2 Agricultural Extension in FAO operations and knowledge management

Extension has also been a major preoccupation of FAO, to quote from its website: “The efficiency of extension systems in sustainable agriculture and rural development for food security is a major concern of FAO’s Sustainable Development (SD) Department. Priorities of its work in agricultural extension include assessing alternative extension systems, policies, strategies, and approaches, addressing extension management and extension-research-education linkages, and developing extension programmes and methodological tools tailored to farmers' needs in various agro-ecological and socio-economic contexts. Major activities of SD include providing advice and technical support to FAO Member Nations on extension policies and strategies, programme development and management. It also carries out studies on current issues such as the planning, monitoring and evaluation of extension programmes, and the introduction of participatory and cost-effective extension methodologies and gender-sensitive programmes based on participatory rural appraisal. SD also organizes and conducts regional and international workshops, conferences and seminars to train extension staff on such topics as the integration of environment and population education and HIV/AIDS as a socio-economic problem into extension and training programmes. Training of extension trainers on innovative approaches supported by both new and conventional media also constitutes an integral part of its normative activities. It also develops training tools and publishes guidelines and reference manuals.”

http://www.fao.org/sd/KN3_en.htm

http://www.fao.org/sd/2001/KN1103a_en.htm

4.3 Perspectives on contemporary issues in agricultural extension

Having noted the relevant work and websites of the two major international organizations of the UN family, some views of the author should be inserted by way of one commentary on and an overview of the materials referenced.

Investments in extension services certainly have the potential to improve agricultural productivity and increase farmers’ incomes, especially in developing countries, where more than 90 percent of the world’s nearly 1 million extension personnel are located. Effective extension involves adequate and timely access by farmers to relevant advice and information, with appropriate incentives to adopt new technology if it suits their socioeconomic and agroecological circumstances. Critical to adoption are the availability of improved technology, access to relevant inputs and resources, and profitability at an acceptable level of risk. Farmers get information from many sources. Public extension is one source, but not necessarily the most efficient. Thus, while extension can improve the productive efficiency of the agricultural sector, the virtues and limitations of alternative mechanisms need to be considered in assessing the cost-effectiveness of delivering information.

Extension, broadly defined, focuses on the delivery of information inputs to farmers. Information can be of many types, from estimates of future prices for farm products to new research products such as improved crop cultivars and knowledge about how to use particular inputs, such as the timing and intensity of fertilizer use. Farmers have a demand for information and may be prepared to pay for it as they do for other inputs according to how productive they perceive it to be.

Contemporary forms of extension systems, as noted in several of the sources given above, have ranged from contracting with the private sector to provide extension services in order to reduce costs and improve cost-effectiveness, to drawing on private sector funding to improve the financial sustainability of extension (Beynon with others 1998). The economic rationale for farmers to pay for extension services is generally clear, and the practice is well established in high-income countries. In developing countries, however, many producers are unable or unwilling to pay for services, in part

because they have not seen examples of effective, responsive extension. Many countries have few extension service providers outside the public sector, and few public institutions have the incentives and institutional arrangements in place to encourage program cost-recovery.

There are several characteristics of public extension systems that jointly tend to result in deficient performance, low staff morale, and financial stress (Feder, Willett, and Zijp 2001). The potential clients of extension services often live in geographically dispersed communities. Underdeveloped transport links and limited connections to electronic mass media add to the cost and difficulty of reaching many farmers. When there are large numbers of field personnel, there is a tendency to adopt a centralized, hierarchical, top-down management system. Such bureaucracies are not generally receptive to participatory approaches to information delivery and priority setting.

In most developing countries the information on which extension advice is based is not generated within the extension organization itself but in separate systems (national agricultural research institutes and universities and, increasingly, private research firms). Under separate management structures and incentive structures, research systems give little weight to the extension service's opinions and priorities. Research priorities are, unsurprisingly, not necessarily aligned with those of extension managers or the farmers they come in contact with.

Public research and extension organizations often compete for budgets. Researchers typically enjoy a higher status (they are often better educated and have greater independence), and this produces tension in interactions with extension services that is not conducive to effective extension services. The already noted World Bank review (Purcell and Anderson 1997) of a large portfolio of extension projects found that research-extension links were generally weak and that neither research nor extension was sufficiently conscious of the need to understand the constraints and potentials of different farming systems as a basis for determining relevant technology and technology-development requirements.

Because the effectiveness of extension activities cannot be easily established, and performance is measured in terms of input indicators, field staff are generally not held accountable for the quality of their extension work and are often able to shirk on quantity as well. The same impact attribution problems mean that higher level managers, while nominally accountable for extension performance to the political level, are monitored mainly in terms of budget spent, staffing levels, and other bureaucratic indicators. Accountability to clients is only nominal, as typically there are neither mechanisms nor incentives to make extension services accountable to farmers—who are the only ones who can easily observe the quality and effectiveness of extension services. Little attention is given to systematic participation by the farming community in problem definition, problem solving, and extension programming. Without mechanisms for accountability to farmers, incentives are distorted. Extension agents divert time and energy to other activities, which earn them extra remuneration, such as promoting inputs for which they earn a commission, or helping farmers access credit. It is thus not surprising that extension tends to be a weak claimant on agricultural budgets. Lack of commitment and support by senior government officials adversely affects implementation and funding. When budgets shrink, fixed staff costs claim a large share of available funds, and field operations are curtailed, along with other recurrent costs (such as vehicle purchase and maintenance). Thus fiscal inadequacy and the unsustainability of extension operations are common themes in the extension literature.

Various **methods of implementing public extension** have been tried over the years with a view to overcoming some of the difficulties noted above. Anderson and Feder¹ (2004) have surveyed these,

¹ An earlier, longer version is available on the Web as Anderson and Feder (2003) at: http://econ.worldbank.org/files/24374_wps2976.pdf

beginning with the **training and visit model of extension organization** that was promoted by the World Bank during 1975–95 in more than 70 countries. This highly regimented system attempted to tackle some of the weaknesses of the public extension service, it also exacerbated other weaknesses. In the end, most of these new structures collapsed. Several features of the design could not stand up to practical realities. The quality of extension services remained mostly unmonitorable, and the lack of accountability to farmers was not resolved. Many observers feel that what eventually brought about the dismantling of the training and visit extension system was lack of financial sustainability.

Decentralization is a reform strategy that has been increasingly attempted in recent years. It retains the public delivery and public funding characteristics of traditional centralized extension but transfers responsibility for delivery to local governments (district, county). Decentralization is intended to improve accountability by moving services closer to the people who use them. But decentralized extension agencies face a multitude of problems. There is greater potential for political interference and the use of extension staff for other activities.

A related reform was the **devolution of extension functions to farmers' associations** rather than to local governments, a strategy pursued in several West African countries with some notable successes. This approach is likely to have a greater impact on accountability, since the employer is even closer to the clientele. There is also greater potential for financial sustainability, since the farmers association that provides the public good is better able to recover costs from its members (through general membership fees, for example), although government funding is generally also provided to the associations.

Fee for service extension programs in developing countries can reduce the fiscal burden of public extension services, though they usually entail considerable public funding even when the provider is private. Government-funded vouchers or other public support is common. Small groups of farmers typically contract for extension services to address their specific information needs. Because this solves the accountability problem, the quality of service is likely to be higher. Farmers determine the type of information that is important to them, so the impact of extension advice is likely to be high.

A key drawback of fee for service modes of extension is that less-commercial farmers—poorer farmers, women farmers, farmers with smaller or less favorable plots—for whom the value of information is lower, may purchase fewer extension services, since the price of the service will tend to be market-determined. This may have undesirable social implications and may also be an inefficient outcome if poor farmers undervalue information because they have less ability to prejudge its value. One way around this problem is stratification of extension systems by types of clients (Sulaiman and Sadamate 2000). Smaller scale and poorer farmers may be served by public extension or by subsidized contracted extension services (for example, an association of small-scale farmers would receive public funds to hire extension staff). Commercial farmers, meanwhile, would be expected to pay a higher share of extension costs in a fee for service system.

Farmer field schools, a recent mechanism much favored within FAO, were originally introduced to teach irrigated-rice farmers in Asia about integrated pest management. After being implemented in Indonesia and the Philippines, the programs were replicated in other countries and for other crops, usually with significant donor funding. The approach uses participatory training methods to educate field school participants. Some participating farmers are selected to receive additional training that qualifies them as farmer-trainers, with official backup support such as training materials. The farmer field school approach seeks to rectify the problem of accountability. But a key drawback of the former field school approach is its cost, which is likely to raise problems of financial sustainability. The intense training activities are expensive per farmer trained. A study in the Philippines, for instance, found little diffusion of knowledge from trained farmers to other farmers (Rola, Jamias, and Quizon 2002). Recent analysis of field farmer schools in Indonesia found no significant impact on yields and

pesticide use by trained farmers or members of their communities (Feder, Murgai, and Quizon 2004). This suggests that both the curriculum and the training approach need to be rethought.

Birkhaeuser, Evenson, and Feder (1991) provided an early review of studies of extension **impact** and found few studies that systematically compared costs and benefits with and without an extension project. Although early evaluations of extension investments criticized the observed low levels of efficiency and frequent lack of equity in service provision, they reported relatively high benefit-cost ratios. The overriding lesson of Evenson's (1997) review of 57 studies of the economic impact of agricultural extension is, however, that impacts vary widely—many programs have been highly effective, while others have not. A recent meta-analysis of 289 studies of economic returns to agricultural research and extension found median rates of return of 58 percent for extension investments, 49 percent for research, and 36 percent for combined investments in research and extension (Alston and others 2000).

However, while economic analysis seems to provide fairly strong justification for many past extension investments (e.g., Maredia, Byerlee and Anderson 2001), it does not tell the full story. Concern about data quality and difficult methodological issues of causality and quantification of benefits must be important qualifiers to the prevailing evidence of good economic returns from extension. In Kenya, perhaps the most closely studied case in developing countries, early evaluations had indicated remarkably high positive economic returns to extension investments, but a comprehensive evaluation based on new and improved data found disappointing performance—an ineffective, inefficient, and unsustainable training and visit system and no measurable impact on farmer efficiency or crop productivity (Gautam 2000). Such findings do little to dispel the skepticism of policymakers about the returns to investment in public extension. More evaluative work is clearly called for to assist policymaking and investment decisions.

Among these general problems of extension organization, the difficulty of attributing impact weakens political support, leading to small budgets and problems of fiscal sustainability. Ironically, this same difficulty may explain why international development agencies continue to heavily support extension activities, financing some \$10 billion in public extension projects over the past five decades. The economic justification for the project is rarely based on solid ex ante cost-benefit analysis, since parameters are typically not available from past projects because of the difficulties of attributing impact. Attribution problems also imply that it will be difficult to establish failure once a project is completed (completion is the artificial point in time when donor funding is fully disbursed, but farming and extension activities continue).

Each situation calls for suitable extension provision methods, but this review emphasizes the efficiency gains that can come from locally decentralized delivery and incentive structures based on largely private provision. Most extension services will remain largely publicly funded, however, especially in impoverished developing countries.

Much remains to be done to bring appropriate extension services to poor farmers around the world. But investors need to be cautious in designing public extension systems and to draw lessons from experience. Informed by these lessons, governments should be able to increase the returns to their investment and successfully assist farmers in boosting their productivity and income, thereby contributing to stronger economic growth.

5. Some Other Relevant Websites Not Mentioned Above

CAB International, Wallingford, UK. This organization publishes many books relevant to the themes of these notes, such as Anderson (1994), Persley (1998), Alston, Norton and Pardey (1998), Lee and Barrett (2001), Byerlee and Echeverría (2002), and Evenson and Gollin (2003).

<http://www.cabi.org/>

Overseas Development Institute (ODI) AgREN (Agricultural Research and Extension Network)
<http://www.odi.org.uk/agren/>

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A short summary version is also available at: [http://lnweb18.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/B728D887FC2B754D852568BD005A8C19/\\$file/198precis.pdf](http://lnweb18.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/B728D887FC2B754D852568BD005A8C19/$file/198precis.pdf)
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