

The World Bank, the Grant Program, and the CGIAR

A Retrospective Review

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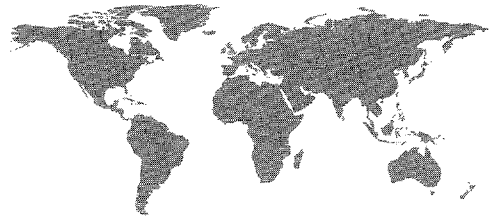
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Abbreviations and Acronyms

AGR	Agriculture and Rural Development Department (World Bank), after 1991 the Agriculture and Natural Resources Department	IDA	International Development Association (World Bank Group)
AKIS	Agricultural Knowledge and Information Systems (Thematic Team of the Rural Sector Board, World Bank)	IDRC	International Development and Research Center (Canada)
AVRDC	Asian Vegetable Research and Development Center	IFAD	International Fund for Agricultural Development
CCER	Center-Commissioned External Review	IFDC	International Fertilizer Development Center
CGIAR/CG	Consultative Group on International Agricultural Research	IFPRI	International Food Policy Research Institute
CIAT	International Center for Tropical Agriculture	IIMI	International Irrigation Management Institute
CIFOR	Center for International Forestry Research	IITA	International Institute of Tropical Agriculture
CIMMYT	International Center for Improvement of Maize and Wheat	ILCA	International Livestock Center for Africa
CIP	Centro Internacional de la Papa (International Potato Center)	IPGRI	International Plant Genetic Resources Institute
DEC	Development Economics Vice Presidency	ILRI	International Livestock Research Institute
DFR	Donor of First Resort	IRRI	International Rice Research Institute
DGF	Development Grant Facility (World Bank)	ILRAD	International Laboratory for Research on Animal Diseases
DSE	German Foundation for International Development (Feldafing)	ILRI	International Livestock Research Institute
EPMR	External Program and Management Reviews	INIBAP	International Network for the Improvement of Banana and Plantain
ER	External Review	ISNAR	International Service for National Agricultural Research
ESDAR	Agricultural Research and Extension Group (World Bank)	ITC	International Trypanotolerance Center
ESSD	Environmentally and Socially Sustainable Development Network (World Bank)	IUFRO	International Union of Forestry Organizations
FAO	Food and Agricultural Organization (United Nations)	IWMI	International Water Management Institute (new name for IIMI)
FARA	Forum for Agricultural Research in Africa	MTM	Mid-Term Meeting (CGIAR, usually held in a developing country in May)
GEF	Global Environmental Facility	MTP	Medium-term Plan
IAEG	Impact Assessment and Evaluation Group (CGIAR)	NARS	National Agricultural Research System
IARC	International Agricultural Research Center	NGO	Nongovernmental Organization
IBPGR	International Board for Plant Genetic Resources	OED	Operations Evaluation Department (World Bank)
IBSRAM	International Board for Soil Research and Management	OPV	Open Pollinated Variety
ICARDA	International Center for Agricultural Research in the Dry Areas	P&S	Priorities and Strategies
ICIPE	International Centre for Insect Physiology and Ecology	RDV	Rural Development Department (World Bank)
ICLARM	International Center for Living Aquatic Resources Management	RSB	Rural Sector Board (World Bank)
ICRAF	International Centre for Research in Agroforestry	SGO	Special Grant Oversight Committee (World Bank)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics	SGP	Special Grants Program (World Bank)
ICW	International Centers Week (CGIAR, held at the World Bank)	SPAAR	Special Program for African Agricultural Research
		TAC	Technical Advisory Committee (CGIAR)
		UNDP	United Nations Development Programme
		UNEP	United Nations Environment Programme
		USAID	United States Agency for International Development
		WARDA	West African Rice Development Association



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Preface

This report was prepared to provide background for a more general study by the Operations Evaluation Department (OED) at the World Bank on the Bank's Special Grant Program (SGP).¹ The SGP was recently brought under the aegis of the newly established Development Grant Facility. Grants are a small but growing proportion of the Bank's operations. The general evaluation was designed to provide information for the Board's discussion of funding for grant programs in advance of FY 1999.

The Consultative Group on International Agricultural Research (CGIAR) represented the first substantial grant made by the Bank aside from transfers to IDA. The initial contribution was made in 1972 and grew steadily until the mid-1990s, when it leveled out. It is the largest single grant by a wide margin, but it has been dropping in relative importance as other grant activities have expanded. However, in 1997 it still represented 56 percent of the total Special Grant Program and 37 percent of Special Programs in general.

Because of the size, complexity, and importance of the CGIAR program, and because of some timing issues at our end, we thought that it would be best to start with a general background document, which could be used as a resource for more specific issues to be raised in the review (and which were being shaped as this was written from January through September 1998). We also thought that such a document might be of broader interest and use.

We recognize, however, that only a few may read the document from cover to cover. Therefore we have tried to make the individual chapters, which may be of varying interest, relatively self-contained. One result is that the more omnivorous readers may find some themes repeated from time to time, especially in the final chapters, in spite of our attempts to reduce this to a reasonably tolerable level.

Executive Summary

This report was prepared to provide background for a more general study of what was known as the World Bank's Special Grant Program (SGP), and more recently, the successor program supported through the Bank's Development Grant Facility (DGF). The Bank and the Consultative Group on International Agricultural Research (the CGIAR) have had a long and close relationship. The Bank took the lead role in establishing the CGIAR. The first Bank contribution to the CGIAR in 1972 was its first major grant (excluding IDA transfers) and was a precursor of the SGP, which was established in 1982. CGIAR has remained the major recipient of SGP funds, although its relative role has declined over time as other grant activities have been added.

At the establishment of the CGIAR in 1971 by the Bank and other international development agencies, it sponsored four International Agricultural Research Centers established by the Ford and Rockefeller Foundations. Today, it has evolved into a 16-Center System, which not only carries out technical and policy research relating to the major food commodities consumed by the world's poor, but is also concerned with natural resources and biological diversity. The System is dedicated to alleviating poverty, improving food security, and protecting natural resources in developing countries. It does this by providing international public goods in collaboration with other research organizations. The CGIAR is at the heart of an international system linking developing and industrial nations. In responding to the needs of developing nations, it is of immense importance.

The Bank plays two major roles in the CGIAR: cosponsor and donor. It is one of four international organizations that sponsor the System. It is more than an equal partner in this process in that it provides the chairman of the Group, funds the CGIAR Secretariat at the Bank, and pays one-third of the cost of the Technical Advisory Committee of the CGIAR, which provides ongoing programmatic advice and scrutiny. It has also contributed an average of slightly less than 15 percent of the funding for the Centers and is the largest of some 44 donors. By virtue of these diverse roles, the Bank is unquestionably the key player in the System.

The broader study of SGP/DGF is concerned with three main subjects: (a) alignment with Bank goals and programs; (b) implementation of supervision, leverage, and evaluation; and (c) accomplishments in grant efficacy and program effects. These questions, which can be difficult to answer for an individual grant of modest size, are especially difficult to deal with for a long-standing international multilateral enterprise with many components spread around the globe. Hence we have attempted to provide a reasonably comprehensive review of the System and the Bank's relationship to it.

Our view is that the CGIAR System and Centers rank high on all three SGP issues. The System has proven surprisingly flexible for an international entity. It is closely aligned with Bank goals and, subject to the caveats noted below, with its programs. The System is well implemented in supervision, evaluation, and leverage, and it is giving substantially increased

The CGIAR is at the heart of an international system linking the developing and industrial nations.

attention to further dimensions of evaluation. It has made notable accomplishments at both the System and Center level, although the record is somewhat uneven among the Centers because of differences in age, type, and difficulty of task (in some cases, more attention might usefully be given to assessing factors hindering adoption). But overall, the System itself is a remarkable and long-standing example of voluntary international cooperation.

Three follow-up questions are addressed in the body of this report. These are: (a) the need for the CGIAR in the future; (b) the continuing importance of the Bank's role in CGIAR; and (c) possible improvements in the Bank's relationship with the CGIAR. First, there will be a definite and continuing need for the international public goods produced by CGIAR in the future. Second, the Bank plays vital roles in sponsoring the apparatus of the System, providing leadership, and funding the Centers. How this support might best be sustained in the context of the guidelines for the Bank's DGF is an important policy issue that must be addressed. Third, the Bank, for all its virtues with respect to the CGIAR, has been less than fully effective in building links between its own programs in agriculture and natural resources, particularly loans for agricultural research, and the CGIAR Centers.

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The Bank could, and we think should, become more involved with the CGIAR at the technical level. Some of the involvement hinges on staffing and administrative arrangements in the Bank's central units with oversight responsibilities for agricultural research investments. In addition, it may be useful to consider an earlier suggestion to designate a small proportion of the Bank's contribution to the CGIAR as a Synergy Fund to help build links between Bank programs and staff and the Centers.

In sum, the CGIAR is a proven and highly useful institution. The vital goals it is pursuing in food security, poverty alleviation, and improved management of natural resources will become more difficult to attain in the future. While the CGIAR System is focused first and foremost on the needs of developing nations, the work of the Centers is often of broader value. The entire world—both more- and less-developed—benefits. Bank participation has been essential to bringing the System and the Centers to their current levels of contribution to development. Yet for all of this, it is a rather fragile institution, especially in its funding. New ways need to be explored to ensure the CGIAR's sustainability in the future.

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Chapter 1

The CGIAR: An Introduction

The Consultative Group on International Agricultural Research (CGIAR), established in 1971, is a unique organization with a vital and formidable task. Its mission is to contribute, through research, to promoting sustainable agriculture for food security in developing countries. Its goals are to alleviate poverty and protect natural resources in order to achieve sustainable food security (TAC Secretariat 1997, pp. 3–4).¹

Composition of the System

The CGIAR System has two principal components: the sponsoring organization, referred to as the Group, and 16 International Agricultural and Natural Resource Research Centers (IARCs). The Group consists of a chairman, cosponsors, donor members, and regional representatives from developing nations. The chairman is a vice-president of the World Bank. Cosponsors include, in addition to the Bank, the Food and Agricultural Organization (FAO); the United Nations Development Programme (UNDP); and, recently, the United Nations Environment Programme (UNEP). In 1997, contributions were received from 50 donor members representing industrial nations (20), developing nations (16), international and regional organizations (11), and foundations (3). At International Centers Week (ICW) 97, three more nations declared their intention to join the Group, and some others are expected to join in 1998. Total funding in 1997 was about \$320 million.²

Of the 16 IARCs, 13 are located in 11 developing nations and 3 are in industrial nations (table 1.1). The Centers in developing nations are devoted to a wide range of agricultural and natural resource research; the latter category extends to water management, fish, and forestry. The Centers in industrial nations are oriented to policy research, institutional development, and genetic resources. In geographic distribution of activities, as measured by expenditures, the breakdown was as follows in 1996: Sub-Saharan Africa, 38 percent; Asia, 33 percent; Latin America and the Caribbean, 18 percent; and West Asia and North Africa, 11 percent (CGIAR Secretariat 1997, p. 44).³ In 1996, the international staff totaled 887, while other (locally recruited) staff totaled 9,416 (CGIAR Secretariat 1997, p. 46). The CGIAR, while modest in size in many ways, is still one of the largest public international research organizations.

The System and Centers are served by several groups. CGIAR Secretariat at the World Bank carries out three main functions: it (1) assists the chairman; (2) coordinates donor relations, resource mobilization, and financial matters; and (3) provides management assistance and informational services. The Technical Advisory Committee (TAC) is composed

The CGIAR's mission is to contribute to the promotion of sustainable agriculture in developing countries.

of a chairman and 12 members from industrial and developing nations and is backed up by a Secretariat at the FAO in Rome; it provides a wide range of scientific and technical advice to the Group, arranges special studies and regular Centers reviews, and reviews the balance between existing programs and new areas of research. The Group also has several standing committees composed of CGIAR donors: the first two were Oversight and Finance; they have been joined by a committee addressing policy on genetic resources. Two advisory committees composed of members from outside the System are concerned with the private sector and nongovernmental organizations (NGOs). The System is also supported by an Impact Assessment and Evaluation Group (IAEG).

Table 1.1. CGIAR-Sponsored Centers, 1998

<i>Center</i>	<i>Headquarters^a</i>	<i>Founded</i>	<i>Joined CGIAR</i>
CIAT – Centro Internacional de Agricultura Tropical (International Center for Tropical Agriculture)	Cali, Colombia	1967	1971
CIFOR – Center for International Forestry Research	Bogor, Indonesia	1992	1992
CIMMYT - Centro Internacional de Mejoramiento de Maiz y Trigo (International Center for the Improvement of Maize and Wheat)	El Batan, Mexico	1966	1971
CIP – Centro Internacional de la Papa (International Potato Center)	Lima, Peru	1971	1973
ICARDA - International Center for Agricultural Research in the Dry Areas	Aleppo, Syria	1977	1978
ICIARM - International Center for Living Aquatic Resources Management	Metro Manila, Philippines	1977	1992
ICRAF – International Center for Research in Agroforestry	Nairobi, Kenya	1977	1991
ICRISAT - International Crops Research Institute for the Semi-Arid Tropics	Patancheru, Andhra Pradesh, India ^b	1972	1972
IFPRI – International Food Policy Research Institute	Washington, D.C.	1975	1980
IIMI – International Irrigation Management Institute ^c	Colombo, Sri Lanka	1984	1991
IITA – International Institute of Tropical Agriculture	Ibadan, Nigeria	1967	1971
ILRI – International Livestock Research Institute ^d	Nairobi, Kenya	1995	1995
IPGRI – International Plant Genetic Resources Institute	Rome, Italy	1974	1974
IRRI – International Rice Research Institute	Manila, Philippines	1960	1971
ISNAR – International Service for National Agricultural Research	The Hague, Netherlands	1979	1980
WARDA - West African Rice Development Association	Bouaké, Côte d'Ivoire	1970	1975

a. In several cases, the Center is located well outside of the city listed (CIAT, CIMMYT, ICARDA, ILRI, IRRI, and WARDA).

b. A major station servicing the Africa region is near Niamey, Niger.

c. Recently renamed the International Water Management Institute.

d. Represents an integration of the International Laboratory for Research on Animal Diseases (ILRAD, founded and joined CGIAR in 1974) and the International Livestock Centre for Africa (ILCA, also founded and joined in 1974).

Characteristics of the System and the Centers

Four key overall characteristics of the System are: (a) the global perspective of mandates and programs, which facilitates a clear focus on problems that cut across national borders and lend themselves to international solutions; (b) the international status of the Centers and their governance, staffing, program design, and resource support, which protect their mandates and programs from undue political pressures and from purely national or regional influences; (c) the international mobility of germplasm, Center staff, and knowledge; and (d) the principles of universality, which have as their aspiration the accessibility of research results to all interested parties and the openness of Centers to all partners seeking collaboration.

The Group itself is a loosely knit, decentralized structure based on voluntary contributions. It has no constitution, by-laws, or written rules of procedure, although it has a framework of extensive informal procedural guidelines. The Group reaches its decisions by consensus, articulated by the chair. The Technical Advisory Committee reports directly to the Group, as do the various committees.

The CGIAR-supported Centers are autonomous organizations with independent legal status and finances. The research policies and programs of each Center are directed by its own board and management. Scientific and managerial staff are recruited internationally. Members of boards are mainly leading scientists, serving as individuals, and for the most part, not as representatives of any institution. Some 55 nationalities are represented on the various boards of trustees and more than 60 nationalities on the internationally recruited staffs of the Centers.

A Canadian description (IDRC 1983, p. 27) aptly summarizes the System and its setting:

The international agricultural research system is a web supported by contacts and commitments, ideas and ideals, inspiration and perspiration. Above all, it is a network of people—not just the scientists and administrators who staff the international centers, but the scientists, technicians, and the extension workers who make up the national programs. And beyond them the farmers themselves.

The research policies and programs of each Center are directed by its own board and management.

Operations of the System and the Centers

The System's various components operate in different ways. The Group itself, which includes the donor members, serves as a sort of overall board of directors, whose decisions are quite influential but not always binding on all concerned. It holds two meetings a year: a Mid-Term meeting (MTM), generally held in a developing country in late May, and International Centers Week (ICW) held in Washington in late October and early November. In addition to cosponsors, donors, regional representatives, TAC members, various committee members, representatives of CGIAR Centers and programs and representatives of many other groups are present. The business session is the heart of the meeting, but it is surrounded by many committee meetings and related activities. The MTM is generally smaller and incorporates a host-country day. The ICW is larger and incorporates reports by each Center and more surrounding events. Both have become the meetings to attend for a wide variety of organizations and individuals concerned with international agricultural research.

The business sessions are, unlike those of other international organizations, relatively informal. Votes are seldom taken and decisions are made by consensus—which places the chairman in a powerful yet challenging and delicate position, for he is the one who declares and articulates the consensus position. Most of the time this is not a problem, but sometimes issues are sufficiently complex and/or the discussion so mixed that it is difficult to tell where the Group stands; in a few cases, the calls have been very close and somewhat contentious. A more routine challenge is to keep the meetings participatory, and yet moving and on target. It is during CGIAR meetings that the absolutely vital role played by the chairman becomes evident. He is, of course, backed up by many others—the cosponsors, the CGIAR Secretariat, and TAC. But the final responsibility is his.

The Centers operate differently. Each has an internationally selected board, generally half from developing and half from industrial countries (including representatives of the host government), which meets once or twice a year. Usually each Center has executive, program, audit, and nominating committees, some of which may meet several times a year. Since some of the broad parameters of a Center's operations are set by the CGIAR System, the board is concerned with the operation of the Center within the context of the System. Selection of the Center director is the single most important task of the board, and has been an increasingly challenging one of late.

Evolution of Programs and Renewal of the System

When the CGIAR was first established, it supported four previously established Centers largely devoted to production research on basic food crops. Over the years, 14 more Centers and programs were added, which deepened and broadened the CGIAR's efforts.¹ The initial additions included basic food crops, but also went on to policy, a broader effort on genetic resources, and assistance to national research systems. Subsequent additions in the early 1990s moved the System deeper into natural resources, specifically forestry, agroforestry, water management, and aquatic resources. Training has always been part of the agenda.

Thus it might be said that the CGIAR supports research and related activities under six broad program thrusts: (a) research to increase productivity of resources committed to farmers' food production; (b) management of natural resources; (c) improvement of the policy environment by assisting countries in formulating and implementing food, agricultural, and research policies; (d) capacity building by training and strengthening national agricultural research systems; (e) germplasm conservation by collecting and classifying genetic resources and maintaining genebanks and other means of conservation; and, increasingly, (f) building linkages between institutions in the national systems and other components of the global agricultural research system.

In the mid-1990s, in response to a series of funding difficulties, the new chairman initiated a renewal process for the CGIAR. The process spread over a year and a half from May 1994 (MTM) to November 1995 (ICW). A special part of the process was a "Ministerial-level" meeting in Lucerne in February 1995, which was the highest level meeting of the Group since it was founded in 1971. The basic purposes of the renewal process were to stimulate the donors and to initiate some changes in the System. As more formally stated,

In response to a series of funding difficulties, the new chairman initiated a renewal process for the CGIAR.

the intention was to “clarify the vision, refocus its research agenda, create greater openness and transparency, strengthen its partnerships, ensure its efficiency and effectiveness, and tighten its governance and operations.” Progress was made on each of these fronts, but the broadening of membership, which made the Group more of an “integrated South-North enterprise based on a shared vision” (Serageldin 1996, p. vii), was perhaps the most notable feature of the process.⁵

Chapter 2

The Role of the CGIAR in Development

The CGIAR plays a major role in development in the developing regions of the world. It does so by providing a technological and policy base for improving agricultural productivity and better management of natural resources. Low-income producers and consumers benefit through lower food costs, and society benefits from improved management of natural resources.

Role of the Rural Sector in Development and the Strategy of the World Bank

The importance of agriculture in economic development has long been established in Bank economic and sector work and research efforts, explicitly recognized in Bank operations, and most recently articulated in the Bank's *Rural Development: From Vision to Action* (World Bank 1997a), the latest sector strategy developed as part of the forging of the Bank's 1997 Strategic Compact.

The Bank's objectives of poverty reduction, along with widely shared growth, food security, and sustainable natural resources management, cannot be met unless rural development, especially in agrarian societies, is nurtured and improved. This principle forms the essence of the agreed strategy for improving the rural economy. Despite rapidly increasing urbanization and all the difficulties that entails, the great majority of the world's poor will continue to live in rural areas well through the next century, so it is imperative to address rural poverty now. In doing so, it is also possible to help ameliorate some urban problems.

Future increases in food supplies must come primarily from rising agricultural yields, rather than from crop-area and irrigation expansion. Indeed, production on existing land must nearly double over the next few decades. The challenge is worldwide, and involves policy, institutional, and technological elements. The technological challenge is considerable, requiring the development of high-productivity and environmentally sustainable production systems, especially in the many parts of the agricultural world that have thus far benefited little from the Green Revolution.

Within this context, the key elements of the current rural development strategy of the Bank are:

- *Reduction of poverty and hunger.* Unless opportunities for rural people are improved, poverty and hunger will remain widespread. Rural growth also helps raise wages for unskilled workers in cities by reducing rural-to-urban migration and lowering prices for food, a large component of the budgets of poor people.

Production must nearly double over the next few decades.

- *Fostering agricultural growth.* Agricultural growth stimulates economic growth in general by freeing resources for investment in industry and services. Few countries have achieved strong economic growth without having first attained significant agricultural growth.
- *Securing agricultural capacity for future generations.* Agricultural growth is also critical if rising food demands are to be met without degrading the environment. Increases in food supplies must come mainly from rising yields. This will require major improvements in soil and water management in all regions of the world.
- *Reversing natural resource degradation.* Rural development is also essential to improve the management of natural resources underpinning the rural sector. Improvements in yields will reduce the conversion to cropping of presently uncultivated areas, especially those under moist tropical forests. Improvements in use of water and agricultural chemicals will reduce pollution and conserve water for nonagricultural uses.

Meeting the goals of the Bank's rural development strategy in terms of agricultural growth, food security, and poverty reduction will depend heavily on the continued availability of appropriate technology. To feed future generations and at the same time sustain the natural resource base will, as noted, not be easy and implies a significant shift from input-intensive monocrop agriculture to the application of knowledge-intensive practices within increasingly complex and diversified farming systems. Recent advances in science, especially in biotechnology and informational technologies, have been especially rapid, but most of the Bank's borrowing countries do not yet have the capacity to undertake the needed research without strong international support and partnerships. The products of much of such research are international public goods that have high applicability across countries. They will not be produced at optimal levels by individual countries alone or by the private sector anywhere, especially for many tropical crops and livestock. Changes in technology and in the role of the public sector will also require new methods for dissemination of these technologies. Thus, gaps in the global agricultural knowledge system could too easily compromise the implementation of the rural strategy.

Past experience has clearly shown that rural development also requires strong public institutions to deliver public goods and services, as well as strong stakeholder participation in these institutions. The Bank is thus seeking innovative ways to more effectively link to elements of civil society, as well as to its traditional government partners. Some important components of these linkage mechanisms involve, naturally, the providers of agricultural services, including agricultural research, and these are addressed next.

Role of Research and Technology in Agricultural Development

The role of research and technology in development, following such original insights as those of Schumpeter and Kuznets, is well understood in the World Bank, as befits an institution with Keynesian roots, and is one articulated at length in the 1998 *World Development Report* (World Bank 1998). The Bank itself was quick to recognize that technology is an important aspect of development, and its commitment to technology continues unabated.

When it comes to the agricultural sectors of the developing world, the primacy of the role of technological advance has been mirrored in Bank operations and other activities, such as various programs funded by the Grant Program, the production of a policy paper on agricultural research (World Bank 1981), and subsequent strategy papers for the overall sector (for example, World Bank 1992; Anderson 1994).

Agricultural technology involves so many links to other aspects of agricultural development that it is better not to consider it in isolation. Broadly speaking, it is driven by investments in research and extension, but it is also conditioned by other policy aspects, including prices for traded and nontraded inputs and outputs, agricultural policies that bear specifically on these prices, and other incentives or disincentives for adoption of improved agricultural techniques. Agricultural technology is also influenced by infrastructural investments, including, most important, irrigation, transport systems such as rural road and rail links, and manufacturing capacity for fertilizer and other major agricultural inputs.

The World Bank, from the outset of its operations, has been centrally involved in all the activities that are linked, sometimes indirectly, to agricultural technology. It has participated by assisting its members to invest in all the developmental components that drive and condition agricultural technology improvement, and has done so adaptively with appropriately changing emphasis over time. In earlier phases, major attention was given, for instance, to large-scale irrigation schemes. Provision of key complementary inputs was also supported, especially improved access to fertilizer and to the research-based modern cultivars, particularly of rice and wheat, which were much more responsive to the fertilizer and water. Together these fueled the Green Revolution, a phenomenon initially centered primarily in South and East Asia.

Much of the developing world is still in the throes of different stages of the adoption of modern cultivars that began in the mid-1960s. Certainly, the impact of these varieties and hybrids has not been uniform across national boundaries, and especially not across agroecological boundaries. In most countries with well-managed irrigation for rice, or relatively favorable growing conditions for other cereals such as wheat, the adoption of contemporary improved cultivars is just about complete, in the sense that nearly all farmers in such circumstances have chosen to grow such materials and have profited accordingly. In other agroecologies, however, farmers still find it to their advantage to sow varieties that do not have all the characteristics typical of the modern versions, such as reduced plant stature, photoperiod insensitivity, and strong responsiveness to nitrogenous fertilizer application.

Even where adoption rates in particular agroecologies are relatively high, national yields have been continuing to increase through improvements in other crop-management practices. Many of these practices constitute further intensification and increase pressure on the land resource; this is causing great concern in some areas, particularly in Southeast Asia.

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Some observers, however, are becoming increasingly worried that progress in boosting yield potential has been so slow that farmers, especially the most progressive ones, are quickly closing the gap between what they can produce under commercial conditions and what research workers can produce under the most favored experimental conditions. If so, there is some reason for concern about the potential for future yield increases.

But major developments are in train. The era of biotechnology has yet to reach the major foodcrops, but it is almost inevitable that major new gains will be made through genetic manipulation in advanced molecular biology laboratories that will “engineer” desired genes in new ways that will greatly accelerate progress in strong crop-improvement programs. The World Bank and others, including the CGIAR, have articulated a position on the exploitation of biotechnology for agricultural development purposes in the developing countries (World Bank and others 1991). This will progressively be translated into new research programs with the international research centers and private sector partners and direct involvement in national biotechnology research programs. Such national endeavors can really be successful, however, only when they are combined with already strong crop-improvement programs.

Most nations still
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Notwithstanding considerable Bank support for investment in national agricultural research systems, most nations still do not have adequate capacity for research work. This is one of the reasons for the importance of the International Network of Agricultural Research Centers, fostering of a global agricultural research system, and the regional cooperation being developed in several areas, particularly in Sub-Saharan Africa with the assistance of SPAAR. It also lies behind the efforts to establish a Global Forum on Agricultural Research, which is intended to link more effectively research programs in developing nations with “advanced” research institutes, wherever they may be.

An aspect of the total picture that is receiving increasing—and deserved—importance is the public versus private “balance.” It certainly seems likely that there is a larger and probably increasing role for private sector contributions in agricultural technology generation, and this is likely to move increasingly to work linked to biotechnology, and thus away from the traditional private sector emphases on mechanical and chemical inputs to agriculture. There will, of course, continue to be major and important public sector roles in technology generation, although, as discussed in the recent OED study of agricultural research (Purcell and Anderson 1997), within these roles there is considerable scope for improving institutional performance.

Agricultural technology provides the key to much needed development in the developing world and, in pursuing its possibilities, all the many components—from research and technology transfer to implementation by the farmers themselves—must be carefully appraised, and appropriate interventions sought by all the concerned development-oriented institutions. The World Bank is among those most actively involved. So are other agencies of many types, national and international, official and unofficial.

Role of the CGIAR in Agricultural and Natural Resources Research

The role of the CGIAR may be viewed both in an international perspective and in consideration of programs.

International Perspective

The CGIAR clearly represents an international approach to agricultural and natural resources research, in contrast with a very localized approach, although there have been some recent efforts to meld the two. The international approach holds that, rather than reinvent the wheel in every country, there are some things that can be done more efficiently in well-ordered facilities at the international level. International Centers can more easily draw on knowledge from around the world, build on it in cooperation with other nations, and feed it back to the world.

In short, research is helping to create international public goods. These goods can be used in many countries. In current economic jargon, the “spillover” from one country to another provides “spillins” for the countries that receive them. Generally, further research must be carried out to select or tailor the technology for local conditions, but still, the final product is likely to be better and cheaper than if it had to be created by each country on its own. This is not at all an unnatural process, as improved agricultural technologies have been criss-crossing the globe in more informal ways for centuries. It merely enhances and systematizes the flow.

The CGIAR, moreover, is able to partly straddle both the industrial and developing worlds. While its research facilities are located in developing nations, it is in a good position to interact with more advanced facilities in industrial nations. Most of the international scientists in the Centers have been trained in the industrial world and have their own set of contacts. They are able to make use of these linkages—sometimes with the assistance of donor organizations—to more efficiently and effectively carry out their own research work for developing nations.

The System and the Centers are playing an increasing role in linking the developing nations together and in fostering a global agricultural research system. The System is also seeking to pursue this through its involvement in the Global Forum, an activity that encourages closer regional and other association of research institutions and their interaction at the international level.¹ It is encouraging, often with project support from donors and regional networks of researchers. ESDAR has contributed to this process (Petit and others 1996).

The System has been giving increased attention to ecoregional research activities—studies that involve complex regional agricultural and ecological interactions, which may produce generalizable results of value to other regions. Studies are also being done using participatory research, which engages farmers more fully in the research process. There are limits to how far an international organization can or should go in these activities, but they are being tested.

Thus, while the CGIAR represents only a small portion of the international agricultural research network, its importance is much greater because it sits at the heart of this network. This importance stems from the extent of international spillovers, the efficiencies of working across national boundaries for many research products, and the productivity-boosting

The CGIAR is at the heart of the international agricultural research network.

collegiality and cost-reducing benefits of sharing information and materials, while fostering the advance of agricultural science generally (Anderson 1998).

Programmatic Emphases

In its early years, the CGIAR gave highest priority to varietal improvement research on the food staples of the poor, particularly cereals. About two-thirds of CGIAR resources were allocated to research on rice, maize, and wheat. High priority was also given to improving the quality of diets through research on food legumes and ruminant livestock. Research on starchy food sources, including roots and tubers, was also prioritized, because of their dietary significance in developing countries, their potential for producing high outputs of food energy, and the prospects for yield increases.

Resource allocation has shifted significantly over the years (Gryseels and Anderson 1991, p. 320). From 1993 to 1997, the proportion of CGIAR resources spent on increasing productivity declined from 49 percent to 40 percent, while the proportions spent on protecting the environment rose from 14 percent to 17 percent and on saving biodiversity from 6 percent to 11 percent. The proportions spent on improving policies and strengthening institutions remained about the same (CGIAR Secretariat, 1998e, p. 50).

The regional allocation of CGIAR resources has been fairly stable since the mid-1980s, with about 40 percent going to Sub-Saharan Africa and the remainder distributed to Asia (32 percent), Latin America and the Caribbean (17 percent), and West Asia and North Africa (12 percent) (Gryseels and Anderson 1991, p. 323; CGIAR Secretariat 1996). Whether the large allocation to Sub-Saharan Africa is appropriate is one policy question not yet satisfactorily addressed (Diouf 1989, External Panel 1994).

The overriding significance of alleviating poverty has recently been given renewed and strengthened emphasis in the CGIAR, as well as in the Bank (TAC Secretariat 1997a, p. 3). The major purpose of the CGIAR can thus now be described as enhancing sustainable agriculture and poverty alleviation through resource conservation and management, increasing the productivity of commodity production systems, improving the policy environment, and strengthening national research capacities. This is very much in line with the attention given to poverty in the Bank's 1998 paper on strategic issues in agricultural research (Byerlee and Alex 1998, Box 3.4), where particular emphasis is given to developing technologies that favor the poor—especially labor-intensive technologies.

The link between agricultural research and poverty reduction is complex (Byerlee and Alex 1998). Research that generates broad-based productivity increases is one of the most effective means of reducing poverty: first (and most directly) by enhancing rural employment and income generation, and second (and less directly) by boosting production, and thus reducing prices of basic foods. One of the major impacts of successful agricultural research is increased supply and lower prices for food, which is especially beneficial to the poor, who spend a large share of their income on food. Research orientation can also be modified by choice of regions and/or commodities that are assessed as offering good prospects of pro-poor productivity improvements, including research on the staples consumed by the poor. Research may also directly address the particular needs of women or disadvantaged groups.

Research that generates broad-based productivity increases is one of the most effective means of reducing poverty.

A focus on rural poverty alleviation may lead to an efficiency tradeoff with research that could procure the greatest total economic return at the farm level. The emphasis of the CGIAR on basic food crops and livestock for domestic consumption is unlikely to be the best way to attain the greatest return. Other commodities, higher-value food crops, and nonfood commodities for domestic consumption and export may offer greater promise of raising farm income. Evidently, the poverty-alleviation policy and agricultural research policy issues are interconnected, but complex. First, it is not certain that the CGIAR has a comparative advantage in conducting research on these other commodities. Second, there is a question whether such a shift in emphasis would increase the System's overall contribution to poverty alleviation. This is because much of the social benefit of current CGIAR programs comes from their effect on helping hold down the prices of food purchased by low-income consumers, both in rural and urban areas. A shift to higher-income or export commodities would not do this. Hence, while more than farm income needs to be considered, there may be some possibilities (certainly recognized in the System's farming systems work) that should be explored.

In many cases, concerned policymakers call for more research on marginal areas as a way of reducing poverty and arresting resource degradation. While this may be appropriate, the situation is usually quite complex (TAC 1997a; Malik 1998). In some of the most difficult situations, the rate of gain from improved technology may be very slow. Agricultural intensification in areas that have both high production risk and a fragile resource base may not be an effective form of intervention. A complicating factor is that there are often spillover effects from productivity gains in the more favored areas, such as the boosted food supplies noted above, and through the migration of workers from marginal to more favored areas (Renkow 1993, David and Otsuka 1994).

Special Characteristics of Agricultural and Natural Resources Research

Research by its nature takes time, is uncertain in outcome, and is thus an inherently risky activity for which patience is required. The reason that investors have in so many cases demonstrated the requisite patience is that it has, typically, proved to be a highly profitable form of investment. Agricultural research, predominantly conducted in the public sector, is no exception to these generalizations, and a large literature documents a consistent record of returns to investment, of the order of a 50 percent and more internal rate of return on a program basis (Purcell and Anderson 1997, p. 116).² This means that, on average, the high gains from successes more than outweigh the losses on failures.

Thus, high social returns are one good reason for investing in public agricultural research. But there are others. One is the "protection" of research gains through maintenance research. As pests and diseases evolve, new cultivars tend to lose their resistance. Thus in crop improvement programs, which have been the mainstay of CGIAR research, there is an ongoing need to continue breeding efforts to maintain productivity. Especially for open- or self-pollinated crops, such as most cultivars of the major cereals, gains from crop improvement cannot be appropriated by the agency responsible for the work, and the

High social returns are one good reason for investing in public agricultural research.

research products thus have many of the characteristics of a public good. The private sector has little incentive to engage in such work, which is surely needed to underpin productivity gains for feeding the world in the decades to come. Public intervention is thus potentially justified in this arena.

There are, moreover, considerable economies of size and scope in such crop improvement work, and this must be taken into account in organizing research. One proven method is the international model noted in the previous section. This arrangement generates spillover benefits to many countries. Indeed, the recognition of organizational needs and economic benefits explains the long-run support by the Bank for both national and international research efforts. The same thinking has surely also influenced the expansion of such international efforts into other research areas within the CGIAR.

Some fields of research are, however, intrinsically specific to local situations. For example, research on soil-plant interactions elsewhere may have little direct relevance to a particular agroecology. And when specific local socioeconomic circumstances are also taken into account, there may be no real substitute for locally conducted R&D. Whether adequate resources and capacity are available for this task, however, is another question.

Clearly, a balance of international and local research efforts is needed. One can only substitute for the other to a limited extent. Providing adequate resources for both, along with other needed support, is one of the great challenges of our time.

Chapter 3

World Bank Involvement in the CGIAR

The World Bank was very heavily involved in the establishment of the CGIAR in 1971 and has played a major role ever since. The early story, up through the mid-1980s, is well and fully told by Warren Baum, a former Vice President of the Bank and former Chairman of the CGIAR, in *Partners Against Hunger: The Consultative Group on International Agricultural Research* (Baum 1986). We will not attempt to retell it here, except to refer to the historic base for some specific points that have continued on into the present. The subsequent story of World Bank involvement is rather complex, as the reader will soon find out.

The World Bank was very heavily involved in the establishment of the CGIAR in 1971.

Multiple Roles of the Bank

The key points that must be made at the outset are that the Bank, as a development agency, plays two essential roles in the CGIAR: as a very active cosponsor of the Group, along with FAO, UNDP, and, recently, UNEP; and as the current major donor to both the System and the Centers. As a donor, it also has the opportunity to play a third role—client or consumer.

- In its *cosponsor* role, the Bank makes two major contributions to the CGIAR System: leadership and operational support. The chairman of the CGIAR has, except for the first incumbent, been a vice president of the Bank.¹ The amount of time devoted to the System by the chairman is thought to have varied from 2 percent to 10 percent or more, depending on the individual. In terms of System operational support, the Bank provides the full cost of the CGIAR Secretariat and a significant contribution toward the cost of the Technical Advisory Committee (one-third of the cost through 1995; less in proportional terms with the arrival of UNEP as a cosponsor).
- The Bank as a *donor* provided an average of 14.4 percent of Center funding from 1972 to 1996. (For many years, USAID [U.S. Agency for International Development] was the major donor, providing up to 25 percent of the total; its overall proportion for the same period was 19.9 percent.)
- Some other donors, through other funding mechanisms, are in a sense *clients or customers* of the Centers. Services are effectively purchased from the Centers, which complement or support other bilateral programs sponsored by the donors. The Bank, as the major provider of loans for agricultural research in developing nations, would seem likely to be a major customer, but this role has not—for reasons to be discussed later in this chapter—been exercised to any notable degree.

Both the cosponsor and donor roles are carried out under the supervision of the chairman/vice president, but in somewhat different though intertwined ways. The principal vehicle for Bank involvement in either case is the CGIAR Secretariat, which is housed in the Bank. The Secretariat is headed by an executive secretary, who reports directly to the chairman/vice president. The Secretariat is divided into three main teams: finance, management, and information. It also has a science adviser. The finance team not only handles Systemwide issues, but is also responsible for the distribution of the Bank contribution (in cooperation with the CGIAR Finance Committee).

Beyond the CGIAR Secretariat, the situation is more complex. Until recently (March 25, 1998), the chairman, in his vice presidential role, also oversaw (among other units) the Agriculture and Natural Resources Department, AGR (now the Rural Development Department, RDV) and an Agricultural Research and Extension Group, ESDAR. These units now fall under the purview of the head of the Environmentally and Socially Sustainable Development Network (ESSD). Both RDV and ESDAR are headed by directors.

The institutional base of the Bank representative to the CGIAR has changed over time. Through the Mid-Term Meeting of the CGIAR in 1994, the Bank was represented by the director of AGR. With the appointment of a new director of AGR in mid-1994, the representational role was shifted to the director of ESDAR (who had also been serving as chair of the CGIAR Finance Committee), and he has continued to hold that position.² Thus, RDV, long the center for Bank involvement in the CGIAR, has no formal responsibilities in this area.

The director of ESDAR does have responsibilities, but his group, despite its title, has few direct-hire staff and its linkage with Bank agricultural research operations was, until 1998, mainly through cross-support activities of its staff. One forum in which both RDV anchor and ESDAR staff are active, along with interested colleagues from Operations, is the Agricultural Knowledge and Information Systems (AKIS) Thematic Team of the Rural Sector Board, a component of the ESSD Network. This Team (of about 100 staff) reviews practices and processes dealing with Bank operations in agricultural education, extension and research, and manages some Network funds for advancing knowledge in areas judged of high-priority need.

In any case, the role of the Bank representative has been challenging. This is because one person has had to play three somewhat different roles under an individual who himself plays two roles. The representative's roles are as a (a) member of the cosponsors, which entails thinking about the System; (b) donor representative, which entails representing the interests of the Bank; and (c) member and chairperson of the Finance Committee, which involves both dimensions. In each case, the representative has reported to the same person, the chairman/vice president. The representative has also had to relate to the executive secretary of the CGIAR, who reports to the same person. While this arrangement appears complicated, it has worked out reasonably well. The biggest challenge is to function as a Bank spokesperson in the face of higher authority, a Bank vice president. With the recent (March 23, 1998) change in the portfolio of the chairman in his vice presidential role, the Bank representative is now in a separate organizational structure. This shift may provide some guidance as to whether Bank representation is better served if separated from institutional subordination to the chairman.

The Bank representative must play three somewhat different roles.

At the policy level, the Bank's several roles could lead to conflicts of interest, real or perceived, but the basic pattern has also had its advantages. The leadership and cosponsor role has inclined it to the high road of thinking about the welfare of the System. The donor role has been used to back-up the leadership/cosponsor role. The question that has come up from time to time, and which will be discussed later in this report, is whether the donor role has been played in too altruistic a manner and whether the Bank should pay a little more attention to its own interests and programs. There is also the question, apart from either of the roles, of whether the Bank has given sufficient attention to linking its programs with the Centers it helps to sponsor. We will return to this subject later in this report.

Bank Role in System and Center Finance

The Bank has played a critical role in the funding of the CGIAR System, both in its grants to individual Centers and its support for the CGIAR Secretariat (and through it, support for the TAC Secretariat). Recently, support for some related activities under the category of partnership development has also been added.

All but the last had been envisaged from the start of the CGIAR System in 1971. President McNamara announced the Bank's willingness to contribute up to \$3 million, not to exceed 10 percent of total contributions, at the first meeting of the CGIAR on May 19, 1971 (Baum 1986). The Bank would also provide the CGIAR Secretariat and share the cost of the Technical Advisory Committee equally with the then other two cosponsors.

The Bank has played a critical role in the funding of the CGIAR System.

Contributions to CGIAR Centers and Secretariats

In this section we will provide documentation of the Bank's contributions to the CGIAR Centers and the Secretariats. Data on Center grants are published regularly and are readily available. Data on the Secretariat contributions are found only in internal documents, and statistics for the early years remain elusive. The Bank has also provided grant funding to non-CGIAR centers, and this program is briefly summarized in the Annex of this report.

CGIAR Centers

Bank grants, both in nominal dollars and as a proportion of total contributions to the Centers for the 1972 to 1997 period, are summarized in table 3.1. The contribution in dollar terms rose fairly gradually through 1993, when it reached \$40 million, and jumped rather sharply to \$50 million in 1994 and 1995 when the Bank responded to a financial crisis in the System,³ and then dropped back to a level of \$45 million in 1996 and 1997.

The Bank contribution as a percentage stayed at about the 10 percent level through 1980 (averaging 9.1 percent on an unweighted basis and 9.6 percent on a weighted basis). Then it began to increase, first into the 11 percent range, and then jumped into the 14 percent range for the 1984 to 1990 period (apart from a spike of 16.5 percent in 1985). From 1991 to 1995 the proportion rose, reaching peaks of 18.6 percent and 18.5 percent in 1994 and 1995 respectively. In 1996, 1997, and 1998, the proportions dropped below 15 percent. The overall average for the 25-year period was 14.3 percent.

The changes in the Bank proportion reflected changes in Bank policy. The initial policy established by Mr. McNamara of holding the contribution at 10 percent was "So that other

Table 3.1: Bank Contributions to CGIAR Centers, 1972–98

<i>Fiscal Year</i>	<i>Bank Contribution (in millions of nominal dollars)</i>	<i>Total Contributions (in millions of nominal dollars)</i>	<i>Bank Proportion (percentage)</i>
1972	1.3	20.7	6.3
1973	2.8	25.0	11.2
1974	2.4	34.5	7.0
1975	3.2	47.5	6.7
1976	6.5	62.9	10.3
1977	7.9	77.2	10.2
1978	8.7	85.0	10.2
1979	10.2	99.5	10.3
1980	12.0	119.6	10.0
1981	14.6	130.9	11.2
1982	16.3	143.8	11.3
1983	19.0	164.7	11.5
1984	24.3	173.2	14.0
1985	28.1	170.1	16.5
1986	28.4	192.2	14.8
1987	30.0	201.6	14.9
1988	30.0	211.5	14.2
1989	33.3	224.5	14.8
1990	34.3	234.9	14.6
1991	35.1	232.0	15.1
1992	37.6	247.3	15.2
1993	40.0	234.9	17.0
1994	50.0	268.1	18.6
1995	50.0	269.6	18.5
1996	44.9	304.1	14.8
1997	45.0 ^a	319.6	14.1
1998 (prelim.)	45.0 ^b	334.9	13.4
Total (1972–97)	615.9	4,294.7	14.3

a. Out of this amount, \$44.3 million was allocated to CGIAR Centers, \$0.3 million to CGIAR committees, and \$0.5 million to the CGIAR reserve.

b. Out of this amount, \$40.1 million was allocated to Centers, \$4.9 to other CGIAR activities (\$2.0 million to initiate a joint Center program in Central Asia and the Caucasus, \$1.0 million for the System Review, \$1.0 million for partnership costs [principally CGIAR committees], \$0.5 million to establish a legal reference center on intellectual property rights), and \$0.4 million to the CGIAR reserve.

Source: 1972–96: CGIAR Secretariat, 1997, p. 27; 1997, 1998: Estimates provided by financial staff, CGIAR Secretariat; May 22 and June 19, 1998.

donors would have to provide their share,” which they did at first. But with the growth in size and number of the Centers, funding became more difficult, and under subsequent presidents the level was raised to 15 percent. The events of the mid-1990s—involving the financial problems of 1993, 1994, and 1995—provided a special challenge. It is not anticipated that the Bank’s contributions will exceed 15 percent in the future, and they could continue to fall below that level if the other donor contributions stay about the same.

It should be noted that the Bank contribution is more important to the Centers than the numerical level might suggest, because it is unrestricted in use; it is not limited to a specific activity in the Centers’ approved program of work. Untargeted funds are desirable because they provide the Centers with flexibility. In 1996, targeted funds represented 36 percent of the total funds available to the Centers, meaning that only 64 percent of the total funds were untargeted. The Bank’s contributions, therefore, make up a higher proportion of the untargeted category than is true overall. (This point is quantified to a greater degree in Chapter 6.)

The Bank contribution is more important to the Centers than the numerical level might suggest.

CGIAR Secretariat

Bank contributions—as best we could track them—to the CGIAR Secretariat, and in part through it to the TAC and its Secretariat, are provided for 1978 to 1997 in table 3.2.

They, too, rose gradually. Over the 20-year period, on a weighted basis they were equivalent to about 12 percent of the CGIAR contribution. The portion of the Secretariat budget passed on to the TAC budget—the costs of which are shared by other cosponsors—has grown in several stages in dollar amounts, but has dropped in proportion (from about 20 percent in 1984 to 15 percent in 1997). From 1995 to 1998, some funds were also transferred to ESDAR for the support of that group. In 1998 the Secretariat received, for the first time in recent years, a cut in its budget (of about 10 percent).

Reliance on Special Grant Program Funding

The establishment of the CGIAR involved the first Bank grant to a multilateral activity. Technical assistance grants were first introduced in 1960–61, but were tied to loan packages to individual countries.⁴ The first Bank grant to the CGIAR in 1972 was for \$1.26 million. Subsequent years have seen other types of grants added to the Bank’s portfolio,⁵ but the CGIAR contribution has remained the largest single item in the grant portfolio. This predominance has not gone unnoticed by supporters of other programs in the Bank who would like to tap the grant funds.

Thus, while the Bank’s Special Grant Program traces its origins to the establishment of the CGIAR, there is increasing crowding and competition at the grant table. To put this in fuller perspective, we will briefly review the relevant portions of the Bank’s grant funding mechanism.

Sources and Management of Grant Funds

The sources of Bank funding have varied over the years—from the administrative budget at the outset, to net income, and then operating income.

According to accounts of the Board meeting on January 13, 1972, when a proposal for “Grants to Various International Research Centers” (R72-7) was first considered:

Table 3.2: Estimates of Bank Contributions to Support the CGIAR Secretariat and Related Activities, 1978–97^a

FY	(1) <i>Reported Contributions to CGIAR Secretariat(Adj.)^b</i>	(2) <i>Passed to TAC Secretariat (millions of dollars)</i>	(3) <i>Passed to ESDAR</i>	(4) <i>"Net" for CGIAR Secretariat Operations^c</i>
1978	0.40	NA	—	NA
1979	0.60	NA	—	NA
1980	0.90	NA	—	NA
1981	1.20	NA	—	NA
1982	1.40	NA	—	NA
1983	2.00	NA	—	NA
1984	2.20	0.40	—	1.80
1985	2.30 (2.41)	0.45	—	1.85 (1.96)
1986	2.20 (2.31)	0.375	—	1.825 (1.935)
1987	2.47 (2.59)	0.375	—	2.095 (2.215)
1988	2.66 (2.81)	0.45	—	2.21 (2.36)
1989	2.82 (2.90)	0.45	—	2.37 (2.45)
1990	2.96 (3.73)	0.60	—	2.36 (3.13)
1991	3.44 (4.98)	0.75	—	2.69 (4.23)
1992	3.44 (4.98)	0.75	—	2.69 (4.23)
1993	3.61 (5.21)	0.75	—	2.86 (4.46)
1994	4.85 (5.21)	0.75	—	4.10 (4.46)
1995	5.05 (5.33)	0.75	0.20	4.10 (4.38)
1996	5.36 (5.36)	0.75	0.30	4.31 (4.31)
1997 (requ.)	5.51 (5.51)	0.75	0.20	4.56 (4.56)
1997 (final)	5.09	0.75	0.20	4.14

a. This table provided some complexities in preparation, which carry over into interpretation. The data have evidently not been pulled together for more than a few years at a time, and the various references are not entirely consistent. There are three basic problems: (1) no data have yet been found for the 1971–78 period; (2) the data reported for 1978–84 do not explicitly state whether funding was included for the TAC Secretariat (presumably it was) or how much this was; (3) the data reported in the left side of column 1 for the 1985–95 period do not appear to include provision for (a) overhead and benefits and (b) office occupancy costs—both of which have been included in recent years (it is not known what the situation was before 1985).

b. In view of the consistency problem noted in item (3) in the previous footnote, the CGIAR financial staff made the following adjustments: item (a) added 38.1 percent for the 1985–93 period; item (b) added 5 percent for the 1985–95 period. The base numbers used for the evaluations for the 1985–90 period, however, were taken from a different source than used in column 1, and vary somewhat.

c. Residual derived by subtracting columns (2) and (3) from column (1).

Source:

Column 1: Unadjusted Data—1978–87. Memorandum from W. David Hopper (SVPPR) to B. Conable, Feb. 4, 1988. 1987–89: "Review of Special Grants Program," memorandum from W. David Hopper (SVPPR) to Barber Conable, April 28, 1988, p. 18. 1990–97: CGIAR Secretariat Business Plans, annual. Adjusted Data—1985–97. "World Bank Contributions, 1985–97," CGIAR Secretariat, January 12, 1998 (the preparation of this new table drew on data for 1986–90 in the World Bank FY90 Budget document, p. 160 [Annex B. 11]; attachment to memorandum from Curtis Farrar, CGIAR Secretariat, May 19, 1989).

Column 2: 1984–88. "Examination of the Roles and Performance of the CGIAR Secretariat," Report of the CGIAR Oversight Committee, July 21, 1988, p. 18. 1989–97. "World Bank Contributions," *op. cit.* Also CGIAR Secretariat Business Plans, annual. Data provided by the TAC Secretariat suggest a figure of 0.45 in 1989.

At least two executive directors strongly urged management to seek funding from *net income*, requiring authorization of the governors. However, the chairman of the Board argued that the amount involved was “modest” and that he was reluctant to take it up with the governors. He suggested that it would be more practical to provide the funds out of the *administrative budget* than from net income, and the Board endorsed his recommendation with a tacit understanding that in subsequent years, grants to the CGIAR should be charged against *net income*.

Later in 1972, when consideration was being given to the Bank’s contribution for 1973, the president proposed that up to \$3 million of the \$110 million transfer to the International Development Association (IDA) be used to finance grants to the CGIAR Centers. He went on to indicate that he planned to “recommend specific grants for the approval of the executive directors from time to time, after ascertaining in each case that the requisite funds were not available elsewhere.” Thereafter, through FY81, the CGIAR grants continued to be made out of the IDA transfer.⁶

In FY82, the Bank accepted the recommendation of its auditors that transfers of funds to entities that have a substantially different membership from the Bank should be treated as expenses and would fit more properly under administrative support (therefore, special grants were shown as a deduction from *operating income* before arriving at net income).⁷

With the change in accounting procedures in FY82, a Special Grant Program (SGP) was created to provide a planning and oversight function for all grants. In reporting, the “traditional” SGP grants are packaged with some other grant-funded activities under the more general category of Special Programs in the administrative budget. The SGP was followed by the establishment, in November 1997, of the Development Grant Facility (DGF), a broader umbrella group. It has absorbed the Special Programs as well as other activities funded out of net income.⁸

Role of Center Funding

The relative role of Center funding, excluding Secretariat support in these two settings from fiscal years 1985 to 1997, is shown in table 3.3. The Center funding, which accounted for 100 percent of the “traditional” SGP funding in 1972, declined to 72.1 percent in 1985, to 64.9 percent in 1988, and then averaged 56.6 percent during the nine-year period from 1989 to 1997. In the larger context of Special Programs, the proportions remained virtually identical through 1992, and then dropped to an average of 39.9 percent for the five-year period from 1993 to 1997.

When the allocation for the CGIAR Secretariat and related activities is included, the proportion would be expected to rise. Another reference provides these data for the FY93–FY97 period.⁹ It indicates that the average proportion of the “traditional” SGP was raised to 63.8 percent, compared with a comparable figure of 57.7 percent derived from table 3.3. The comparable proportion of the more inclusive category of Special Programs was 44.1 percent compared with 39.8 percent.

Any way one looks at it, the CGIAR represents a sizable proportion of World Bank grant funds. This presents a problem for both the CGIAR and others who would wish to obtain grant funds. This issue became apparent as early as 1988 in the larger context of the

The CGIAR represents a sizable proportion of World Bank grant funds.

Table 3.3: CGIAR Center Funding in the Context of the Special Grant Program, 1985–97

<i>Fiscal Year</i>	<i>CGIAR Center Funding^a (millions of dollars)</i>	<i>Proportion of Special Grant Program (percentage)</i>	<i>Proportion of Special Programs (percentage)</i>
1985	28.1	72.1	71.9
1986	28.9	66.1	66.0
1987	30.0	63.6	63.4
1988	32.0	64.9	64.8
1989	33.3	54.8	54.7
1990	34.3	56.4	56.3
1991	35.2	54.2	54.2
1992	36.5	55.6	55.6
1993	40.0	58.8	35.4
1994	53.0	61.6	47.7
1995	50.3	58.2	42.2
1996	41.5	53.3	36.7
1997	45.0	56.3	37.4
1990–97	335.8	57.0	47.3

a. Excludes Secretariat support.

Source: “The Development Grant Facility: A Proposal,” Strategy and Resource Management Partnerships Group, July 18, 1997, p. 6 (table 3.1).

“graduation” issue. It had been noted that the activities sponsored by grants, probably most notably the CGIAR, did not graduate and become self-supporting. Hopper put the situation in these terms on April 28, 1988:

Should the Bank withdraw support from the CGIAR, there is clear potential for collapse.

The “graduation” issue is difficult to resolve. The Bank created institutions like the CGIAR, and its presence has ensured stability and helped to attract additional donor support. The CGIAR and other agricultural research centers are totally dependent on these donations; they sell nothing and are unable to generate any significant revenues on their own. Should the Bank withdraw support from the CGIAR, there is a clear potential of the collapse of the Consultative Group itself and, therefore, an end to the research work of the system.¹⁰

The subject came up again in 1990 as part of a “Review of the Special Grants Program.”¹¹ The arguments advanced to explain the Bank’s limited resort to “exit” from grant programs were reviewed. In order to allow for the addition of new programs, it was proposed that “existing programs must be regularly scrutinized to see if Bank contributions should be continued.” At the outset of new programs, it was suggested that the Bank should, “where appropriate,” include a disengagement strategy. The report also stated that “based on the outcome of the periodic examinations [of ongoing projects], decisions should be

taken to maintain, expand, gradually phase out, or terminate Bank involvement.” It does not appear that any such review program was ever established.

At a meeting of the SGP Oversight Committee on April 14, 1993, the minutes indicate that a speaker:

Suggested that management should consider recommending to the Board that the CGIAR grant be funded separately from the SGP . . . if the Bank was serious about supporting international agricultural research, alternative methods of funding the CGIAR grant should be tabled for Board consideration. Separate funding of CGIAR outside the SGP would also avoid any possible adverse impact on the availability of resources for other special grants.¹²

Another speaker noted that the committee was unable to devote sufficient attention to the CGIAR grant commensurate with its size, and that it would be more effective for the group to focus on the large number of small grants. Nothing was reported about possible alternative sources, and the issue was not mentioned in subsequent Committee reports.

Allocation of Bank Grants to Individual Centers

The process of allocating Bank grants to Centers is basically handled by the CGIAR Secretariat. Through 1993 the Secretariat carried out this process by itself; it followed CGIAR priorities but essentially utilized a mechanistic procedure. With the establishment of the CGIAR Finance Committee following the May 1993 meeting of the CGIAR, the process was done in consultation with that group, which is composed of donors. A mechanistic process continued to be employed, but with some changes, until a funding crisis engulfed some Centers in 1996 and 1997. Three main stages can be identified for the 1972 to 1997 period.

Donor of Last Resort/Balancing Donor

For over 20 years, from 1972 to 1993, the Secretariat allocated Bank resources in a way that would cover shortfalls in Center funding in light of Center budgets that had been reviewed and approved by TAC and, in a cursory way, by the Group. The logic was that, because donors made their own decisions on how to allocate their own funding, there could well be a gap between what was approved and what was actually received by a Center. And indeed such gaps materialized, sometimes as a result of routine decisions, and sometimes as a result of unexpected events. The Bank funding was not always adequate to fill gaps, but it went a long way toward ameliorating the situation. Nearly from the start, the Secretariat set an upper limit of 25 percent on the proportion of funding it would provide to individual Centers (25 percent of contributions to that Center)—although the final proportions did not always turn out this way (see table 3.4), because of unexpected changes in funding by other donors.

The Bank was not entirely alone in the gap-filling process: for virtually all of this period, USAID representatives would consult with the Secretariat and take shortfalls and over-

For over 20 years, the Secretariat allocated Bank resources in a way that would cover shortfalls.

Table 3.4: Bank Funding as a Percentage of Center Funding, 1988–97

Center	(A) Balancing Donor						(B) Combination Policy ^a			(C) DFR ^b
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
CIAT	2	11	11	17	23	23	21	18	16	15
CIFOR	*	*	*	*	19	—	19	27	7	9
CIMMYT	8	9	12	15	19	16	23	22	16	13
CIP	17	9	14	11	7	7	14	8	7	8
ICARDA	28	23	22	21	21	20	28	24	16	13
ICLARM	*	*	*	*	11	13	8	12	16	14
ICRAF	*	*	*	*	6	6	7	8	9	9
ICRISAT	8	6	12	9	14	20	21	22	19	25
IFPRI	19	15	20	17	9	15	12	9	8	9
IIMI	*	*	*	*	9	17	23	21	17	13
IITA	26	20	17	15	17	20	24	24	17	14
ILRI ^c	15	19	21	21	24	22	28	26	25	21
IPGRI	—	6	4	—	8	8	7	9	10	11
IRRI	7	7	11	10	9	4	12	12	17	16
ISNAR	23	24	26	13	19	25	30	25	14	13
WARDA	19	21	25	23	26	26	—	11	7	10
Total	13	13	16	15	16	16	19	18	15	14

* Not a member of the CGIAR system during this period.

a. A combination of balancing donor and donor of first resort.

b. Donor of first resort. Preliminary data.

c. A combination of figures for ILCA and ILRAD from 1988 to 1994.

Source: 1988–97, CGIAR Financial Report, annual, 1992–97, annex tables.

subscriptions into account when allocating their funds. Between them, the two groups provided 35 to 40 percent of total system funding, which permitted a fairly strong resource base and played a helpful role in stabilizing the System.

The gap-filling process, however, had some limitations, which are discussed in detail elsewhere.¹³ The primary ones were a stifling of Center initiatives in raising funds and an insulation of some Centers from economic realities. As a result, the Bank ended up providing more funding for some Centers over a longer time than might otherwise have been the case (the Bank's contributions as a proportion of total contributions are reported in part A of Table 3.4). Another major limitation of the process involved the classification of what was then called core and noncore funding. The Bank contribution was designed to match core funding. When the Centers began to encounter tighter budgets in the early 1980s, they found it advantageous to reclassify some projects previously considered core as noncore; this brought down their core funding levels and qualified them for more Bank funds. This process matched the interests of some donors. But at the System level, the cumulative effect accentuated the apparent overall shortfall in core funds and sometimes threatened the inflow of matching funds.¹⁴

The gap-filling or stabilization process also faced one other problem that required additional measures to address: large and unexpected changes in exchange rates and inflation. To help counter this, a Stabilization Fund was established in 1984 with support from the Bank (from some unmatched CGIAR funds) and operated in a fairly active way through 1989, when it began to decline; it essentially disappeared by 1991. The idea was that Bank funds would be withheld from Centers that had experienced windfall gains, and that unexpected or exceptional gains received by Centers would be returned to the fund, and used to support less financially fortunate Centers. It was a good idea in theory, but it required discipline to manage. The outflow soon exceeded the inflow; Centers were—during a period of financial stringency—more likely to identify unfavorable developments than they were to admit to positive changes and return money to the Secretariat.¹⁵ The Secretariat met with a representative of the Centers' Directors in June 1991 about revitalizing the fund through borrowing from the Bank, but this was not pursued.

By contrast, in the early 1990s the Secretariat, in cooperation with the Centers, established a new policy relating to the upper level of its contribution. Instead of staying at the 25 percent level for a long period of time at Centers that were chronically short of funds, it was decided to reduce this proportion after three years to 15 percent (over a three-year period). The policy was duly noted in several references in 1993 and implemented in the case of at least two Centers (ICARDA, ILCA).¹⁶ However, it was soon overtaken by events that led to the second phase in the allocation process.

The balancing or donor of last resort policy did not go without some criticism within the Bank. In January 1993, the Special Grants Oversight (SGO) Committee considered:

Whether the Bank's grant should continue to be treated as the balancing contribution; this practice results in Bank funds flowing to those international centers which receive much lower contributions from other donors than their funding requirements, thus precluding "internal exit" from centers or programs within the CGIAR System.¹⁷

It suggested that in the coming 12 months, an examination should be conducted on the most effective way of allocating the Bank's contributions among the Centers. Similarly, at the April 1993 meeting, it was noted that "as the balancing donor to CGIAR, the Bank did not exert much influence on the overall direction of system activities."¹⁸

In May of 1993, the CGIAR received a proposal from a "Working Group on Deliberation and Decisionmaking Process," which, among other things, called for the establishment of a standing committee on finance for the first time.¹⁹ The timing of this proposal was, in retrospect, very appropriate in light of the concerns expressed by the SGO Committee.

A Transition Policy

Presumably as a follow-up to the recommendation of the SGO Committee, the Secretariat prepared a detailed paper titled "Resource Allocation in the CGIAR—Does the Balancing Donor Concept Need Adjusting?"²⁰ The paper recognized the need "for maintaining some

The Bank's status as donor of last resort did not go without some criticism.

contingency to fill funding gaps of individual Centers and to stabilize resource flows in the short run.” And “for the remainder, the facility could apply part of its funds to match Centers’ successful efforts in raising core funding in order to set a positive incentive to mobilize resources.” One way to do this would be to provide “a fixed percentage of CGIAR approved Center requirements as a donor of first resort.” In summary, it stated that “A combination of gap-filling and up-front distribution (first-donor option) may be the most appropriate use of the facility in the current overall funding situation of the CGIAR” (p. 2).

The Finance Committee, composed of nine donor members of the CGIAR and chaired by the then director of the Agriculture and Rural Development Department of the Bank, first met in October 1993. The first item of business, not surprisingly, was “The Future Role of the Balancing Donor.” The report of the meeting indicates that “the option of most interest to the committee was a “donor of first resort” option consisting of three components: (1) program funding, (2) some contingency, and (3) a small synergy fund” (p. 3).²¹ In the case of the contingency funds in 1994, it was proposed that they:

Be used for a transition phase to minimize disruptions in funding for those Centers presently receiving a substantial allocation of World Bank funds. In subsequent years this transition role would be reduced and the contingency funds would be used primarily for adjustments such as hyperinflation and exchange rate fluctuations.

The Synergy Fund was a new idea:

A small percentage of the Bank funds would be used to support TAC-approved initiatives of potential synergy with the Bank’s operations, and especially where there was an opportunity to leverage investments from other sources, including Bank loans and credits [p. 3].

The Committee considered that a change in the role of the “balancing donor” was desirable in principle.

In the end, the committee considered that a change in the role of the “balancing donor” was desirable in principle, but recommended that the Bank continue to provide a fixed percentage of the approved program. It also thought that some portion of Bank funds should be retained for contingency and synergy purposes (2 percent was mentioned for the Synergy Fund at one point—p. 8).

In the more specific case of 1994, which was viewed as a transition year, it was recommended that one-half of the Bank’s contribution be used for contingency purposes such as gap-filling in order to minimize the disruptions in the funding of individual Centers as the new policy took hold. It was expected that the proportion of donor-of-first-resort funding would increase in subsequent years. In the case of the Synergy Fund, the committee proposed to make recommendations on its creation, criteria, and use to the CGIAR in May 1994 (p. 4).

During the following months, the financial situation of the CGIAR worsened, and questions of gap-filling became more important. As a result, the 50/50 balance as an interim or transition measure was continued in 1995 and 1996.²² The results, in the Bank’s contribution as a proportion of total contributions to the Centers, were somewhat, but not greatly,

different (see part B of table 3.4). Aside from brief mention at the second meeting of the Finance Committee, nothing more appeared to have been said about the Synergy Fund during this period.

One complication that arose during this period concerned the balance between the funding of approved agenda and nonagenda activities (sometimes known as special projects). While nonagenda funding plays a very useful role in carrying out the development side of the CGIAR agenda, it does not substitute for the core research program. During the mid-1990s, the financial squeeze faced by the System put severe pressure on the research budgets of many Centers. Yet nonagenda budgets remained relatively high (for example, \$59 million in 1995). The challenge for the chairman was to increase funding for the research agenda. This led, in 1996, to a decision to continue the shift in utilization of Bank funds to the donor-of-first-resort role; it was thought that this would increase the incentive for donors to direct funds to the approved agenda, in part by reclassifying appropriate activities that were formerly in the nonagenda category.²³

The challenge was to increase funding for the research agenda.

Emphasis on Donor-of-First-Resort Role

By 1996, the 50/50 policy—which had been intended as an interim measure for 1994—had been in place for three years. At the May 1996 meeting of the Finance Committee it was clear that the CGIAR chairman was interested in resuming the shift to a greater emphasis on the donor-of-first-resort (DFR) role in 1997. He proposed that a larger portion (80 to 87 percent) of the Bank funds be allocated on a DFR basis, while the remainder (13 to 20 percent) would go toward competitive grants and a reserve fund. The year 1997 would be a transition year: the DFR proportion would be raised to 60 percent. The proposed figure of 80 to 87 percent would be reached in 1998.²⁴

After a vigorous discussion in the committee, it was proposed that the allocation for 1997 would be: DFR, 60 percent; transition payments to the most seriously affected Centers, 26.7 percent; competitive grants, 6.7 percent; and Systemwide reserve, 6.7 percent.²⁵ The transition payments were necessary because it became evident at the meeting that several of the larger and older Centers (especially CIAT and ICRISAT) were experiencing very severe financial problems.

At the next meeting of the Finance Committee, in October 1997, some further modifications were discussed in the last two categories, which together accounted for 13.3 percent of the total.²⁶ The reserve level was raised to 11.6 percent (\$5.2 million) and the competitive grants were reduced to 1.1 percent (\$500,000) and were joined by a grant of comparable size for CGIAR committees and a smaller grant for twenty-fifth anniversary expenses (\$200,000). The latter two grants were not large, but represented a significant change from past funding patterns; heretofore such expenses were covered in the Secretariat budget or by donor subscription.²⁷ This change was to become more apparent in 1998.

Further modifications were made in a subsequent meeting of the Finance Committee.²⁸ The reserve fund of \$5.2 million was essentially distributed to five Centers in need, and \$500,000 of that amount was earmarked for Systemwide activities and other funding shortfalls. The outcome in the World Bank proportion of Center funding is shown in section C of table 3.4.

In the case of 1998, the committee generally agreed to recommend the following preliminary distribution:²⁹

Category	US\$ million	Percent
DFR matching funds	33.0	73.3
Transition costs	5.5	12.2
Addition to the reserve and special financial needs	4.0	8.9
Partnership costs and the System review	2.5	5.6
Total	45.0	100.0

The third and fourth items were taken up at the May 1998 meeting of the Finance Committee. Under the third item, \$0.4 million was added to the reserve; the remaining funds were distributed as follows: \$2 million for initiating a CGIAR program in Central Asia and the Caucasus, \$1.6 million for special assistance to ICARDA, and \$0.5 million to start a central unit to help Centers fund legal advice on intellectual property questions. Under the fourth item, the allocation for partnership costs totaled \$1.0 million (NGO Committee, \$350,000; biotechnology panels, \$250,000; Global Forum, \$200,000; Genetic Resources Policy Committee, \$120,000; and Private Sector Committee, \$80,000); the System review cost was reduced to \$1.0 million to reflect the rate of expenditures, and the remaining \$0.5 million was deferred until 1999. Clearly, the partnership costs, which are annual, and other activities are now becoming a significant expense and reduce the Bank funds available to the Centers by a corresponding amount. Whether all these activities justify their expense remains to be seen.

The distribution of Bank funds is increasingly being determined by the pattern of funding of other donors.

Thus progress is being made toward the goal of increasing the proportion of Bank funding allocated through the DFR mechanism. There is, however, some concern about the tradeoffs that this process entails and how far it should be carried. The shift to the DFR process means that the distribution of Bank funds is increasingly determined by the pattern of funding of other donors—which in some cases is increasingly directed to popular programs rather than institutional support.³⁰ While flexibility and adaptability are to be desired, the other side of the coin is that less stylish, although vital, long-term strategic elements of the System may be relatively neglected or diminished in the process.³¹ Similarly, it is more difficult to follow through on TAC recommendations with respect to the distribution of resources. In the fine-tuning of the process of allocating Bank funds, it may be desirable to give further attention to balancing these dimensions.

Technical Relationships with Bank Agricultural Staff and Research Loans

The Bank has several hundred staff members who are involved in making loans for agricultural and rural development projects. Within this category there is a substantial component devoted to agricultural research. The Bank has also supported some complementary programs and activities. The degree of linkage with the CGIAR System and Centers is, however, variable.

Bank Technical Staff

The technical staff are found in both central units and in regional offices. The central units include the Rural Development Department/Anchor (RDV) and the Agricultural Research and Extension Group (ESDAR), both formerly within the Environmentally and Socially Sustainable Development Vice Presidency (ESSD); and a Rural Development Research Group in the Development Economics Vice Presidency (DEC). Each of the Bank's Regional Offices has a staff group devoted to matters relating to the rural sector (and usually the "green" environmental subsector also), and this is supported by other groups in central units. All told, there are some 450 staff members presently working in the rural sector, although probably less than 50 have an active involvement with agricultural research issues. These, along with other staff interested in aspects of the agricultural knowledge and information systems (AKIS), are networked in a collegial assembly under the aegis of the Rural Sector Board, chaired by the director of Rural Development.

The links between these several Bank units and the CGIAR System are many and varied. Some 20 present Bank staff are former staff members of CGIAR Centers, and they naturally retain fairly active collegial links. Traditionally, line responsibility for CGIAR matters, from the World Bank perspective, rested with the vice president who chaired the Group, along with the predecessor to RDV (variously the Agriculture and Rural Development Department or the Agriculture and Natural Resources Department), but with the creation of ESDAR in 1995, this was mostly transferred to the more specialized small unit, whose head has also served as chair of the Finance Committee of CGIAR.

While some staff members continue relatively strong and active involvement with one or more Centers, this is the exception. Why? One factor might be that there is no particular encouragement or allowance under the Bank's budget plan for any formal staff involvement with the System beyond that of the chairman, the director of ESDAR, and the CGIAR Secretariat staff. Another might be that many staff members are simply not very familiar with the Centers and the possible contributions the Centers might make to the programs supported in their Bank work. It is thus unsurprising that the connections between the Bank and the Centers are not particularly close or effective. The extent to which this is a less than an ideal situation is taken up in Chapters 7 and 8.

Loans to National Programs

The Bank has had an active program of loans for agricultural research in developing countries. These have been discussed and reviewed in detail elsewhere (Pritchard 1990, 1994, pp. 45–58; Purcell and Anderson 1997; Byerlee and Alex 1998, pp. 57–70) and we will only mention some of the major characteristics. Bank loans are provided both for free-standing agricultural research projects and as components of other agricultural and rural development or education and industrial projects. Two sets of estimates of the number and value of these types of loans are provided in table 3.5. Parts A and B are organized by somewhat different time periods. Differences arise from interpretations of major project intentions and changing classification procedures over time. While the annual funding has varied from year to year, which is not surprising, it was quite significant in total. The free-standing projects have represented the largest share of funding, but are expected to be-

Many staff members are simply not familiar with the contributions the Centers might make to Bank work.

Table 3.5: Bank Lending for Agricultural Research, 1977–96

A. Purcell and J.R. Anderson 1997

<i>Approval Years</i>	<i>Bank Commitments (\$ million)</i>		<i>Total</i>
	<i>Free-Standing</i>	<i>Component</i>	
1977–80	105.5	119.4	224.9
1981–84	382.3	241.4	623.7
1985–88	279.7	231.9	511.5
1989–92	546.3	253.2	800.0
1993–96*	666.5	309.0	975.5
Total	1,980.3	1,154.9	3,135.2
Proportion	63.2%	36.8%	100.0%

B.D. Byerlee and G. Alex 1998

<i>Year</i>	<i>Free-Standing Research Projects (number)</i>	<i>Projects with Research Component (number)</i>	<i>Total Research Funding (\$ million)</i>
1981	7	29	362.36
1982	5	23	199.75
1983	4	34	211.09
1984	5	30	134.00
1985	11	35	203.70
1986	7	26	156.90
1987	10	32	212.70
1988	8	18	344.76
1989	12	21	232.58
1990	15	23	280.07
1991	8	18	193.25
1992	10	23	343.34
1993	9	22	240.61
1994	12	26	205.45
1995	11	23	391.81
1996	11	25	155.97
Total	145	408	3,868.34

* *Estimate*

Source: A. Purcell and Anderson (1997, pp. 94, 208); B. Byerlee and Alex (1998, pp. 58, 76–77).

Nearly all the country projects now have a component to finance links and collaboration with the Centers.

come relatively less important in the future as the component type of funding becomes more prevalent. The data are probably conservative in that they may not include some related activities in, for example, natural resources, which might also qualify in a broader classification.

The general nature of the loans might be characterized as institutional development, giving particular emphasis to human resources, research facilities, and management. Nearly all of the country projects now have a component to finance links and collaboration with the Centers. One Center (ISNAR) is particularly well placed to contribute to the institutional side of this process. The others have more to offer in actual research—when they are in a position to

provide genetic resources, assist and collaborate in the development of new technologies and improved policies at the country level, and provide research training.³² As a former Bank agricultural research adviser put it (Pritchard 1994, p. 48):

They have been the source of technology, mainly for food commodities, that could be adapted for use in Bank-supported development projects. The [Centers] also act as a source of technical expertise and guidance for Bank projects and provide training opportunities at varying levels for research staff in less-developed countries.

The relationship with ISNAR has been two-way. ISNAR has been called upon at the country level to participate in a number of ways: program review, diagnostic analyses, planning, information systems, outposting of experts, human resources, and special studies. One reviewer noted that during the 1980s, Bank loans to NARs in Africa were often conditional upon prior involvement by ISNAR. And ISNAR has been able to draw on the experience of the country effort in developing lessons for other nations. More recently, ISNAR has been asked to participate in mid-term reviews of research projects, and there have been a considerable number of different types of contact (Purcell and Anderson 1997, p. 210). While the Bank has used a lot of ISNAR products in research management, especially in priority setting, monitoring, and evaluation, one staff member felt that the Bank did not really get "big picture stuff from ISNAR on best practice in research policy, financing of research, competitive grants, handling spillovers and spillins, decentralization, organizational and governance issues, etc." ISNAR is now in the process of reorganizing its program.

Centers are a source of technical expertise and guidance and provide training for research staff in developing countries.

While some of the other Centers may be involved in institutional development, their participation may well be less formal and is more likely to come at the scientist-to-scientist level in collaborative and cooperative research programs. These interactions may come after the institutional development stage, when the main involvement of Bank program officers is phasing down, and hence may not be fully observed.

Complementary Institutional Support

The Bank funds two closely related units in Washington (Byerlee and Alex 1998, p. 61) that also have linkages both with the Centers and with country programs: ESDAR and SPAAR (see Annex B). ESDAR was established in 1994 to promote synergies among the elements of the global agricultural research system, especially between the CGIAR Centers and national programs. The staff has included a number of individuals who have been involved with the CGIAR System in different capacities (some on secondment or terminal study leaves from the Centers). SPAAR was established in 1985 to promote regional activities and strengthen agricultural research in Africa. It has been largely funded through the Special Grant Program. There are also other units in which the Bank is involved, such as the Global Environmental Facility (GEF), where greater interaction might be useful.

Views on Extent of Relationships

A former agricultural research adviser of the Bank, cited earlier, has commented on Bank relationships with the CGIAR in two papers. In one, Pritchard (1990, p. 6) observed:

The IARCs were involved in providing technology, technical assistance, and guidance to many of the Bank-supported “free standing” agricultural research projects, but with few exceptions, the level of involvement in the component type project was small.

He went on to add that “where Centers have been involved in Bank-supported agricultural research projects it has been at the request of the countries themselves rather than through Bank initiatives.” He noted (p. 11) that the Bank had not attempted to link the IARCs directly with Bank-supported activities.

In a subsequent paper, Pritchard (1994, p. 53) went on to state that “there is a need to develop a system of interaction between Bank staff and the IARCs.” He suggested four possible avenues:

- Appointment of Bank staff to IARC Boards
- Use of Bank staff on the periodic external program and management review teams
- Joint seminars, workshops, and training sessions
- Regular interinstitutional visits.

There have subsequently been some examples of each of these, but not many.

He also noted that, in the early 1990s, AGR staff members were asked to administer six projects financed by UNDP at five IARCs. “The imposition of Bank accounting and administrative procedure caused some start-up problems with these projects but these have been resolved.” A related need was for regional staff to become involved. The program only lasted a few years.

Another former activity, which was not mentioned, was a half-day meeting of Center representatives with Bank staff held before ICW. This was modeled on an “International Centers Day” (ICD), which had been, and still is, held by USAID. ICD was reduced to half a day at USAID so that the Bank could hold a comparable effort in the afternoon. At the time it was operative (roughly the early to mid-1980s), the Bank portion did not—evidently because of apathy on the part of Bank staff—work out very well. At quite a different level, there has been an informal annual meeting between Center directors and the executive directors of the Bank in recent years in conjunction with ICW.

Previous Internal Documentation and Evaluations

Although the Bank has provided a significant level of contributions to CGIAR, and has been so closely involved, there appears to be little available in the way of internal documentation and evaluation. This is probably partly the result of the close relationship at the management and administrative level and the extensive program of priority setting, review, and evaluation carried out by the CGIAR System (discussed in the next chapter).

Business Plans

Each year the CGIAR Secretariat has prepared a business plan for Special Grant Funding. The plan covers a three-year period, but is a rolling process (it is updated each year for a three-year period). It is composed of an introductory narrative outlining recent developments and changes in focus, responses to a standard SGP questionnaire, and attached tables and other materials. The material is sent to the CGIAR chairman's office (who in his substantial other life is a vice president of the Bank, until recently, for Environmentally and Socially Sustainable Development, and since early 1998, for Special Programs) and then forwarded to the SGP Secretariat, and then to the SGP Committee. In years when substantial changes in the System or budget were involved (such as 1994 and 1995), considerably more documentation and substantial consultation was involved. In years when there is little change, the process appears to have been fairly routine. However, the SGP Committee, as we have seen, sometimes provides suggestions that lead to substantial changes—such as the switch in the allocation process for Bank funding. And with the establishment of the Development Grant Facility, the process may get more involved and is expected to be more competitive.

Audit Reports on the CGIAR

From time to time, the CGIAR is reviewed by the Internal Auditing Department of the Bank. One audit was evidently issued on June 21, 1991. A more recent report was issued on June 29, 1995, and was titled, "Report on an Audit of CGIAR Reporting Arrangements."³³ It represented a detailed investigation by two auditors between November 1994 and March 1995 and involved visits to six Centers and a meeting with staff members of another Center. The report concluded:

CGIAR-wide financial reporting policies, systems, and procedures, either already in place or being introduced as part of the CGIAR's current financial re-engineering should: [i] adequately support the new planning, budgeting, and funding arrangements of the CGIAR . . . ; [ii] promote the objectives of financial predictability, transparency, and accountability for the CGIAR System; [iii] allow a reliable and meaningful overview of CGIAR activities across centers (p. i).

Some specific recommendations were also made.

Reviews of the Special Grant Program

One of the attachments to the FY98 Business Plan of the CGIAR Secretariat states that "within the Bank, the CGIAR was most recently reviewed as part of the SGP review conducted in 1991 which led to the creation of the SGP Committee."³⁴ A perusal of the document, however, revealed that, while it discussed a number of interesting general issues, it contained only a few descriptive and passing references to the CGIAR.³⁵ More was said in

There is a need to develop a system of interaction between Bank staff and the IARCs.

The CGIAR is reviewed by the Internal Auditing Department of the Bank.

an audit of the SGP in 1995, which contained a short section on “CGIAR Monitoring and Evaluation” and referred to the above audit report of the CGIAR system.³⁶ An earlier review of the SGP had more to say about the CGIAR, but was largely descriptive in nature.³⁷

Special Documentation

We were not able to find much in this category, although there may be more than meets the eye. The most notable case we are aware of concerned the request for additional funding for CGIAR during the funding crisis of 1994–95: This involved two memoranda to the executive directors, one in May and the other in June 1994.³⁸

The story of Bank involvement with CGIAR has been, as promised, a rather complex one. But at the same time it has been extraordinary; there are probably few parallels. The Bank has had to juggle three very demanding international roles, and these have, at times, stretched even its very substantial capabilities. We shall return to an evaluation of its performance and that of the CGIAR in subsequent chapters.

Chapter 4

The CGIAR: Planning, Review, and the Evaluation Process

The CGIAR System has long had a rather elaborate system of planning and review. Evaluation has received attention from time to time, but has only recently become a regular part of the fabric of the system. The latest extension of this work has included explicit attention to impact assessment.

Priority Setting and the Resource Allocation Process

This process has evolved and grown over time. It has both technical/program dimensions and three temporal dimensions: long-term, medium-term, and annual. There are four basic documents involved that have played varying roles over time. The first is a periodic report on system priorities and strategies (P&S) prepared by TAC approximately every five years: 1973, 1976, 1979, 1986, 1992, and 1997. The process of preparing these plans has become increasingly complex, and the reports correspondingly more detailed. The second category is composed of long-term strategy plans issued approximately every 10 years. The first batch of such plans appeared in 1979–81¹ and were not a formal requirement of the CGIAR System; thus they were prepared independently of TAC. The third category is composed of medium-term plans, initially for five years, which were first prepared in 1987 as a result of CGIAR action. The fourth component is made up of annual program and budget plans.

- *Process through 1986.* Initially, the Center program and budgets were drawn up in the context of the TAC P&S document and the Centers' own long-term strategies. While focused on one year, they contained multi-year projections. These were reviewed by TAC and approved by the Group. During this period, three documents commented on the priorities and budget process: the first and the second reviews of the System (1977 and 1981) and a special study on budgeting and financial management (1985).² The first review recommended the preparation of a biennial budget and a further two-year indicative plan (p. 99); the second review recommended that Centers produce "rolling five-year projections of their financial requirements as part of their annual budget submissions" (p. 73).
- *Process from 1986 to 1992.* In 1987 the CGIAR decided that the Centers should adopt medium-term plans (MTPs) as a basis for resource decisions covering a five-year period in addition to the traditional annual budget statements. The new process was "expected

The CGIAR System has long had a rather elaborate system of planning and review.

to provide Centers with a longer-term planning horizon and to be closely linked with the priorities and strategies of the CGIAR system as a whole." A review of this process was conducted in 1990, and some suggestions were made for improvement.³

- *Process since 1992.* The 1992 TAC P&S study took up the linkage between its recommendations and the allocation of resources in earnest, devoting a chapter to the subject. A five-year planning horizon was retained and special emphasis was given to linkages with the MTPs and the annual plans (TAC Secretariat 1994). The 1997 P&S paper, reviewed in draft form in 1996, proposed a new framework for the development of MTPs and suggested a three-year rolling horizon (the current annual process is outlined in box 4.1).⁴ More generally, the 1997 review represented an extensive consultative process and attempted to take a broad and analytical view of contemporary issues. A summary of the table of contents is included as box 4.2.

Box 4.1: The CGIAR's Annual Financial Decisionmaking Process and Schedule

Setting the Agenda (MTM, May). At the Mid-Term Meeting, the CGIAR Technical Advisory Committee proposes the research agenda for the following year, based on interactions with the Centers. Center proposals are based on the research directions agreed upon during a triennial consideration of Center medium-term plans (effective 1998). The Group debates TAC's recommendations, taking into consideration advice from the Finance Committee on funding prospects, and endorses the proposed research agenda and financial allocations, with or without modification. Following the Mid-Term Meeting, the Centers and the CGIAR Secretariat solicit overall financing indications from members.

Preparation of Financing Plans (June–

September). Centers prepare their individual financing plans for the following year, based on specific financing information solicited through bilateral contracts with members and past trends. World Bank funding is included on a percentage basis of funding secured by Centers from other members.

Confirmation of Program Content (mid-September). Centers indicate to TAC and the CGIAR Secretariat any changes in expected funding for the research agenda, as determined through Center interactions with individual members, and the implications of these changes on program content. TAC compares the program content of the research agenda approved by the Group in May with the implications of subsequent funding actions by individual donors and highlights any significant

differences for consideration by the Group at International Centers Week.

Review of Financing Plans (end-September–October). Following the confirmation of program content by TAC, the Finance Committee reviews Center financing plans, including the contribution of the World Bank, for consistency and feasibility, based on funding information solicited by the CGIAR Secretariat.

Approval of the Research Agenda and Financing Plan (ICW, October). At International Centers Week, the Group considers the finalized researched agenda and financing plan for the following year, leading to approval of financing and implementation of the research agenda.

Disbursement and Implementation (January–December). Following approval by the Group at

International Centers Week (in the previous year) of the research agenda and financing plan, Centers commence implementation of the agenda on January 1 of the current year, and members disburse funds to the Centers. Of the World Bank funds, half are distributed in January; the remaining half are disbursed in June, following a review of updated Center financing plans by the Finance Committee at the Mid-Term Meeting.

Accountability (Year-End). At the end of the current year, Centers prepare financial statements showing the use of the funds received in support of the research agenda. Centers also confirm the use of the funds provided by the World Bank and refund to the Bank any funds provided beyond the agreed formula.

Source: CGIAR 1996 Financial Report, July 1997, p. 3 (paragraph 3 modified for greater clarity).

The preparation of the most recent P&S document by TAC overlapped with the preparation of the 1998–2000 MTPs of the Centers. TAC reviewed the proposed MTPs in March 1997 and provided a detailed comparison of its recommendations and proposals by Center (and overall) to the MTM of the CGIAR in May 1997.⁵ It provided a supplementary set of comments concerning 1998 at the October 1997 meeting of the CGIAR.⁶

The priority-setting work at the System level can be described in its latest approach as a formalized and partly quantified analysis of the allocation of the resources available to the System. It involves consideration of the multiple objectives of the Group, and has endeavored to quantify many of the dimensions of the research needs and opportunities through a spreadsheet-based approach and the assignment of scores to combine otherwise disparate elements of the assessment.⁷ The sheer size and complexity of the research challenge make this a demanding exercise, and one that is made considerably more difficult by the current desire to take resource degradation and poverty incidence explicitly into account. One evaluation specialist has questioned whether sufficient attention has been given to evidence of past success in resource allocation, and therein lies part of the rationale for completing the evaluation loop by ensuring that the new impact assessment work links back to the planning and strategic work in the System.

The analytic methods used will doubtless continue to evolve and add greater depth to the priority-setting results. Meanwhile, albeit imperfectly, the process serves a useful role in analyzing and directing the scarce resources of the System toward an overall research program that is relevant to the stated objectives of the Group. The resource allocation methods

The size and complexity of the research challenge make setting priorities a demanding exercise.

Box 4.2: Abridged Contents Page: TAC Priorities and Strategies Paper for Resource Allocation during 1998–2000

- | | |
|---|---|
| 1. Introduction | Protecting the Environment |
| Implementation of 1992 Recommendations | Saving Biodiversity |
| Framework for Priority Setting: 1998–2000 | Improving Policies |
| CGIAR Mission and Goals | Strengthening National Programs |
| 2. Environments Influencing the CGIAR | 6. Analytical Process: Production Sectors |
| Socioeconomic and Ecological | and Commodities |
| Scientific | Sectors |
| Institutional | Commodities |
| 3. Analytical Framework | 7. Analytical Process: Systemwide Programs |
| Agricultural Research, Productivity, and Income | Overview of CGIAR Experience |
| Growth | Classification of the CGIAR's Systemwide Activities |
| Economic Growth and Poverty Alleviation | Evaluation and Future of Systemwide Activities |
| Agricultural Research and the Conservation | 8. Implications for 1998–2000 Resource Allocations |
| of Natural Resources | TAC's Views on Activities |
| Methods for Setting Priorities | Commodities |
| in Agricultural Research | Concluding Remarks |
| Element in Priority Setting: Poverty, Efficiency, Other | Annexes |
| 4. NARS Regional Fora and TAC Strategic Studies | Activities and Their Definitions |
| Regional Fora and Global Forum | Quantitative Analysis of CGIAR Commodities |
| TAC Commissioned Studies | Overview of Production Sectors and Commodities |
| 5. Analytical Process: Activities | |
| Increasing Productivity | |

Source: TAC Secretariat 1997, pp. vii–x.

used within each Center and that “feed” into the MTPs considered by TAC naturally have much more specificity and direct effect on research program formulation.

In addition to this formal process, at ICW 1993 the CGIAR commissioned an expert group to prepare a future vision of international agricultural research (External Panel 1994). The report was widely distributed and well received.

Review Process

The CGIAR has an extensive external review system—one that was built into the System virtually from the start. There are three main components: Center reviews, cross-cutting or program reviews, and System reviews. Essentially all components of the System are regularly reviewed, but in somewhat different ways and with different frequencies.

Center Reviews

Beginning in 1975, the individual Centers have been reviewed approximately once every five years. Altogether, over 70 reviews have been conducted through 1997.⁸ The purpose of a review is to:

The CGIAR has an extensive review process.

Monitor the institutional health and contributions of a Center from both a retrospective and prospective perspective. The reviews comment on the continuing appropriateness of a Center’s mandate, its outputs and impact, strategies and plans, organization and leadership, and how efficiently it manages its resources.⁹

Both the research and management sides of the Center are covered. The research component also includes an assessment of the quality of science.

General Pattern of the Reviews

The overall pattern of the Center reviews has been much of the same, but there have been many modifications in process. The teams and the team chair are chosen by TAC and are international in composition. The members—usually four to six—are chosen for their professional expertise in one or more areas of work conducted by the Center. The team spends perhaps four weeks on the job (more for the chair), usually split into two portions. The team normally visits the main campus at the beginning and end of the process, and works in visits to field stations and to developing country institutions around this schedule. During the visits they interview staff, visit laboratories and field plots, and review Center documents. A written report, with recommendations, is completed during the second visit and discussed with Center management (and sometimes the Center Board) before the team disbands. The Center is allowed to prepare a written response. Both the report and the Center response are then considered by TAC, which prepares its own commentary. Finally, the whole package is presented to the CGIAR as an agenda item and further discussed. The process is thorough and challenging,¹⁰ and despite some limitations, is one of the definite strengths of the System.

The review process has gone through four main phases in reaching its current state of development:¹¹

1. Quinquennial reviews: research focus.
2. Addition of external management reviews, which in the early days were conducted by a separate team.
3. Combined program and management reviews (EPMRs), more recently known as External Reviews (ERs).
4. 1996–Present. ERs supported by Center Commissioned External Reviews (CCERs).

Management reviews were added in response to a recommendation of the second System review in 1981. The first was undertaken in 1983 (CIP). They were managed by the CGIAR Secretariat, which has continued to provide oversight to this side of the review process.

The 1981 System review also recommended that the review package should include “internal reviews of the Institutions, commissioned by the Boards of Trustees.”¹² They provide a way of overcoming some of the deficiencies of the traditional reviews with respect to lack of depth in scrutiny and inadequate feedback to the reviewed personnel. The internal reviews, especially of management, are often held before the external review in order to “tidy-up” and to have documentation to provide to the review team. The two types of reviews are highly complementary, and the dual process appears to be working fairly well.

As a result of these and other changes, it might be said that the focus of the reviews has gone through a cumulative evolution, involving the following steps: (1) quantity and quality of research, (2) research results, (3) management efficiency, (4) strategic directions, (5) impact, and (6) science quality.¹³ The latter phases are still being implemented.

Comments on the Review Process

Although the Center review process is now quite refined, the teams do face some important constraints. One is time. As intensive as it is, the time scale does not offer much opportunity for detailed review of individual research activities and research products such as articles and reports, nor for critical examination of actual field work, whether on experiment stations or farmers’ fields. Another constraint is the human element. As Ozgediz notes: “Each panel is unique in composition, leadership, and approach to the review. This introduces an inevitable element of variance in perspective, capacity, and rigor among reviews.” Hence, each review can only be said to represent “a periodic check-up covering key performance areas that contribute to the Center’s health and vigor.”¹⁴

A rather comprehensive external evaluation of the Systems’ Center review process was undertaken in the mid-1980s under the direction of Professor Vernon Ruttan. The study was commissioned by the CGIAR and TAC Secretariats and involved extensive interaction with the Centers, TAC, and the Group. The final report was in two rather distinct parts: first, a fairly concise general report containing ten recommendations, and second, a highly detailed annex. It was presented to MTM 1987, and four of the key recommendations eventually became a part of the CGIAR review procedure.¹⁵

Ozgediz subsequently studied the management side of the Center review system at length, but no further general assessments of the review structure have been made.¹⁶

Management problems can flare up very rapidly and can have a serious effect on the Center.

The impacts of the reviews on the Centers are somewhat variable. As viewed from the outside, the effects usually appear to be more subtle on the scientific side than on the management side. Scientific issues tend to be relatively long-term and often involve professional differences of opinion. Management problems, in contrast, can flare up very rapidly and can have a serious effect on the Center. Most of the Centers have had substantial management difficulties at some point in their history. Ozgediz has identified five Centers where the reviews have led or contributed to major changes in programs or management over the first 12 years.¹⁷

The Center review process plays a critical role in the CGIAR System. Individual donors generally require periodic project reviews, and the reviews serve the purpose; if they did not exist, many donors would have to do their own, which would be difficult for the donors and a nightmare for the Centers. Nevertheless, as we argue here, the review process should be made more efficient and effective.

Cross-Center and Program Reviews

There is a large and varied category of cross-Center reviews, which are usually initiated by TAC. At first they were known as “stripe reviews,” in that they approached a ribbon of activities common to all Centers.¹⁸ The first was a review of farming systems research (1978). It was followed by reviews of the Centers’ off-campus activities (1980), and in 1984, by training in the System (TAC Secretariat 1986). Since then a number of others have followed (such as rice research in the system, 1993; CGIAR activities in West Africa, 1995; root and tuber crops, 1997; policy and management, 1997; institutional strengthening research and service, 1997; soil and water aspects of NRM research, 1997). These are usually published in the same format as the Center reviews, but are not necessarily subject to the same degree of System scrutiny.

Reviews of the CGIAR System

This, by contrast, is a small category in number, but a large one in complexity. As must be evident by now, two comprehensive System reviews were done in the early years of the CGIAR, in 1976 and 1981.¹⁹ A third was in process during 1998.

The first two reviews, which have been admirably discussed by Baum (1986, pp. 99–105, 144–51, respectively), played a very important role in the development of the System. In doing this study, we have been struck by how many important decisions can be traced back to these reviews. Why, then, such a long gap—some 15 years—between reviews? Part of the reason is that they did such a good job that they did not require an immediate follow-up. The ensuing problems were less Systemwide and more specialized in nature and could be handled by more specific studies. Also, it must be recognized that the System reviews consume significant resources—in the neighborhood of \$450,000 for the second review—and that they were largely funded by earmarked donor subscription.²⁰

Consideration was given to a third review as early as 1984 (ICW 1984, Agenda item 7), but it kept getting pushed back, in part by the need for more specialized reviews (such as the impact study discussed below).²¹ The idea was revived at the time of the Lucerne meeting in February 1995. It was primarily pushed by some nongovernmental organizations.²² It evidently was discussed during the meeting, but is not mentioned in the official summa-

The first two reviews played a very important role in the development of the System.

ries. One view is that an understanding was reached that a review would be conducted at the end of the renewal process.

In any case, the current System review got under way in late 1997, and a progress report was presented at ICW 1997.²³ The review team is divided into two panels: Science and Strategy and Governance, Structure, and Finance. A number of regional meetings were conducted and the report is on the agenda for ICW 1998.²⁴ The review—reflecting the times and stage of development of the CGIAR—is more outward in its orientation than the first two reviews. It deals with many issues, and has many more constituencies to serve, than the first two reviews. The cost is currently placed at about \$1.5 million, and it is, as noted earlier, being paid for by the Bank out of its CGIAR contribution.

While the System reviews are best known of the reviews, it should also be noted that separate reviews of two key components of the System—the CGIAR and TAC Secretariats—were conducted in 1988 and 1989, respectively.²⁵ It may be appropriate to think of another review of each of these components at some point in the future.

Impact Assessment

Impact assessment is now a major concern of the CGIAR System and is receiving increased attention at the Center level. It is, however, considerably easier for donors to espouse than for Centers to carry out, especially in an era of tight budgets. In this section, we will discuss some of the inherent difficulties of the process, and then briefly review progress to date in CGIAR.

Inherent Difficulties

Certain types of impact assessment are more difficult than others. We will illustrate this by starting with some of the least difficult, and then moving up the ladder. The problems are noted so that one can gain a better appreciation of what can and cannot be expected from the process.

Cultivar releases are perhaps the most straightforward elements of an impact assessment to describe, even though such an assessment is not particularly straightforward. A research enterprise, such as an IARC, shares plant materials at different stages of genetic development with others, such as national research enterprises (see, for example, Pardey and Alston 1996). Another complication is the dispersed nature of the information on who uses the improved materials once they are released, at what intensity, under which circumstances, and to what effect on quantity and quality of production. The costs of gathering such information, particularly on any wide geographical scale, are considerable. Any careful impact assessment is thus potentially a costly matter.

The problems are greatly compounded when comparable assessments must be made of methods that may be traceable to the research activities such as crop husbandry. Many agents are involved in advising farmers how to better manage their farm resources, including new cultivars. The private sector, for one, is usually heavily engaged through its desire to sell inputs to farmers. Perhaps these difficulties explain the rather limited documentation of the effectiveness of “crop-management research.” This is not to say, however, that such work is unimportant. Indeed, some have argued that crop-management research will be the

Impact assessment is now a major concern of the CGIAR System.

major means of technological advance in the post-Green Revolution era (Byerlee 1994, 1998; Morris and Byerlee 1998). This intensifies the need to document successes.

The difficulties become even greater when estimating and assessing the effects of research in crop management and soil and water management on the productivity of the agricultural resource base. To see this, one has only to reflect, for example, on the technical difficulties of measuring soil loss under alternative crop-management and land-management practices, or the pollution of groundwater and downstream flows through inappropriate use of agricultural chemicals. Some of these same difficulties should be confronted in assessing the real impacts of any productivity-enhancing research, to the extent that some of the gains apparently made may be at the expense of reductions in the quality of the resource base (Alston, Anderson, and Pardey 1995).

Dealing with what economists refer to as the “equity issue” presents substantial additional challenges, for which the efforts of Lipton with Longhurst (1989) provide a significant illustration. Many factors determine the extent to which the work of agricultural researchers benefits specific groups, and it is not easy to ascertain precisely whether the effects of research are equitably distributed. Observers need to be humble about the actual possibilities of assessing “research impact” holistically. This is particularly the case in measuring the effect of research on poverty. Still, the System and the Centers could do more to demonstrate the link between their work and poverty alleviation, and to this end, CIAT is organizing a major conference on this theme in September 1999.²⁶

Needless to say, to the extent that research is truly participatory, attribution involving the properly acknowledged role of all the participants will probably continue to be difficult. At least with crop improvement, however, recent efforts at attribution have gone some way toward making concrete progress in methods of attribution, especially in the situation of valuing spillover (or spillin) benefits to the affected parties. Such work is rather demanding of detailed information on the genetic composition of the materials being studied for their impact consequences, not to mention other aspects of the use of the materials, by whom, where, and so on.

While the methodological problems of measuring impact areas are formidable, they are even more challenging in the fields of policy research and institutional change.

Prior to the Mid-1980s

The CGIAR System and the Centers paid relatively little attention to impact assessment from the time of their establishment until the mid-1980s. The Green Revolution and the role of IRRI and CIMMYT in increasing rice and wheat production were well known. And the award of the Nobel Peace Prize to Norman Borlaug (of CIMMYT) in 1970 added a celebrity note not normally found in agricultural research. Other Centers were soon established, based in part on the success of the Green Revolution, but it would take a while (and continues to do so in some cases) before much could be said about their impact.

Still, it was important to begin to quantify at least some of the information in hand and to begin to think about the future. One of the authors of this report began to gather and publish information on the development and extent of adoption of the high-yielding varieties developed by IRRI and CIMMYT in 1969, and continued to do so through the mid-1980s. A further impetus to this process was provided by a conference, Resource Allocation

The
methodological
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are formidable.

and Productivity and International Research, held at Airlie House in Virginia in January 1975 (Arndt, Dalrymple, and Ruttan 1977). The conference was organized by the Agricultural Development Council of New York (now absorbed into Winrock International), with assistance from USAID. The record of productivity of national systems at that point was based on the papers presented, and was rather more extensive for the national than for the international centers, where most of the attention was devoted to wheat and rice.

At the conclusion of a wheat and rice paper, one of the present authors (Dalrymple 1977, pp. 171–208) provided some general comments on future information needs:

For the moment, the accomplishments of the early Centers are well known. They have produced striking technologies whose worth is readily understood. Past studies have shown that investment in research yields high returns. And indeed this study . . . suggests that the returns to international wheat and rice must have been very high. Perhaps these findings will be adequate for the future.

At some point, however, it is likely that more quantitative evidence will be requested. Of all aid recipients, a research organization should be in a good position to provide some measure of its worth.

Sponsors need to have some understanding of what can and can not be readily measured . . . some research activities might show considerably less quantitative effect than others. Such results might not always be well received, but they ought to be known if resources are to be allocated most effectively. It should be realized . . . of course, that quantitative techniques can not measure everything.

The evaluation task, therefore, is broad and challenging. But an enlightened and effective program of international agricultural research requires research on the system itself. It is time to consider a modest but enduring organizational mechanism that can carry out the job.

The main approach used in the impact study was to take a client's perspective.

Relatively little attention, however, was given to this subject by the System until the mid-1980s. A few scattered studies were done at the Center level, but they were certainly an exception rather than the rule (for example, Scobie and Posada 1977).

The Impact Study

A group of donors, led by Sweden, concerned about the insufficient documentation of the impact of the System to that time, initiated an impact study in 1983. It was advised by a high-level Advisory Committee chaired by the president of the National Academy of Science of the United States, and was conducted by some 72 independent consultants with a director (one of the authors, JRA) based in the CGIAR Secretariat for more than a year (in 1984–85).

The main approach used in the study was to take a client perspective from the point of view of a country that had been a recipient or collaborative partner in using research products from the System. More than 30 countries were studied, mostly under the direction of a national of the respective nations. They were chosen to be broadly representative of a range of ecological and policy settings.

The range of research products was wide, encompassing not only the conventional improved varieties associated in some way with a Center, but also the less-conventional items such as policy advice, institution-building assistance, and new methods of research directed to the circumstances of resource-poor farmers. In short, the full range of activities covered by the then 13 Centers was addressed.

By taking the client view, it was not surprising that the findings included much on national perceptions of failings of the System, such as a lack of equality in partnership arrangements; lack of complete coverage of important and relevant commodities by the international Centers, such as forests and fisheries; and resource management work more generally.

The extensive documentation did, however, manage to quantify the spread of major products through the developing world, and to assess the aggregate and some of the distributional consequences of the modern cereal varieties associated with the Centers (or their predecessors). The work was presented in several summary forms and a book (Anderson, Herdt, and Scobie 1988), as well as a large main report and 25 published study papers.

Subsequent CGIAR Center Activities

The System impact study passed the evaluation torch back to individual Centers, where in a few cases it was given considerable attention, in others modest attention, and in others little or none. Part of the reason for the variability in response lay in the nature and maturity of the work done by the Center, in the importance of such work as judged by the economics staff, and in the professional background and interests of the Center director.

Following the CGIAR impact study, the next most significant effort at a Systemwide level was a workshop on agricultural technology management at Rutgers University in July 1988, cosponsored by ISNAR. Half of the papers were, in the final reporting, related to diagnosing constraints, and half to assessing the impact of agricultural research (Echeverría 1990). Another conference, with much more substantial Center involvement, was held at Cornell University in June 1991 (Lee, Kearl, and Uphoff 1992). Both ex post and ex ante assessment issues were discussed. During this period, economists at ISNAR had been gathering data on research programs and issues, which resulted in the publication of a book (Pardey, Roseboom, and Anderson 1991). The CGIAR subsequently issued a comprehensive bulletin on impact analysis in the international Centers (Collinson and Tollens 1994).

Thereafter, the amount of impact work at the Centers began to increase appreciably, although the emphasis given to the subject varied by Center, and at different times within a Center.²⁷

Early in the 1990s, the donor community became more concerned with impact evaluation.

Recent IAEG Effort

Early in the 1990s, the donor community became more concerned with impact evaluation. A study panel, established in July 1993 to examine the long-term governance and finance structure of the CGIAR, recommended “the mounting of a systemwide effort . . . to develop systematic and continuous processes for impact assessment.”²⁸ The panel’s recommendation was endorsed at ICW 1994. The issue was also discussed at the Lucerne Ministerial Meeting in February 1995, which called for the establishment of an independent evaluation function, reporting to the CGIAR as a whole. An intensified systemwide evaluation effort was under-

taken in the mid-1990s. Prior to the May 1995 MTM of the CGIAR, a widely attended workshop was held on impact assessment, for which the previously noted (endnote 27) document by Alston and Pardey was a key background paper. The subject was taken up in the CGIAR meeting, and a decision was made to create an independent Impact Assessment and Evaluation Group (IAEG).²⁹ The IAEG was established at the 1995 ICW meeting of the CGIAR.³⁰ It was composed of a chair plus three members of the group, all serving on a part-time basis, with a small secretariat at CSIRO in Canberra, the institutional base of the first chair. The expertise on the team included biological science, evaluation, agricultural economics, and agricultural research administration.

The IAEG was busy during its first two years of existence, among other things, trying to best-guess what it was that the Group had charged it with doing. In presenting the *First Annual Impacts Report* in October 1997, members of the Group were explicitly charged with responding to how well, or not, it accords with intentions, imperatives, and the like, although these reactions have not yet been made available. The costs of gathering impact information and of assembling the other reports were not inconsiderable (about \$300,000 a year to start). Several different types of reports were commissioned, primarily through independent agencies.

Annual Impacts Report. This report was presented as the first in a series that will "include evaluations on the extent that intermediate CGIAR objectives are being met" (IAEG 1997, p. 1), but there was virtually none of this sort of evaluation in the pilot edition. It is proposed to report each year on a "selective sample" of impacts, given the evident impossibility of an encyclopedic approach. All the information reported on the first occasion, with its tight schedule, was drawn from available Center documents. It appeared to be a good and broad selection, attractively presented, conveniently summarized in compact form, and was generally informative to readers not closely familiar with the System. It probably does represent good value for money.

Early IAEG Reports. The initial IAEG reports were prepared by a Florida State University team. The first report (Cooksy 1997a) was a review of Center documents on impact assessment, and the second (Cooksy 1997b) was an analysis of ex post documents. A constant theme in both reports is a quest for meta-evaluation across the system within a consistent framework, and a complaint that even within a Center's documents, there is an evident reluctance to look across the span of Center efforts and effects.

In the first report, it was noted that 265 documents had been received for possible review. It was judged that only 87, or about one-third, of these were *done by Centers themselves* and "presented evidence on Center effects," and thus became eligible for further scrutiny. Earlier impact study documents were apparently put aside on principle. Apparently (p. 3) the major reason for the sharp reduction in the number of documents finally given some scrutiny was the perceived lack of clearly articulated links to a claimed effect on Center activities. In many of these and other cases, it was judged that data issues were insufficiently or unclearly handled in the reports examined. Most of the Centers' formal impact study documents do provide adequate description of the nature and quality of the data used, although the messy details are sometimes to be found in unpublished background reports. What is clear is that a large majority of Center impact documents were never intended to portray "a comprehensive picture of effectiveness," and many are overtly

location-specific case studies not intended to be generalized to larger populations or different geographical areas.

The second report presented a detailed analysis of the 11 Center documents, whittled down from the 87, that were identified as being worthy of review. This involved the work of 10 Centers. The analysis hinged on a logical framework developed in a TAC/DSE workshop. The TAC logframe was based on a process interpretation of the CGIAR Mission Statement. The creative activities that enter into the articulation of a logframe are such that the result is bound to be a reflection of the world view of the contributors. This report, oddly, had no mention of the market effects of new technologies that may be associated with Center products, but this has been revised (publication is pending) during 1998. The report contained many statements about “plausibility” and the reviewer-perceived shortage of it in the reviewed Center documents on impact. The inherent subjectivity in these types of comments seems to be great, and it remains to be seen how the case material stacks up to the lofty evaluative intentions when it is completed and formally presented.

More recently, a University of Arizona team has been working with 8 Centers in 10 case studies intended to inform the Group and all concerned on matters of adoption and impact. This work is seeded by support from IAEG for some of the activities, but involves “leveraging” rather larger resource commitments by the Centers themselves, as well as others. To take the case of Study 1, involving CIMMYT-linked improved maize in Ghana, IAEG has provided \$20,000, and CIMMYT, CIDA, the Ghanaian CRI, and ODI some \$150,000.

The work of the IAEG is thus still at a fairly early stage of development. The approach taken of emphasizing impact studies through external independent agents has some virtues, but these do not include a major commitment to foster self-evaluation capacity *within the System itself*, which the present authors see as key to real and sustainable progress in this domain. It may be that the case studies launched will have a useful demonstration effect for the Centers. The function is to be further institutionalized by a staff appointment through UNDP, and this may help to boost concern with the issues within the Centers, but it will represent yet another overhead cost for the System to bear on a possibly continuing basis. Whether the IAEG agenda will be cost-effective is uncertain and must be closely observed. The alternatives for implementing more mainstream self-evaluation processes within the Centers thus seem to have been insufficiently explored to this point.

Overplanned and Overreviewed?

The Centers frequently complain that they are overplanned and overreviewed.³¹ Centers from the pre-CGIAR period and supported by two foundations looked back on that period as the good old days after the CGIAR System, with its more elaborate ways, was established. And newer, smaller Centers that have joined CGIAR experience a certain amount of “system shock.” It is true that the cost of transactions for a small Center in the CGIAR System is relatively higher than that for larger Centers (for example, they must meet the same reporting requirements, and external reviews cost nearly as much as for the larger Centers). In addition, Centers that receive targeted/restricted/special-project funding generally have to report separately on such work to the respective donors.

The Centers frequently complain that they are overplanned and overreviewed.

From a “System” point of view—the donors and the Secretariats—the planning and reviewing processes are likely to be seen as a normal cost of doing business. As funds become shorter, donors must be assured that their contributions are being spent in the best possible way. Planning, review, and evaluation are key elements in that process. Moreover, as noted, if the System did not sponsor and arrange the reviews, the donors would have to do something of this nature on their own, and this could be difficult for them, and a nightmare for the Centers. The costs could be much higher than they are for the current system. There really is no other choice—but there certainly is room for improvement in the existing processes.

This being said, it must be acknowledged that the costs of the existing external review process are probably substantial. It is not possible to sort out the planning costs, but the out-of-pocket costs of recent Center reviews averaged about \$300,000.³² The costs to the Centers in staff time and related expenses are not known precisely, but may be in the neighborhood of 75 percent or more of direct costs.³³ Just how one counts the cost of the Center-commissioned external reviews is uncertain; some would be done by the Centers in any case, and some are done with an eye toward the external review. But it is clear that they are typically better targeted in thematic coverage, and have probably greater cost effectiveness in their implementation. Similarly, the inter-Center review costs would have multiple payoffs. In each case, a mitigating factor is that these reviews are only done about every five years, so they can be amortized over that period. The Systemwide activities are also not inexpensive. The IAEG budget as of 1998 was about \$800,000 a year (through a budget separately authorized by the cosponsors) and is an annual expense. The impact study of the mid-1980s reported to cost \$1.1 million, the second system review in 1981 was about \$0.5 million, and the current system review about \$1.5 million.

If the total Center and Systemwide costs of the external review and evaluation system could be sorted and added up, the number would probably seem high by itself, but not nearly so high in the context of the total size of the CGIAR budget. While the Center-level costs could probably not be reduced much, the price tag of the Systemwide reviews may be getting to the point where they will be difficult to repeat on the same level in the future. Still, most comparable groups now give considerable emphasis to review and evaluation, and if they spend, for example, one percent of their budget in this way (the cost of the Operations Evaluation Department in the World Bank represents about this fraction of the Bank’s administration budget), the CGIAR may be getting by fairly reasonably. The CGIAR Secretariat and TAC are currently trying to obtain more comprehensive information about costs of evaluation. It is quite possible that the process, or some modification of it, could be carried out more efficiently and at lower cost.

Are the Centers overplanned and overreviewed? It seems unlikely that there will ever be ready objective criteria to determine whether this is true or not. Much depends on where you are sitting. It is easy to understand the concerns of those working in the Centers, but these must be balanced with the needs of the donors. Overall, given these needs, the CGIAR System and Centers may not be overreviewed. The whole question of the benefits of more intensive review is one of the many important issues being addressed by the current system review.

In total, the
CGIAR System
may *not* be
overreviewed.

Chapter 5

Assessing Achievements of the CGIAR

The CGIAR System and Centers have numerous achievements in many areas. Some are obvious, and others are subtle. Some came relatively quickly, others took a long time. Rather than attempt to provide a comprehensive catalogue, which would be very difficult to do in a few pages, we have elected to provide a framework for viewing achievements, along with some examples.

Considerations

The CGIAR Centers are primarily biological research organizations that give some attention to social science. Three have specialized functions of a broader nature: policy research, genetic resources, and institutional development, all of which complement activities carried out at the other Centers.

In viewing achievements, especially in biological research, five levels might be considered: (1) accomplishments of a scientific technical nature at the research level, (2) adoption by farmers, (3) changes in yields, (4) impact on producers and consumers, and (5) broader social implications. Each step brings advantages and difficulties to the assessment process. Step 1 is the necessary, but not sufficient, condition. It is the most undiluted indicator of the basic task of the Center. Step 2, of course, is the essential next step and can be fairly readily measured for some technologies, especially improved crop varieties. Step 3 is readily measured, but can be influenced by several factors. Step 4 can partly be measured by changes in commodity prices, and partly by changes in producers' incomes. Step 5 gets into broader social measures of accomplishment, which are what we are after, but which are influenced by so many other factors that it is difficult to delineate the specific contribution of the Center. In other words, as one moves out from the first step, there is a growing attribution problem. The measures become more important, but the connection with the Centers' activities becomes more attenuated.

The paths for the other types of research and effort may follow different and less obvious routes. Policy research, of course, does not emanate from the laboratory but may involve field research. The audience is more likely to be government officials—economists and administrators. The products of CGIAR policy research do not carry genetic markers. Links may be visible to those up-front and involved, but perhaps not to those at a distance and at a different time. This is true of both food and agricultural policy research, but also, and perhaps even more so, for natural resource research that has a high policy component. Institutional development also presents measurement challenges. One component, the number of individuals trained, is easily measured, but does not get into the effect or impact of training.

The CGIAR Centers are primarily biological research organizations.

The products of CGIAR policy research do not carry genetic markers.

It should also be acknowledged that, as in any field of research, not all agricultural research is successful, although this may vary somewhat with the eye of the beholder. Some research may be considered successful from the point of view of the scientist but not from the perspective of the donor because it may not, for any one of many reasons, find its way into immediate use. CIMMYT's work on quality protein maize is a case in point.¹ It was a fine scientific accomplishment with much promise for the improvement of human and livestock nutrition, but did not begin to find much adoption until recently in Africa and China. Rather than view examples of this sort as failures, as some have, we would prefer to think of them as promising technologies that are on the shelf, but may someday find their niche. Other efforts hold less promise, and their day may never come. Some research efforts were undertaken with insufficient understanding of realities at the farm level, especially at the earlier stages of development of the System. This is less likely to occur now, with the much greater degree of collaboration with other researchers and with farmers. Participatory research, which has certain cost limitations, is also now more common. Ex ante technology assessment and impact analysis can be helpful in guiding the allocation of research resources. But even so, some research efforts will continue to be more successful than others.

Table 5.1: CGIAR Research Agenda Investments by Activity, 1992–96

<i>Investment</i>	<u>1992</u>		<u>1993</u>		<u>1994</u>		<u>1995</u>		<u>1996</u>	
	<i>\$m</i>	%	<i>\$m</i>	%	<i>\$m</i>	%	<i>\$m</i>	%	<i>\$m</i>	%
Increasing Productivity	127.5	49	123.4	49	124.3	47	134.4	47	129.1	40
Germplasm Enhancement & Breeding	61.3	24	59.8	24	61.9	23	64.0	22	58.8	18
Production Systems Development & Management	66.1	26	63.7	25	62.4	24	70.5	25	70.2	22
Cropping Systems	40.0	15	37.5	15	41.6	16	38.5	13	40.5	12
Livestock Systems	21.1	8	20.3	8	15.7	6	21.1	7	18.4	6
Tree Systems	3.9	2	4.9	2	3.9	1	8.9	3	9.2	3
Fish Systems	1.1	0	1.0	0	1.2	0	1.9	1	2.2	1
Protecting the Environment	29.7	11	35.8	14	40.1	15	45.3	16	53.7	17
Saving Biodiversity	19.9	8	14.7	6	22.6	9	28.5	10	34.6	11
Improving Policies	25.5	10	24.8	10	26.0	10	25.2	9	38.9	12
Strengthening NARS	56.1	22	55.4	22	51.7	20	52.6	18	68.7	21
Training	22.4	9	19.5	8	17.5	7	21.3	7	24.6	8
Documentation/Publication/Information	19.9	8	22.3	9	19.2	7	16.2	6	18.3	6
Institution Building/Advice to NARS	5.8	2	7.5	3	6.9	3	6.0	2	12.2	4
Institution Building Networks	8.0	3	6.0	2	8.1	3	9.1	3	13.7	4
TOTAL	258.7		254.1		264.0		286.0		325.0	

Source: CGIAR 1997, p. 42.

Allocation of System Resources

Assessment of achievements should take place against a backdrop of information about how the System allocates its resources. The CGIAR, through TAC, groups its activities into five major categories and some subcategories, as shown in table 5.1. Increasing productivity represented about 40 percent of the total in 1996, followed by strengthening NARSs (a collection of activities), 21 percent; protecting the environment, 17 percent; improving policies, 12 percent; and saving biodiversity, 11 percent.²

It may be seen that the major activity continues to be increasing productivity, but that this has declined in relative importance, although not in dollar terms. The drop is found in both subcategories in percentage, but is more pronounced in germplasm enhancement and breeding. Protecting the environment, which encompasses natural resource work, and saving biodiversity (which to some extent represents another side of the germplasm category noted above) have grown gradually. Improving policies and strengthening NARSs have remained relatively constant.

Since two of the productivity categories include sector investments, which are only partially broken down, it may be useful to mention another tabulation (p. 43), which shows the following distribution for the productivity categories more generally in 1996: crops, 72 percent; livestock, 18 percent; trees, 8 percent; and fish, 2 percent. The proportions in 1995 were essentially the same. A different calculation suggests that of the 40 percent going to production, about 2 percent went for post-harvest activities (TAC Secretariat 1997a, Annex III).

As it turns out, many of the achievements for which the System is best known fall in the crop production category, which represented about 30 percent of System funding in 1996. (Counterpart work in saving biodiversity, which is largely focused on crops, but would not show up immediately in terms of effect, added another 11 percent in 1996.) Some other activities, while all of importance in one way or another, are less likely to be found in current lists of accomplishments, and are in any case more difficult to measure. We will hear more about them in the future, particularly as some of the newer programs become more established.

Aggregate Measures of Accomplishment

We have noted that there is a dilemma in reporting research accomplishments. The basic problems are aggregation and attribution. While on the one hand, highly aggregate numbers are useful in illuminating important overall trends, on the other hand, they are influenced by so many factors that it is difficult to attribute credit to any one component, even a likely contribution such as research. The challenge is to build links between the highly aggregate and more specific project- or program-level information.

The aggregate data can at least be disaggregated to some extent. Some of the more relevant output indexes that are provided annually by FAO for developing countries are summarized in table 5.2. It can be seen that the indexes of food production have grown substantially in all three regions, but that when population growth was taken into account, they dropped in Africa. Similarly, yields of the major food crops, most of which are covered by the CGIAR, also rose noticeably.

Another important aggregate measure has to do with changes in food prices. One of the aims of agricultural research is to bring about a decline in food prices. This has happened

Many of the system's best-known achievements are in crop production.

In reporting research accomplishments, the basic problems are aggregation and attribution.

at the global level for grains. Compared with 1980, international export price indexes in 1995 dropped as follows: wheat, 38.2 percent; rice, 52.9 percent; maize, 40.6 percent; and grain sorghum, 44.3 percent (World Bank 1997b, p. 302). Data on real price changes within developing countries are more difficult to obtain and summarize, but some such information has been gathered by CIMMYT and IRRI and reveals a similar pattern.

Table 5.2: Changes in Food Production and Yields, Developing Countries, 1970–97

A. Indexes of Food Production, Developing Nations (1989 – 91 = 100)

(1) Total

<i>Period</i>	<i>Africa</i>	<i>Asia</i>	<i>Latin America^a</i>	<i>All Developing Countries</i>
1970–74	66.6	51.4	59.1	54.6
1975–79	72.2	60.3	71.4	63.7
1980–84	77.4	73.4	82.9	75.6
1985–89	90.4	89.6	93.9	90.5
1990–94	104.4	109.5	104.6	108.0
1995–97	114.1	133.4	118.6	128.5

(2) Per Capita Production Index

<i>Period</i>	<i>Africa</i>	<i>Asia</i>	<i>Latin America^a</i>	<i>All Developing Countries</i>
1970–74	109.5	73.4	86.9	79.8
1975–79	104.0	77.3	93.0	83.2
1980–84	96.9	85.5	96.8	89.2
1985–89	98.2	94.7	99.3	96.1
1990–94	98.9	105.8	101.0	104.1
1995–97	97.2	121.3	107.2	115.6

B. Yields of Major Food Crops, Developing Nations (kg/ha)

<i>Period</i>	<i>Cereals^b</i>	<i>Coarse Grain^c</i>	<i>Root Crops^d</i>	<i>Pulses^e</i>
1970–74	1,523.8	1,114.4	9,393.5	586.6
1975–79	1,744.4	1,307.8	9,976.2	613.2
1980–84	2,056.4	1,498.0	10,472.5	616.0
1985–89	2,259.8	1,558.9	10,868.5	629.1
1990–94	2,486.5	1,753.0	11,201.5	639.4
1995–97	2,673.8	1,930.6	11,653.7	648.8
Change^f	+75.47%	+73.25%	+24.06%	+10.60%

a. Includes the Caribbean.

b. Wheat, rice, other.

c. Corn, barley, rye, oats, millet, sorghum, other.

d. Potatoes, sweet potatoes, cassava, taro, yams.

e. Dry beans, broadbeans, dry peas, chickpeas, cowpeas, pigeon peas, lentils, other.

f. Percentage change from 1970–74 to 1995–97.

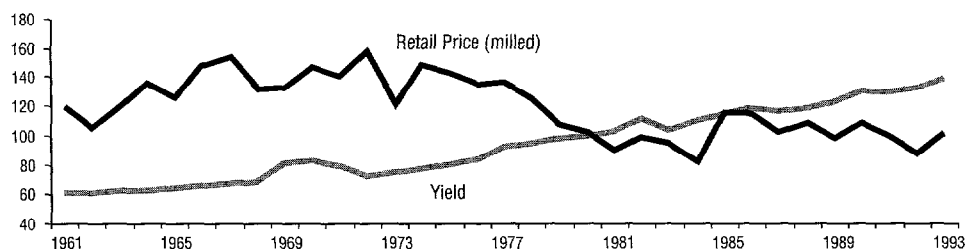
Source: Derived from FAOSTAT [<http://www.fao.org>], February 1998.

- Producer prices for *wheat* in India, Pakistan, and Mexico declined from 1960 through 1989 (CIMMYT 1991, p. 24). The reduction in producer prices in India (Punjab) from 1968 through 1989 was paralleled by a similar, but not quite as pronounced, drop in consumer prices; producer prices fell by more than 3 percent yearly, while consumer prices fell over 2 percent yearly (CIMMYT 1992, p. 27).³
- Data on changes in both yields and retail prices for *rice* in Bangladesh, India, and the Philippines from 1961 to 1993 are presented in index form in figure 5.1. In general, increases in yield (which closely paralleled changes in production) were associated with decreases in retail prices.⁴ More recent data for rice in Bangladesh indicate a decline of 0.23 percent annually in wholesale rice prices from 1986 to 1996.⁵

Figure 5.1: Changes in Rice Yields and Domestic Retail Prices: Philippines, India, and Bangladesh, 1961–93

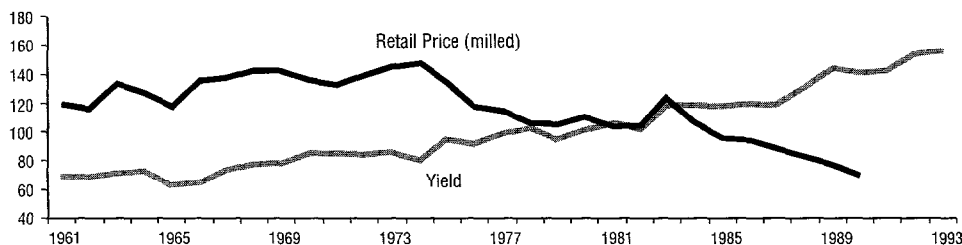
Philippines

Index Period 1979-81 = 100



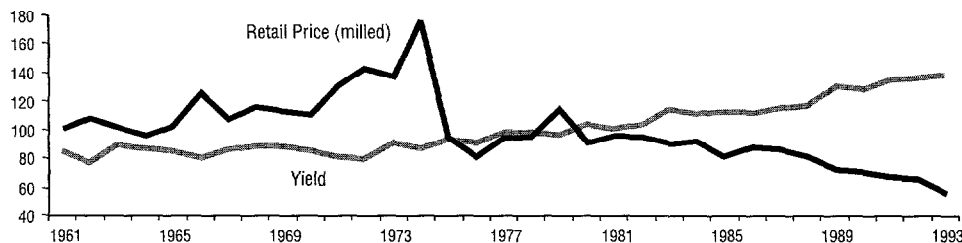
India

Index Period 1979-81 = 100



Bangladesh

Index Period 1979-81 = 100



Note: Index prices deflated by consumer price index for country.

Source: Yields: FAOSTAT, April 1998. Prices: calculated from data provided in IRRI 1995.

Many factors influence food prices, but food supply is certainly a major element. Research undoubtedly played a role in increasing yields and food supplies, and hence in reducing prices. While it cannot be said how significant the CGIAR Centers were in the process, the linkage is probably closest in the case of wheat, maize, and rice. Table 5.3 provides some estimates for wheat and maize.

The aggregate contributions noted refer mainly to the supply-side effects. The same technologies can also contribute to strengthening demand through their direct effect on farm income and spin-off effects on local employment and industry, and the subsequent marketing chain. No aggregate data are available on these important impacts, although some of them may be treated in Center case studies.

Table 5.3: Estimates of Adoption and Impact of Improved Germplasm of Wheat and Maize Developed by CIMMYT: 1990, 1997^a

Indicator	Wheat ^b		Maize ^b	
	1990	1997	1990	1997
1. Proportion of varieties released by national programs derived from CIMMYT material	>80% ^c	>80% ^c	>70%	nr. 80%
2. Area planted to varieties with CIMMYT-related germplasm (million ha)	41* ^d	51* ^d	nr. 14	20± ⁱ
3. Proportion of total production represented by CIMMYT-related varieties	65%* ^e	68%* ^e	i	k
4. Additional yield per year (kg/ha)	>200	>200	j	?
5. Additional production per year (million metric tons)	9 ^f	11 ^f	?	?
6. Value of additional production per year (billions of 1990 dollars; 1989/90 prices)	\$1.5 ^g	1.8* ^g	\$0.7 b ^m	\$1.0 b ^m

Code: > = greater than; nr. = near; ± = about.

a. This table had its origins in some data extracted from a leaflet prepared by the External Relations Department of CIMMYT for the CGIAR meeting in October 1997 (see source). These data were then checked with the Economics Department at CIMMYT, where they were subjected to further analysis, which in some cases produced additional or moderately different figures. The latter figures have been used where available and are marked by an asterisk (*). In these cases, the original data are repeated in the footnotes below. Further data are being gathered for 1997, which will provide more information at the farm level.

b. Utilizes a strict definition of CIMMYT-related varieties: crosses in which at least one parent comes from CIMMYT. A looser "any ancestor" definition could be taken, which would result in higher figures.

c. Excludes China. If China is included (which would involve relaxing the definition of CIMMYT-related varieties to involve grandparents), the proportion in 1997 would probably be in the range of 60–70 percent.*

d. Includes China. The originally reported figures were 45 percent and 55 percent.

e. Excludes China. If China is included, the figures would be reduced to about 40 percent and 49 percent, respectively.* The originally reported figures (excluding China) were 70 percent and 80 percent.

f. Includes China.

g. Includes China. If 1996 prices were utilized, the figures would be \$1.3 and \$1.8 billion.*

h. The definition of CIMMYT-related is looser for maize than for wheat. The data reported here exclude temperate China.

i. A recent analysis provided a figure of 10 million ha in Latin America alone.*

j. The proportion of all non-temperate maize area planted to CIMMYT-related varieties is placed at about 23 percent.*

k. The proportion of total maize area in Latin America currently planted to CIMMYT-related varieties is placed at about 37 percent.*

l. The original report provided a figure of 500, but this was presumably a breeder's guesstimate of the average difference in yields between unimproved and improved materials weighted by environments. The comparable figure for wheat was 700, whereas the figure reported in the table was 200.* Clearly more precise information is needed on yield changes before the remainder of the table can be completed.

m. The original report provided figures of \$0.7b and \$10b, but these probably utilized the probably-too-high yield figure cited in fn. a.*

Source: "A Sampling of CIMMYT Impacts," 1997, pp. 3–4. E-mail from Paul Heisey, Economics Department, CIMMYT, February 23, 1998 (we are indebted to Dr. Heisey for undertaking what turned out to be a more substantial task than was anticipated).

The System has had impacts in other related areas. In terms of protecting the environment, it has been estimated by TAC that the land saved (that is not brought into cultivation) globally by the intensive use of modern varieties and the use of intensive new technologies pioneered by the CGIAR is some 300 million ha. Natural means of pest control and integrated pest management have vastly reduced the use of agricultural chemicals. In saving biodiversity, the Centers have assembled the world's largest *ex situ* collection of plant genetic resources of food and fiber crops of importance to developing countries, comprising some 500,000 accessions. And in capacity building, over 50,000 (about one-third of) developing country scientists have been trained through CGIAR programs.⁶

The Centers have assembled the world's largest *ex situ* collection of plant genetic resources of food and fiber crops of importance to developing countries.

Center-Level Accomplishments

Center accomplishments, as noted, can fall into several categories: scientific, farm level, consumer level, and society level. Accomplishments are not necessarily impacts. The Centers have generally focused their own analyses at the farm level, but have also reported on new scientific accomplishments and their potential at the farm level (sometimes in a conjectural way, and more recently through more formal *ex ante* analysis). As we have noted, virtually all of the Center research is conducted in cooperation with other groups, particularly national research systems, which must share any credit. Thus we are talking about a joint product.

One of the most common measures for assessing the impact of agricultural research, as well as other projects, is the economic rate of return. This provides a means not only to assess the return from individual projects but also to compare them with those of other projects. As of the late 1980s, only a few such studies had been done for Center-related work. Since then, the number of such studies has grown significantly. The reports, however, have been rather widely scattered. Fortunately, Pardey and colleagues, in the course of preparing an updated review of rate of return studies (the last such summary was done in 1988 by Echeverría; see Echeverría 1990), have put together a section on Center research. It reveals that the returns on Center research compare favorably with those found elsewhere.⁷

Rate of return studies are, however, only one of the more formal ways of measuring accomplishments. Other less formal measures are available. Some idea of the diversity of approaches was revealed at the October 1997 meeting of the CGIAR (ICW), when each Center was asked to report on their activities and findings. The reports varied widely in coverage. One reviewer divided them into four categories: impact reports, impact statements, program commentaries, and conceptual struggles. They may also be divided between new and promising developments (in two cases rather closely examined in an *ex ante* analysis) and technologies that have been adopted. Most of the cases fell into the production category, with a few related to policy, natural resources, and information systems. More careful preparation would have enhanced the story in several cases. The Secretariat has subsequently gone further and summarized the highlights of the presentations in the formal report of the meeting (CGIAR Secretariat 1998a, pp. 13–24) and in a separate report (CGIAR Secretariat 1998b). Two examples of these presentations are provided in box 5.1. We would suggest that some variant of this reporting process be continued in future years.

Center activity in impact analysis has been augmented by the activities of the Impact Assessment and Evaluation Group, which is currently working with several Centers on evaluation projects, in addition to its own activities (reported earlier). The pace will likely increase in the future.

System-Level Achievements

Emphasis on the particular should not close our eyes to the related but somewhat different nature of System accomplishments. These are not as amenable to formal measure, but are important to the CGIAR Centers and to agricultural research more generally. The CGIAR has become a point of focus for an increasing number of issues of fairly broad interest and importance. These issues are sometimes pondered and sometimes incorporated into its own operations and policies. Recent or current topics that fall in the former category include

Box 5.1: Summaries of Center Presentations of Accomplishments, ICRISAT and CIP

International Crop Research Center for the Semi-Arid Tropics (ICRISAT)

ICRISAT's research has increased the knowledge base of one of the most fragile ecologies in the developing world—the semi-arid tropics. Home to almost 850 million people, including many of the world's poorest, this region has not attracted commercial investments in agricultural technology improvements because the markets are small and water scarcity, coupled with harsh climate, limits plant growth. ICRISAT works on the most important food crops in the diets of the poor in these dry areas—cereals, including sorghum and millet, and the legumes, including groundnut (peanut), chickpea (garbanzo bean), and pigeonpea. By combining cereals and legumes in their cropping systems, farmers reap such benefits of diversification as increased and stabilized

income, reduced risk, improved soil fertility, the disruption of pest cycles, and improved human nutrition and many others.

ICRISAT, in collaboration with its national and international partners, has made significant progress in developing technologies that are lifting the living standards of the rural poor. For example, ICRISAT, along with ICARDA, is making a special effort to meet the needs of these dryland farmers by developing new technologies for dryland agriculture. Over the past 25 years, ICRISAT partners in 70 countries have released 365 improved varieties based on germplasm supplied by ICRISAT. ICRISAT's greatest impact to date has occurred in India and Sub-Saharan Africa. Chickpea impact has been greatest in West Asia and North Africa through collaboration with ICARDA; it has also been substantial in India.

Pigeonpea research has had its largest impact in the crop's home country, India. Concerted efforts are now in progress to tailor this crop to the needs of Eastern and Southern Africa. ICRISAT's groundnut improvement research in Africa is beginning to show signs that high impact will be forthcoming over the next decade.

One of ICRISAT's most significant achievements to date has been the introduction of resistance in pearl millet to the downy mildew fungus that causes a disease so severe that it threatened to make farmers abandon production of the crop in India. This is a story with many dimensions, including a huge payoff to strong partnerships among the international, national, and private sector research communities; the effective use of the global gene pool to solve a national problem; and the application of cutting-edge science using molecular

markers to make major gains in breeding efficiency in the future. In recognition of this achievement, the CGIAR granted its highest accolade, the King Baudouin Award, to ICRISAT in 1996.

Economists measure the benefit streams generated by new technologies much as a banker would express interest on cash deposited in a bank—as an annual percentage return. The internal rate of return to society generated by ICRISAT's investments in crop improvement, for a number of cases studied to date, ranges from 11 to 65 percent. These are extremely attractive rates of return and compare favorably to alternative investments in rural development. A pooling of the income streams estimated from the studies of the impacts of just 20 of the improved crop varieties released to date yields the conclusion that the benefits accruing are

plant genetic resources, intellectual property rights and global warming. And the System has moved to engage non-governmental organizations and the private sector in its activities through the establishment of committees for each. It has supported a more international approach to research and in particular, the establishment of the Global Forum (CGIAR Secretariat 1998a, pp. 35-36). The System also does much to promote the visibility of agricultural research. Six of the 14 World Food Prize laureates have come out of or been closely involved in the CGIAR System at the Center level.

Improving Performance

We have noted that CGIAR Center achievements can come in many different forms. This is good on the one hand, in that it reflects the range and diversity of work underway, both for immediate and longer-term needs. On the other hand, it does make it difficult to compare

worth more than 10 times ICRISAT's annual budget. This does not take into account the benefits accruing to society from the remainder of the 365 released lines; the resource management technologies; the noneconomic benefits from sustainability, equity, and other intangible gains; nor the global acceleration of research progress resulting from the expanded knowledge base created by 25 years of effort at ICRISAT.

ICRISAT has trained 3,200 scientists and technicians from Africa, Asia, Latin America, and other regions, built an extensive research facility in the Sahel where none existed before, and introduced new crops to traditional cropping systems.

International Potato Center (CIP)
CIP focuses on increasing agricultural production while taking into account

environmental concerns and the needs of poor farmers. Impact has been achieved through a combination of yield increases, an expansion of area planted, the development of superior seed systems, and the availability of technologies that allow farmers to reduce pesticide use.

Ten case studies of CIP projects since 1992 show that the majority of new potato varieties released in developing countries now have CIP parentage. This reflects the value of using locally adapted breeding materials and indicates that CIP efforts to broaden the genetic base of potatoes in developing countries is succeeding. CIP distributed breeding materials developed by Argentina's national potato program to China, where the breeding materials are now some of the most widely grown potato varieties, with annual area in such varieties exceeding 400,000 hectares. In Peru's coastal valleys, spreading to the

highlands, CIP-developed breeding materials now dominate much of the production, which is valued at \$70 million annually.

In Asia, farmers produce close to 70 million tons of potatoes today because short-duration cereal varieties (the high-yielding, early-maturing rice and wheat varieties resulting from NARS and IRRI and CIMMYT work) have opened a niche in the cropping calendar. As a result, farmers not only harvest more rice and wheat, but can sandwich in a potato crop. In Bangladesh, farmers grow more than 17 million tons of potatoes this way.

In Peru, CIP's true potato seed hybrid is providing farmers with a strategic reserve of potato seed that can counteract the possible effects of the El Niño emergency on potato seed supplies. Similarly, farmers using the new Chacasina seeds are producing an average \$4,000 more per hectare

than farmers who use traditional seed. This is taking place in a region where family income averages less than \$400 per year.

CIP, in cooperation with more than 3,000 farm families, has field-tested an integrated pest management program in southern Peru with excellent results. Farmers reduced sprays from six to zero in two years, equivalent to cost savings of \$250 per hectare.

CIP has produced user-friendly, low-cost kits for detecting potato viruses. It has distributed sets of antibodies to 15 national programs that tested about 400,000 samples for 6 viruses in the Andean region, and 4 in the rest of the world.

Source: CGIAR Secretariat 1998, pp. 14-15, 20.

the productivity of different types of programs and Centers. Some are clearly extraordinarily productive by any measure; others are less so; and some have probably been relative failures. The latter are to be expected in any research activity.

Clearly the CGIAR successes have been more thoroughly reported than the less effective or marginally productive efforts. While individuals closely associated with the System may have their own lists of candidates for the latter category, these cases have generally not been given much attention by the CGIAR System and Centers. There are, however, some significant exceptions and some changes are under way, which indicate that the System is paying more attention to these issues and to learning from them.

Assessing and
improving
research
performance is a
difficult task.

Program Level. The change in attitude is perhaps most visible at the program level. Some examples were provided at a session on impact assessment at International Centers Week in October 1997. The ICRISAT presentation, for instance, reviewed constraints to adoption of some of the technologies it had developed. In one case, it was acknowledged that one technology developed for India (broad bed and furrow) was introduced where it did not respond to the main problem, involved expensive equipment that was unaffordable for resource-poor farmers, and entailed high labor costs. However, "better targeting in design has resulted in a more successful uptake of the same technology in Ethiopia." Another case, on high-yielding groundnuts, which were not taken up because farmers placed a high premium on early maturity, especially in drought-prone areas, led their scientists to refocus on early-maturing germplasm.⁸

In the case of another Center, CIP, which has carried out a number of case studies, it was reported that they:

Actually have proven infinitely more useful to us than was first envisioned. For one thing, they taught us which things have not lived up to expectations. More importantly, they have helped us to make mid-course corrections. . . . They have also taught us to evaluate our work in the future.⁹

The external reviews have also been giving increased attention to similar questions. The recent review of CIMMYT, for instance, recommended that its maize program "thoroughly investigate the reason for lack of adoption of improved maize OPVs [open pollinated varieties] and hybrids on more than 40 percent of the maize area in developing countries."¹⁰ One might feel that getting over 50 percent adoption is quite an accomplishment, but obviously the review team felt that there is more to learn.

Center Level. It is a more difficult task to assess and improve research performance at the Center level than at the program level. It is likely to arise from a complex combination of management and other problems. And it may reflect the special difficulty of carrying out research on some topics and in some areas, particularly in Africa. Nevertheless, some significant changes have been made to revitalize research centers and to make them more productive. More generally, greater effort needs to be made to complete a culture whereby lessons distilled in evaluation and impact measurement processes enter explicitly into the planning processes of respective Centers.

The clearest case of a major change is WARDA, which was in decline through 1987. TAC commissioned a special review that presented a bleak picture.¹¹ Some donors had lost

faith in the organization but were reluctant to pull back from a needed African institution. Fortunately, circumstances involving the addition of two very gifted leaders allowed WARDA to almost completely reinvent itself—with a new Center in a new country with an almost completely new staff—and to initiate a promising new research program in the course of a few years. A detailed account of this transformation has recently been written, but has not yet been published.¹²

The System has also responded in other ways, in part to meet changing needs. In 1995, it elected to merge two existing livestock research centers in Africa into one (ILRI); existing facilities were maintained, but the research focus was modified. More recently, a small Center, ISNAR, has chosen to rather substantially modify its overall line of work.¹³ More such changes are likely in the future.

System Level. The CGIAR Oversight Committee, at its May 1998 meeting, discussed the need for an *overall* performance assessment and impact system that would incorporate the work of TAC, the Centers, and IAEG. It will consider whether the CGIAR might establish such a system at its October 1998 meeting.¹⁴

Assumptions in Food Projections

Virtually all of the projections of the world food situation have assumed that research will continue at past levels of investment. This is a hazardous assumption given the tenuous position of public funding for agricultural research by both donors and developing countries. The CGIAR has been able to hold on, but not without some shrinkage, as we have seen. What if, as alerted by Crosson and Anderson (1992, p. 105, 1994, p. 118), overall funding for research declined significantly?

The only study that we are aware of that has factored this in was a projection by IFPRI relating to likely levels of child malnutrition in developing countries in 2020. In a low-investment option, they allowed for a “significant weakening,” involving the elimination of international investment by developing countries and international Centers (\$1.5 billion), along with a 25 percent reduction in nonagricultural GDP and a 20 percent reduction in health, education, and sanitation. According to the model, the consequence would be a 11.3 percent (20.8 million) increase in the number of malnourished children compared with 1990. Of the variables, research was shown to account for 90 percent or more of the total increase in cereal production that underpinned improved nutrition.¹⁵ Additional emphasis is now being given by FAO and IFPRI to measuring the impact of a reduction of research investment. More consideration clearly needs to be given to the research variable in evaluating food prospects in developing nations.

Projections of world food supply have assumed that research will continue at past levels.

Chapter 6

Constraints and Challenges Facing the CGIAR

The CGIAR System has a big task and moderate resources. And although substantial progress has been made on many fronts, the nature of biological processes is that they continue to change and generate new problems. Just maintaining past levels of productivity, let alone increasing them, can require a considerable research effort. Natural resource problems can add to supply-side problems. On the demand side, population continues to increase at an alarming rate in the poorest regions of the world. The job is never done, especially where poverty prevails. As research systems go, the CGIAR is modest in budget and size—a current budget of only some \$330 million and about 600 to 700 senior scientists¹—considering that it has much of the globe, and many of the more challenging areas, to cover.

Considerations

In viewing constraints and challenges, it may be useful to start by trying to sort out longer-term structural issues from shorter-term human/individual issues. The former are of more importance for this review. The latter exist in every organization and are of primary interest here insofar as they are an important characteristic of the System.

Key structural characteristics of the System are that it is small in a global context and relies heavily on synergistic interactions with research organizations in industrial countries for cooperation and collaboration in carrying out applied research programs. While the Centers are public organizations, as are most of the groups they work with in developing countries, interaction with private research entities is increasingly important in industrial nations (especially as it concerns biotechnology) and will probably grow in importance in the developing world. But for now, much of the research in developing countries relies on public institutions, and their health and vigor are of great importance in determining the success of the CGIAR Centers. Moreover, national policies can be of major importance in determining the adoption and impact of agricultural research and development activities.

One special challenge faced by the System is that expectations of what it can or should deliver, when aggregated, exceed its capabilities at its current resource base. Successes in some areas can lead to the belief that the System or Centers can be equally successful in other areas. And with new needs, or perceptions of needs, constantly emerging, the System could easily be drawn in too many directions and become less successful in the areas where it has a comparative advantage. Fortunately, the System has a very useful governor in the form of its Technical Advisory Committee (TAC), which is charged with reviewing prospective and proposed new areas of work. While TAC is only advisory and its advice is not always followed, it usually provides the breathing room and scientific perspective needed

The System relies heavily on synergistic interactions with research organizations in industrial countries.

to help the System make informed judgments. Balancing needed change against excessive expectations is an important and continuing challenge for the CGIAR.

On the human/individual side, it should be recognized that the System is truly international. Both the System and the Centers strive for balance between industrial (North) and developing (South) country staff and board members. A wide range of nationalities is represented. Some of the Centers are located in areas that entail substantial operational difficulties and personal risk (especially in times of civil unrest). Considerable international travel is usually required of senior staff, and family life may move to a different rhythm. Many scientists from industrial countries find that a decade or so is enough for them and their families; those from developing countries sometimes find the Centers more attractive than domestic alternatives.

Constraints

Any research enterprise operates under a series of constraints, and the CGIAR is no different. It may differ, however, in that the ranks of its donors are so deep, the scope of its coverage so wide, and the extent of its operations so far flung. It is somewhat of a wonder that it operates at all, and somewhat of a miracle that it operates as well as it does. In such a setting it is not difficult to identify constraints. Three groupings particularly come to mind.

Funding

This is the most important constraint. The CGIAR is a voluntary organization and donors are not bound by treaty or other international convention. There is nothing to permit them from coming and going. CGIAR funding is most definitely not an entitlement (“a right to benefits specified especially by law or contract”). Funding comes only as long as the System performs. But other factors are also at work: the principal one is that most of the funding comes from multilateral pockets of national and regional assistance agencies, and these are increasingly constrained by factors such as the end of the Cold War for some, donor fatigue, or the emergence of other important areas of concern. For example, unrestricted core funding from USAID, long the leading donor, dropped from a peak of \$46.25 million in 1986 to \$26 million in 1997, putting it in third place. Over the course of the history of the CGIAR, the focus and interests of donors have waxed and waned, but usually the declines were temporary and were offset by other, more positive, developments.

But the events of the early 1990s placed more of a stress than usual on the System and, while overall funding levels were maintained by vigorous actions of the CGIAR chairman, the real (rather than nominal) budgets of many Centers declined, partially as a result of inflation. The effect of this situation can perhaps most readily be seen by examining changes in employment at the 12 Centers that were in the System through the 1988–95 period. The number of international staff declined gradually, from 785 in 1989 to 692 in 1995, a cut of 93, or 11.9 percent. The decline in local staff was even more pronounced: from 10,929 in 1989 to 8,677 in 1995, a drop of 2,252, or 20.6 percent.² A few Centers will show further declines, especially in the local staff category, in 1996. The international staff category is largely (perhaps 75 percent) composed of scientists; to the extent that their numbers were cut, the total research program shrank. The decline in numbers is larger for local employ-

Funding is the most important constraint.

ees, but may have been partially the consequence of relatively generous staffing at some Centers. The four new Centers experienced a mild growth in both categories from 1992 to 1995: from 81 to 127.

Another side of the funding picture that is of particular importance to the Centers concerns the changing nature of funding. The CGIAR Secretariat, in a recent exercise, divided agreed agenda funding into three categories: unrestricted, restricted attribution, and specific restriction (sometimes termed special-project funding). During the four-year period from 1993 to 1997, unrestricted funding declined as a proportion of the System total from 68 percent to 45 percent, restricted attribution funding increased from 15 to nearly 19 percent, and funding with a specific restriction increased from 17 percent to nearly 37 percent. Preliminary data for 1998 suggest a clear continuation of these trends.³ Funding with specific restrictions has some advantages (it is, for example, generally multi-year in nature), but it has higher transaction costs for the Center, both in securing the projects and reporting on the work, and may not pay sufficient overhead. Some of the newer natural resource Centers have faced this problem for some time, but it is now being felt by the older and larger Centers.⁴ The increase in restricted funding may also make it more difficult to adhere to the TAC recommendations concerning allocation of research funds by program area. A further complicating factor is finding adequate funding for Systemwide or multi-Center initiatives. These initiatives have been endorsed by TAC and the CGIAR as a whole but have not drawn strong support. Some of the World Bank funding was designated for this purpose in 1998.

Although the chairman has been very successful in recruiting new donor members, especially from developing countries, they generally come in at or near (or sometimes below) the stated minimum annual contribution level of \$500,000. Some may not give every year. *Stabilizing large-donor support is thus also an important task. At times it must seem like a case of constant running to stay even.*

The CGIAR System has long lived under the implicit threat that one day budget shortfalls might make it necessary to go beyond program reductions and actually cut off one or more Centers. This prospect was first raised, in a not too serious way, in 1982.⁵ TAC began to look at this prospect in the early 1990s, but that process was sidetracked when the renewal process took hold. The need to close a Center, however, could return. The mechanisms for doing this are not clearly in place.

Governance/Management

As the system grows larger in members/donors (if not in actual funding in real terms), the *governance/management issues multiply*. The CGIAR System has responded over the years by modifying the way meetings are run (that is, the use of parallel sessions at some points), establishing a number of committees, supporting the Global Forum, and through other mechanisms. These changes have worked well, and in some ways—such as the Finance Committee—represent a significant improvement. Others steps have represented a way of reaching out to other constituencies, such as NGOs and the private sector. These efforts are more complicated because they represent such a wide variety of groups and views (especially in the case of the NGOs). Moreover, the views of some of these groups are at odds with those of another (particularly in the case of intellectual property rights). Finding com-

As the System grows larger in members/donors, the governance/management issues multiply.

mon ground that is not the minimum common denominator and that will lead to progress can be a very challenging task for the CGIAR chairman.

Broadening partnerships also entails financial costs. In the past it was possible to carry most of these enterprises under the Secretariat budget and by soliciting special contributions from donors. With the 10 percent cut in the Secretariat budget in 1998 and the expected expansion in committee costs and Global Forum costs in 1998, we have noted that it was judged necessary to take the needed funds—which total \$1 million—out of the Bank funds that would otherwise have gone to the Centers. Moreover, with an additional \$1.5 million on a one-time basis for the cost of the System review, this adds up to a total of \$2.5 million out of the Bank's contribution that will not go for research as such. Attempts are being made to solicit contributions for some of these efforts, but such funds are no longer found easily.

Political Dimensions

The CGIAR prides itself on being relatively free of political constraints compared with other international multilateral organizations. This is largely true, but the qualifiers are important. Politics does rear its head from time to time. The most notable case is the exclusion of the Asian Vegetable Research and Development Center (AVRDC)—which works on a very important area largely neglected by CGIAR—from CGIAR support because of its location in Taiwan, China. Other examples are less significant but arise often enough to remind those involved in CGIAR affairs that politics is generally not far away. And, as more members join the Group—which was once largely the province of only a few donors—the political dimensions will not diminish. This is particularly true of genetic resources and intellectual property rights. A more subtle influence is that political correctness becomes an important consideration, both in public utterances and in appointments to various components of the System.

Emerging Challenges

At the program level, new challenges of all sorts are constantly emerging. Many can be handled by the System's Technical Advisory Committee (TAC) process for analysis and priority setting.

But some problems are larger than both TAC and the CGIAR System and will require new approaches. Biotechnology and bioengineering of transgenic crops are cases in point (Kendall and others 1997; CGIAR Secretariat 1998c, pp. 30–36). They involve engagement with the private sector and associated questions of intellectual property rights. Global climate change will undoubtedly also have many implications for the CGIAR (CGIAR Secretariat 1998c, pp. 28–29). In some cases, such as potato late blight, which is a global problem, there will be a need for expanded cooperative activities with a wide range of advanced research organizations. Post-harvest and marketing research, which will become increasingly important with the growth of urbanization may require a more local approach (TAC Secretariat 1997b).

But for other important issues with notable social, political, and even emotional dimensions, the path is less clear. Poverty alleviation—a most worthy goal—is a case in point.

Biotechnology
and
bioengineering of
transgenic crops
will require new
approaches.

While the System is doing much more through its effects on food supplies for all low-income consumers than may be realized by those who think only in terms of producers or of more glamorous crops, there will be a continuing need to enhance effectiveness and develop improved measures of impact. Plant genetic resources and intellectual property rights have proved to be particularly difficult issues for the System, and will no doubt continue to be so.

These are all important issues for society and worthy issues for the CGIAR. It is vital that the CGIAR exist to play a role in taking them on. The need for the System will undoubtedly become greater, not lessen; equally, the need for the System to change and adjust will expand. Both these changes will occur at a time when resources are not likely to be substantially enlarged. These factors will certainly provide more than adequate challenge in the future.

The need for the
System will
undoubtedly
become greater.

Dependence on the World Bank

The Bank plays a major role in all aspects of the CGIAR System, as has been documented in earlier chapters. Aside from the vital leadership role played by the chairman, the Bank is the principal source of funds for operation of the CGIAR System and is the leading donor for its core.

As we have seen, at the System level, the Bank provides the full cost of the CGIAR Secretariat and has traditionally provided one-third of the cost of the TAC Secretariat (a proportion that began to decrease in 1997 as UNEP came in as a fourth cosponsor). At the Center level, the burden is more evenly spread; the Bank gives no more than 15 percent of the total. But even here, its importance is greater than this share implies, because it provides unrestricted funds; in 1996 it provided 23 percent of unrestricted funding, making it half again as significant in this category.⁶ These funds are extremely important for the System and the Centers because they provide strategic flexibility. And, as we have just noted, in 1998 it will be providing support for various participation activities and the System review.

How do the other cosponsors and donors compare? They are approximately equal in TAC support but more variable in Center funding. In 1996, UNDP contributed \$6.5 million in targeted support to the Centers, and UNEP contributed \$0.3 million in the same category. UNDP has taken over sponsorship/hosting/oversight of the IAEG; UNEP also contributed in kind to this effort.⁷ It is, however, doubtful that any of the other cosponsors will be in a position to do much more. And it is unlikely that many of the donor members of the System would be able to provide any significant funding toward the costs of the Secretariats without dipping into the funds that go to the Centers. The fact that they do not have to provide overhead costs of running the System and thus can assure their leaders and parliaments that all of their funds go directly to research and development programs for the developing nations is a definite plus in obtaining funding. That is, it is much more appealing to write a check to a Center than to the Bank or other multilateral organization.

Thus the Bank emerges as the unquestionable kingpin of the System. Without it, there would be no CGIAR System, and there would be fewer and more impoverished Centers. It is obviously not a healthy situation for the System to be so dependent in so many ways on one donor. But there does not seem to be any alternative if the System (as distinct from a few Centers) is to survive.

Building a More Sustainable Funding Base in the Bank

The present Bank funding system has worked efficiently and well, but there are real questions about its future sustainability. The Bank grants are derived from Bank earnings and are provided through a new and evolving Development Grant Facility (DGF). Bank earnings in the late 1990s are down from previous levels, and this is placing pressure on a wide array of activities financed from those earnings, most notably grants. The DGF is developing policies and procedures that, among other things, call for an exit strategy for each grant. The exit strategy does not necessarily mean that the Bank is seeking to totally withdraw support, but it certainly does raise the specter of phasing down funding or shifting to other means of financial support.

The future outlook for CGIAR funding within the DGF facility may be one of increasing difficulty and decreasing sustainability.

All of this places the CGIAR in a vulnerable position because of the size of its grant.⁸ But it also stems from the long-term nature of research, which requires fairly stable levels of funding over long periods of time, a need that may never end. In an organization that tends to think of grants as being of a relatively short-term start-up in nature, research—and particularly agricultural research—may be an uncomfortable fit. This discomfort is unlikely to lessen. Hence, the future outlook for CGIAR funding within the DGF facility may be one of increasing difficulty and decreasing sustainability.

What options are available? Two quite different alternatives have come to our attention, although further thought might suggest others: (a) shift CGIAR funding to the Bank's regular administrative budget⁹ or (b) consider establishing a CGIAR foundation within the Bank to provide a source for at least some of the CGIAR funding. Each has strengths and weaknesses. Detailed analyses of these and other alternatives must be made.

Chapter 7

Assessment

In this chapter, we attempt to assess the performance of the CGIAR System/Centers, the Bank, and other participants through criteria normally utilized by OED in appraising projects. A liberal interpretation will be made of the criteria in light of the rather complex and unusual nature of the subject.

CGIAR System and Centers

The Bank grants are being made, as we have noted before, for both the operation of the CGIAR System and to individual Centers. The System is needed to attract and retain other donors who, aside from the cosponsors, provide essentially all of their funding directly to the CGIAR Centers.

Considerations

The CGIAR System is oriented toward the production of international public goods—goods that benefit a number of nations and are freely transferable from one nation to another and to all members of society. The CGIAR itself is only a small part of the global agricultural research system, representing less than 4 percent of total public expenditures in and for developing nations, and considerably less than that if public expenditures in industrial nations are considered (and still less if the considerable expenditures by private firms in these nations are factored in). Although the CGIAR proportion is small, the System works with all other major components of the global agricultural and natural resource research system, especially developing countries. In this way, it both draws from and benefits them.

This interaction has many advantages, but it also means that it is often difficult to sort out the unique contribution of the CGIAR System and Centers. In addition, many other factors influence the potential productivity and implementation of agricultural and natural resources research—varying from international trade policies to national trade, development and food policies, the degree of public support for the national research and outreach programs, to the climate for both the private sector and nongovernmental organizations. Thus, we are dealing with a relatively modest program in financial terms, which is caught up in a much larger scheme. Formal quantitative analysis can only take us so far in such a context: we must also rely on qualitative judgments.

Development Results

We will briefly consider three commonly used measures: relevance, effectiveness, and efficiency. Before doing so, it might be well to represent the mission and goals of the CGIAR.

The CGIAR produces international public goods that are freely transferable from one nation to another and to all members of society.

- *Mission.* To contribute, through its research, to promoting sustainable agriculture for food security in developing countries.
- *Goals.* To alleviate poverty and protect natural resources to achieve sustainable food security.

Relevance

Relevance is defined here as the consistency of goals with the country’s overall development strategy. We consider it in three categories:

- *Economic development.* Clearly, the immediate focus here is to reduce poverty. CGIAR, and indeed all research organizations, attempt to do this by maintaining past gains and developing more productive technologies and policies, which reduce the cost of production and lower the price of food to the consumer (both urban and rural). This process results in increased incomes for farmers who are first to adopt the new practices (although not for the last to adopt them) and for all consumers of that product. Since a large portion of the income of poor people is taken up by expenditures for food, the lowering of food costs is of special benefit to them. The lower costs for both groups is the equivalent of an increase in income; this increase is, in turn, spun off to the rest of the economy in the form of expanded purchases of other goods and services, thus providing a further stimulus to development.
- *Social development.* Agricultural development of the type noted above can facilitate other forms of social development: a reduction in undernutrition and in malnutrition leading to improvements in individual health and productivity. These factors, combined with economic development, can contribute to reduced population growth rates. In some cases, these contributions can reduce civil tensions (such as those that emerge in food riots¹) and lead to a more stable society.
- *Preservation of natural resources.* The CGIAR Centers now cover a wide sphere of natural resource interests. In the organic or living resource category, it makes a unique contribution to *ex situ*, and to some extent *in situ*, preservation of plant germplasm and biodiversity. While the emphasis is on food crops, the System now embraces forestry and tree crops, as well as aquatic resources. On the inorganic or physical side, the System is heavily involved with soil and water resources, and to some extent, with the atmosphere. It is becoming increasingly involved in climate change issues. Natural resource preservation is not only a goal in its own right, but also a contributor to economic and social development.

The CGIAR System scores well in its relevance to the goals of development generally, and of the Bank more particularly.

In our view, the CGIAR System scores well on all three counts in its relevance to the goals of development generally, and of the Bank more particularly.

Effectiveness

Effectiveness is defined here as “Producing a decided, decisive or desired effect” (Webster). This was in part the subject of Chapter 5. As before, there are two components to be judged: the System and the Centers. Aside from funding difficulties faced by some donors, we judge the System itself—the chairman, the Secretariats, TAC, and committees—to be

very effective overall, although it is too soon to judge some of the newer participation efforts. The Centers have varied from extraordinarily effective to somewhat uncertain in their effectiveness, in part from differences in age, mission, and funding. It is easier to show the effectiveness of the biologically oriented Centers (totaling 13) as a group than it is for the Centers concerned with policy (IFPRI), genetic resources (IPGRI), and institutional development (ISNAR). This does not mean that the latter three are less effective, only that it is more difficult to demonstrate the effects of the kind of work they do. Moreover, the 13 biological research Centers vary in their demonstrable effectiveness to date: Centers or programs focusing on varietal improvement have more to show than those working on natural resource management, which is newer to the CGIAR and longer-term in nature. This variability means that there is room for both improved effectiveness and methods of demonstrating effectiveness in some Centers.

Efficiency

Efficiency is defined as an assessment of results in relation to inputs, including costs, implementation times, and economic and financial returns. One of the main reasons for having an international research system is to increase efficiency (Winkelmann 1994). The IARCs provide an essential link between research in both industrial and developing countries that benefits both. Through their resources, particularly their genebanks and other stores of science and technology, they can simply do many things better and more efficiently than they could be done in individual country programs. This has been demonstrated most clearly in a recent study of international wheat research that concluded (Maredia and Byerlee 1996, pp. 179–80):

The comparisons of various measures of research efficiency indicate that the international research system (CIMMYT in collaboration with NARSs) has a cost advantage in wheat improvement research . . . In general, the cost per unit of research output of the international research system is lower than the NARS systems' average on all the efficiency indicators except in large NARSs (nearly all of which are in Asia) . . . small NARSs depend *relatively* more on direct spillins from the international system . . . However . . . large NARSs, reap the largest *absolute* gains . . . The results suggest that there are considerable economies of (market) size and specialization in wheat breeding research. These economies result from the geographic aggregation of the crossing and early generation selection activities by CIMMYT and . . . from CIMMYT's ability to gather germplasm from many sources, wide-scale testing, and in providing critical mass for given diseases and operating basic research programs such as wide crossing and biotechnology.

The Centers can simply do many things better and more efficiently than they could be done in individual country programs.

These efforts may be most evident for the major crop Centers, but the general principle should also apply—if in somewhat different form—at the other Centers.

It is more difficult to appraise the efficiency of the operation of the CGIAR System. Compared with other international organizations, it seems to be efficient and well regarded. And while recent efforts to broaden membership may reduce pure efficiency to some extent, they are thought to have other offsetting benefits.

Institutional Impact

This important category has not always been included in impact studies, probably because of the difficulty in measuring it. The System is thought to have had considerable impact in raising consciousness about agricultural research among donors in other international organizations and in developing countries. It is extremely important in providing scientific leadership. While only one Center (ISNAR) has institutional development as its primary charge, all contribute to institutional development through their training programs for scientists from developing countries and through their cooperative and collaborative research activities.

More generally, it might be said that the CGIAR has been using an organizational model for 27 years that is now beginning to become fashionable in development circles: constructing networks of decentralized institutions rather than building hierarchical internal bureaucracies.

Sustainability and Leverage

We have already noted, in Chapter 6, that one of the main constraints/challenges of the CGIAR System and Centers is their high degree of dependence on the World Bank.

The Bank provides much of the leadership for the System and most (roughly 80 percent) of the funding for the coordination of the System (the chairman; the CGIAR Secretariat; one-third to one-fourth of the cost of TAC; the recent participation efforts; and the System review, which, unlike the other items, can be conceptually spread over a number of years). The Bank also provides a very important intangible contribution: its involvement in the System reassures donors, and particularly their treasuries, that their contributions are properly managed. No other organization could play these multiple roles. Thus there would not be much, if any, stability at the System level without the Bank.

The story is somewhat different on the Center side, where the Bank now contributes less than 15 percent of the total funding—but half as much again if one considers the amount it provides to the unrestricted funding category. The Bank is the leading donor and, as such, is important in both financial and psychological terms to the Centers. While the Centers probably have a higher sustainability rating than the System, their fortunes would be much reduced if the Bank were to play a lesser role.

The other side of the sustainability issue is a well-known Bank term: leverage. It might be stated that the Bank, through its \$50 million in grants to the System and the Centers, is leveraging up to another \$280 million (agreed agenda and nonagenda) in voluntary grants for international agricultural research. This is no minor accomplishment.

Bank and Other Participant Performance

Bank Performance

The Bank involvement with the CGIAR System as a cosponsor and donor is exemplary. It provides strong leadership, significant funding, and substantial support through the CGIAR Secretariat. The principal areas where we think some further thought and effort might be called for concern the third dimension noted in Chapter 3, the customer/client role—specifically, the management of its own involvement with the System.

Bank
involvement in
the System
reassures donors.

Interaction at the Technical Level

The basic problem as we see it is that the Bank's mainline agricultural activities are relatively isolated in an institutional—and more recently, organizational—sense from the System, although the links to ISNAR (especially on management of NARSs) and IFPRI (for policy work on the rural sector) are fairly extensive. One former research adviser commented that “The project staff have only ever been involved with the CGIAR at the margins.” While some staff members, especially those with backgrounds in a Center or experience with the System, do maintain contacts on an individual basis, many others do not have this background and may be insufficiently aware of what the System and the Centers may offer their projects, such as linkages between Bank-supported agricultural research projects and both CGIAR Centers and leading research institutes in other parts of the world. It is also important for those above them in the administration to be knowledgeable about the System and Centers.

What seems to be missing is a central point for linking the CGIAR with the rest of the Bank. This would seem a logical role for the Bank's representative as distinct from the chairman. Traditionally, the Bank's representative, who also serves as a cosponsor representative, has been the director of Agriculture and Natural Resources (AGR). This situation changed at the end of 1994 when the former director of AGR completed his tour of duty in that position and was appointed as director of the newly established ESDAR. His replacement at AGR (now RDV) was the former chairman of TAC. It was decided that the new director of ESDAR should continue as Bank representative and as chairman of the Finance Committee (a position he had held).

The role and staffing of RDV and ESDAR were complementary, but rather different.² ESDAR was charged *inter alia* with developing closer links between the Centers and national agricultural research activities in developing countries. ESDAR has had a very small staff of direct-hire professionals (two at this writing), augmented by a larger number of individuals seconded from other organizations. RDV is more directly involved in Bank programs at both the central and regional/country levels and has a staff of some 20 direct hires plus consultants. Obviously, if ESDAR has been effective at the country level, there may also be more interest in CGIAR ties in Bank loan projects.

Other things being equal, it would seem most logical to us to have the Bank represented by the director of RDV, especially if there is active concern with improving linkages between the CGIAR and administrators and technical staff in regional programs. But the director of RDV has many responsibilities, and therefore the matter of staff support becomes important. There is also some precedent here. For many years, AGR had an adviser for agricultural research. Much of that advisory function was oriented to research loans to national agricultural research programs. But the advisers were also involved in CGIAR matters to some extent—sometimes visiting Centers, attending TAC meetings, and occupying the Bank's seat among members during CGIAR meetings (as distinct from his director, who occupied the Bank seat among the cosponsors at the head table). With the retirement four years ago of a long-standing adviser, the description of the position was changed somewhat, and the CGIAR role largely diminished—paralleling the shift in CGIAR responsibility to the director of ESDAR. Obviously, if the responsibility for CGIAR matters

The Bank's main agricultural activities are isolated from the System.

were to return to the mainstream of RDV, attention should be given to attending to CGIAR matters at the adviser level.³

The CGIAR Secretariat has long had a science adviser—and for a while it had three (one in biophysical science, one in forestry, and one in social science). The various individuals in these positions, however, have in general had relatively little intersection with Bank staff. The CGIAR System can easily absorb all of the science advisers' time, and evidently has done so. More recently, the demands placed on the Secretariat for staff support of the various committees has placed an additional burden on the adviser's time. Still, there might be ways to achieve more interaction with other Bank technical staff, and the AKIS Thematic Team provides one convenient structure for doing this.

Even if it is possible to provide more of a focus at the RDV level, there is a way to go, for problems existed in the past when such a nexus existed. There are two groups to be reached: management and technical staff. To some extent, they can be kept better informed and this is part of the challenge. But they need to be more involved. A few Bank staff members have been, or are, connected with the System as Center Board members, external reviewers of a Center, and a cross-Center reviewers (one has recently become a Center director). Such a level of involvement, however, can take weeks of time, which is not easily found in current work programs. There are lesser degrees of involvement and time commitment—such as suggesting names for System and Center positions—but these may not reach the necessary degree of interaction to make much of a difference. Also, most Bank staff members may be working in areas or on projects that would not seem to have much in common with Center programs. At the same time, some staff have had the impression that the CGIAR System should be on call to help with Bank projects: this can be done through special projects and individual contracts but cannot be considered a mainline gratis function of the Centers. Finding the right balance and the correct prescription may not be easy.

The opportunity for technical involvement at the System level is somewhat limited and indirect. The Bank has a fairly prominent place at the podium of the plenary sessions of CGIAR meetings (chairman, Bank cosponsor representative, and executive secretary of CGIAR). There used to be a Bank chair among the other donors, which was intermittently filled by the research adviser or someone at that level; this person, however, spoke little, and then on technical matters. This chair is gone now, and with it the voice for technical issues (except as voiced by the Bank's cosponsor representative, who in the recent past has been an economist). There are now, however, more parallel sessions and side meetings that provide some opportunity for greater engagement. And the Bank could, as some other donors do and the Bank previously did, send an observer to TAC meetings.

The possibilities of technical interaction may be somewhat greater at the Center level. Activities that might be encouraged could include expanded linkages with Center information systems, greater use of Center meeting and training facilities for courses and workshops, increased interaction with scientific staff through visits and seminars, and possible use of governmental contacts. More extensive tripartite (Bank-Center-country) arrangements should be possible, but only if the arrangements work to assist Bank Task Team Leaders in their work and do not add to their already full work programs. Increased interaction with Bank projects could also be of value to the Centers.

Technical
interaction could
be expanded.

Hence it would seem possible for the Bank to have considerably more involvement at the technical level, but to do so would require a greater effort on its part. It would necessitate individuals who had the time and interest to follow research efforts at the Centers, to participate in meetings of TAC, and to be available for participation in System and Center reviews. Those persons would be seen as being highly qualified in their own right, and not just as spokespersons for the major donor to the System.

Allocation/Use of Bank Funds

The Bank has certainly been a model citizen and a team player in the allocation/use of its grant funds within the CGIAR System. These contributions have always been fully in the coveted untargeted/unrestricted category and a good portion has been made available early in the season. Views might and do differ on the actual allocation procedure (relating to its earlier role as donor of last resort, and more recently donor of “first resort”), but the overall purpose has been to better serve the System.

The Bank, however, is unlike other CGIAR donors in that it doesn’t appear to have other “pockets” that it can readily tap to fund special project activities with Centers that would tie in with general program emphases or country loans (independently of any funds that might be provided in the loan). In the case of USAID, for example, other central and regional bureaus have provided substantial amounts of funding (averaging \$18 million per year from 1985 to 1993) for special projects—usually in a specific country for a specific period of time.⁴ Other donors also support similar activities.⁵

Some observers, both inside and outside the Bank, have wondered why it has not earmarked a small portion of its contributions—5 percent, for example—for Centers or activities that would be of special interest (such as fostering better research management through working with ISNAR) and that might generate further interaction with Bank projects. The first, more formal, mention of such an idea seems to have occurred at the first meeting of the CGIAR Finance Committee in October 1993.⁶ In considering future funding options, the idea of a Synergy Fund was raised and was put this way in the meeting report:

A small proportion of Bank Funds would be used to stimulate CGIAR initiatives of priority to the World Bank, especially those which encouraged the synergies between national and international agricultural research, and those cofinancing initiatives where an initial modest investment would facilitate funding from other sources, including Bank loans and credits. These initiatives would be either center or systemwide, approved initiatives which required financing. (p. 5)

The committee agreed that there would be advantages in retaining a small proportion (of the order of 2 percent) of the Bank’s contribution a Synergy Fund. (p. 8)

Nothing more was found on this idea in this form. Several years later (May 1996), there was mention of using 1 percent of the Bank funds in 1997 for competitive grants.⁷ In the reports of the October 1996 and May 1997 meetings, the recommendation was that \$500,000 of 1997 funding be set aside for a small grant program.⁸ In neither case was reference made to issues of priority to the Bank. But, as it happened, the proposals were not elaborated or carried any further.

The Bank does not have other grant funds available to stimulate CGIAR initiatives.

The challenge would be to keep the administration of such a program simple and flexible.

A Synergy Fund could be useful in developing linkages, but it has some limitations. It might be used, for instance, to fund some additional “larger view” activities at ISNAR that would complement the Bank’s loan activities for national agricultural programs; to expand collaborative policy studies with IFPRI and other Centers; and to facilitate interaction between Bank staff and Centers. The challenge would be to keep the administration of such a program simple and flexible; this is not always easily accomplished in a large bureaucracy.⁹ Earmarking of Bank funds in this way would also run counter to the current efforts of the chairman to reduce donor restrictions on use of their funds. Still, the idea may be worthy of further consideration.

Possible Impact of Reorganization

The recent (March 23, 1998) redesignation of the chairman as vice president for special programs and the retention of responsibility for RDV by the head (acting) of the Environmentally and Socially Sustainable Development Network and Council will create, for the first time, a gap between CGIAR and RDV. It is too soon to tell how this will play out in the relations between the Bank and the CGIAR. One obvious possible effect could be a greater distance between the chairman and the affairs of RDV, which could, on its own, lessen linkages. It could also result in a greater degree of independence between the chairman and the Bank’s representative to the CGIAR. These and other related issues are considerations that must enter the Bank’s continuing analysis of how best to service its long-term commitment to supporting agricultural research at both the national and international levels.¹⁰

Other Participants

The performance of other participants is particularly difficult to call in usual OED terms. It seems to us that the cosponsors, other donors, and other participants perform remarkably well within their financial and other administrative constraints. We think that this is true by any standard, but particularly by the standards of international organizations.

Chapter 8

Summary Remarks

Here we will summarize some of our previous remarks on the Bank and the CGIAR under five headings. These may respond to some of the questions and issues on the minds of others concerned with the relationship between the two groups.

Need for International Public Goods in Agriculture and Natural Resources

There is a special need for research to provide international public goods in the agricultural and natural resource sectors in developing countries. The biological base of both sectors means that change is constantly taking place. Hence there is a continuing need for improved technologies and policies just to maintain past levels of productivity in the face of evolving problems. It is also necessary to increase productivity and production in order to ensure that the prices of basic food crops do not increase in the face of population growth, and to stimulate economic and social development in order to reduce poverty. Further, the natural resource base must be maintained.

The public research sector is particularly important to developing nations, especially poorer countries, in responding to these needs. The private sector is not very active in such research, preferring to operate in areas that offer large markets, reasonably well-developed infrastructure, and an appropriate policy and legal setting. Thus, much of the research for the principal domestic food crops consumed by poor people, which would otherwise be orphan crops, is done by the public sector. Since public sector research efforts are often not well funded, or are in some cases carried out in very small countries, they need outside assistance.

The World Bank provides relevant assistance to these nations through its loans to national research programs. But they also require support of another sort: scientific contact and interaction with the outside world. They must, if they are to respond to their urgent domestic needs, have access to germplasm and to the latest advances in science and technology that are relevant to them. Because of their limited resources, they cannot do everything, and if some research can be done more efficiently elsewhere, all the better. An international agricultural research system providing freely available goods can meet this need and round out the loan package provided by the Bank for institutional development.

There is also a temporal dimension. The loans for institutional development are for a finite period. But the need for international public research goods will continue far beyond the duration of any loan. An international system is needed that is of considerably longer duration. This need is widely recognized within the agricultural research community, but it is less commonly understood by those involved in providing loans, who tend to operate with a finite life concept. There is a certain proclivity for moving from one short-term project to another, partly to keep up with current headlines or fads. What is needed, of

The need for international public research goods will continue far beyond the duration of any loan.

course, is a balance between the longer term and the shorter term—which is more easily said than done.

Importance and Impact of the CGIAR System

The CGIAR System is extraordinarily important for developing nations. It also benefits the industrial nations. The System provides a scientific link between both worlds and helps bring to bear, in a three-way combination, the best and most appropriate knowledge on the problems faced by developing nations. The combination is sensible, and it has proven that it works. It is—as we have suggested in Chapter 7—relevant, effective, and efficient. Few, if any, public investments of some \$330 million annually could provide as many benefits to so many low-income people on a global basis. The World Bank, through its financial contributions and leadership, is the glue that holds the System together and is the chief force in retaining and attracting new donors.

The Bank is the
glue that holds
the System
together.

Since agricultural research plays a key role in agricultural, economic, and social development in developing nations, and since the CGIAR plays a critical and productive role in this process, it follows that the Bank's investment in the CGIAR is at the heart of the development process. Demonstrating the link between the Bank input on one end and the output or the effect on the other is more difficult, because of the many links in the chain and the many other partners and forces involved. Individual linkages are subject to research and verification, and it is likely that the whole is much greater than the sum of the parts, but proving that would take many more resources than were available for this study.

CGIAR System Management

We think that the CGIAR System is, considering its nature and challenges, well run. By nature it is a voluntary organization with voluntary contributions at a level determined by the donor. There is no formal structure, nor are there absolute roles and regulations or formal commitments. It is held together by performance and good will. The biological Centers are located in developing countries and are international in leadership and composition. Each has a big job to do with modest resources.

That the System works well is testimony to a great deal of effort and devotion by individuals at many levels in the donor agencies, the CGIAR System, and cooperating governments. The System has given considerable attention to management, in part as a result of the first two System reviews. The subsequent addition of management expertise to the CGIAR Secretariat and the initiation of management reviews of the Centers have been very helpful in anticipating and responding to management problems. Even so, these still do arise from time to time at individual Centers, sometimes with surprising speed. Interim directors have been in greater demand in recent years than one would like. A better mechanism is needed for monitoring Center management between reviews, but it is difficult to think of a vehicle that is unobtrusive and does not conflict with the current structure.¹ The Center review process is, in any case, under continuous review, and further modifications will doubtless be made.

Management problems at the System level tend to be of a different nature. But they may be no less important. The System reviews have helped foster better management. The advent in the 1990s of the Oversight and Finance Committees boosted the System's capacity to monitor progress and to solve problems. Some issues of a continuing nature that have been noted include the need for (a) more tightly trimmed and consolidated governance; (b) more secure funding; (c) leaner Systemwide assembly; (d) more emphasis on performance-driven staffing, occasionally subject to deeper outside review; and (e) examination of mechanisms for more competitive allocation of research resources. Other observers might well cite other issues.

Because of the rather unusual nature of the System, it may be more concerned with reviewing and trying to remedy its limitations than the more conventional bureaucracies that sponsor it—some of which may seldom, if ever, have undergone an external management review.

Bank Financial Support of the CGIAR

The Bank's strategy for rural development was surely influenced by the early days of the Green Revolution, especially in India. The Bank's President at that time, Mr. Robert McNamara, was personally involved in forging the Bank's rural development agenda and was familiar with the experience of the foundations in establishing the first international agricultural research centers. Thus an early appreciation developed of the role agricultural research could play in agricultural and rural development. This recognition extended not only to the CGIAR System and Centers, but also led to an early commitment by the Bank to devote loan and credit funds to developing national agricultural research capacity.

There has subsequently been consistent, firm Bank support for development activities in this area of essential, publicly supplied agricultural services. As the recent OED study of research and extension (Purcell and Anderson 1997) demonstrated, there is scope for improvement in such interventions, but fortunately Bank management is committed to doing better, and to doing more, as noted in Chapters 2 and 3. The current clearly stated Bank support for agricultural research in *Rural Development: From Vision to Action* (World Bank 1997a), articulated as part of the 1997 Strategic Compact, is further evidence that the influence of the CGIAR has been strong and sustained.

Bank financial support for the CGIAR, as we noted in Chapter 3, has come from Bank earnings and has been processed through the Special Grant Program (SPG). The SPG has recently come under the aegis of the Development Grant Facility (DGF). This shift has come at a time of decreased Bank earnings from its loan portfolio. The result has been a squeeze on all activities funded from earnings, including those handled through the DGF.

The DGF has been establishing its own procedures and processes. Financial matters concerning the CGIAR, which were once handled at a high level, are now one of many items on the agenda of a group representing most parts of the Bank. Agriculture is only one of nearly a dozen voices heard on the DGF Council. The DGF, moreover, has come into existence with a mandate requiring that exit strategies be established for all its grants. Emphasis is likely to be placed on smaller, shorter-term, initiating grants.

The clearly stated Bank support for agricultural research in the 1997 Strategic Compact is further evidence that the influence of the CGIAR has been strong and sustained.

New funding
models must be
explored.

Thus, the financial setting is changing—and in a way that is not likely to favor large, long-term, institutional grants of the type provided to the CGIAR. The time has clearly come to consider other potentially more sustainable ways of providing funding to the CGIAR. We have briefly noted two very different approaches: (a) shifting CGIAR funds to the regular Bank administrative budget administered by the Rural Sector Board (RSB) or to a network such as Environmentally and Socially Sustainable Development (ESSD);² and (b) establishing a CGIAR endowment or trust fund in the Bank. Both appear promising, but have limitations. Still, they might play some role in a more diversified funding approach.

Other options or variants may well be possible. Any of these variants is likely to be more complex and difficult than the old pattern, but, unfortunately, the old pattern is probably not sustainable under present circumstances. New funding models must be explored.

Bank Technical Interaction with the CGIAR

While the Bank is doing an excellent job in its major roles involving support of the CGIAR System and Centers, it is another question whether the Bank is contributing as much as it might, or in turn benefiting as much as it might, at the technical level. However, through various mechanisms such as ESDAR and ENV/RDV activities, and those of AKIS Team members, the connections appear to have begun to improve. Still, there appears to be more of a disconnect between Bank programs and the Centers than is desirable.

There are probably a number of reasons for this gap, but one of the most obvious is that until the creation of ESDAR, there was no one in the Bank charged with responsibility for helping to expand operational bridges between the two institutions. It is not a job that can be done by the CGIAR Secretariat; it has to be performed by someone who regularly works with the program side of the Bank. Some of this kind of work used to be carried out by the agricultural research adviser, but that position no longer exists in the same form.³

Another factor is that the Bank has not chosen to devote much start-up funding to support linkage projects or programs. All of its CGIAR contribution is unrestricted, and no other Washington-based funds appear to have been designated for linkage activities. The only such efforts seem to come out of country loans. The CGIAR Finance Committee in 1993 favorably considered the designation of some of the Bank's contributions for a Synergy Fund to support "TAC-approved initiatives of potential synergy with the Bank's operations" (p. 3), but the Bank does not seem to have pursued the matter. More recently, there has been discussion of competitive or special grants, but these do not seem to have been tied to Bank projects.

Greater linkage efforts would certainly be enhanced if there were a favorable administrative climate. Technicians can do a lot on their own, but they can accomplish much more if their supervisor has a favorable view of the enterprise. This would mean building support at the level of director and above—which, in turn, would require efforts by someone at a comparable level in agriculture or concerned with agriculture. The recent decision of the Bank to start recruiting new staff in agriculture, some of whom might well come from CGIAR Centers, might encourage linkage activities.

Looking Ahead

There will be a continuing need for public goods in the form of improved technologies and policies for agricultural and natural resources in the developing nations in the years ahead. While scientific developments in some areas, such as biotechnology, may facilitate the process, other developments, such as increasing concern with intellectual property rights and national concerns about genetic resources, may complicate it further. Mother Nature, moreover, constantly provides new biological challenges, sometimes in response to human misuse of biological and physical resources. The private sector, guided as it is by profit, will never show the same degree of interest in research in the poorer areas of the world as it does in the more advanced regions.

Given the need for public research goods, the CGIAR System will continue to be of great importance. The Centers offer an array of resources—biological (particularly the genetic resources they hold in their genebanks), physical (laboratories, field stations, and plots), and human (an experienced and well-trained international scientific staff). They are the hubs of a coordinated System that has extensive ties with advanced research institutes in industrial countries and collaborative ties with scientists in developing countries. They deal with both public and private sectors. The Centers' presence in the developing nations may stimulate entry and investment by the private sector. The System and Centers have amply demonstrated their ability to respond to internal and external challenges.

The future capability of the System and Centers to carry out their present tasks and adapt to new needs, however, will continue to depend to an uncomfortable degree on what the World Bank does. As we have seen, the Bank plays a key role in all aspects of leadership, management, and financing of the System. Any obvious weakening in any of these areas could have significant implications, both in direct impact on that particular activity or function, and indirect effects on the psychology of other donors and the other components of the System. The Bank is the force that holds it all together.

The System provides an extraordinary resource for the betterment of society, but it cannot be taken for granted. It is very resilient in some ways, but is a "fragile web" (IDRC 1983) in others. It will require close attention and care if it is to continue to play an evolving and vital role.

The Bank plays a key role in all aspects of leadership, management, and financing of the System. Weakening in any of these areas could have significant implications.

Annex

World Bank Contributions to Non-CGIAR Centers

During the 1980s, the Bank began to contribute to several international agricultural research centers and programs that were not in the CGIAR System. Some subsequently were taken up by the CGIAR. The Special Grant Program (SGP) was the principal source of funds, but perhaps not the only one.¹

Fairly precise allocation data for the 1986 to 1992 period are provided in table A.1. It is not certain when the first contributions were made; SGP documents list a contribution to one of the centers (ICPIPE, \$1.3 million) in 1985, but do not include the others. The figures included in SGP documents for the next five years are listed by function, rather than by Center name, and do not exactly match. During the post-1992 period, four of the Centers were absorbed into the CGIAR, and Bank funding appeared to continue as follows for four of the others: ICIPE, IFDC, and IBSRAM were the same in 1992 and 1993 and showed a slight increase in 1994 and 1995; AVRDC was listed for \$550,000 in 1993 only.² The grants appear to have ceased in 1996.

In the SGP documents, the grants were divided into two main categories: (1) an Agricultural Research Linkage Fund (later informally known as a transition fund) and (2) initially

Table A.1: World Bank Contributions to Non-CGIAR Centers, 1986–90
(thousands of dollars)

Center	1986	1987	1988	1989	1990	1991	1992
1. AVRDC	0	0	0	250	350	350	350
2. IBSRAM	0	0	100	150	150	150	75
3. ICIPE	1,921	2,866	994	1,079	630	630	630
4. ICLARM	90	203	552	532	500	500	500
5. ICRAF	400	430	460	460	460	810 ^a	CGIAR
6. IFDC	108	43	298	700	980	770	770
7. IIMI	19	850	750	614	500	500	CGIAR
8. INIBAP	0	0	0	100	100	100	CGIAR
9. ITC	0	0	0	400	400	400	400
Total	2,538	4,392	3,154	4,285	4,070	4,210	2,800

a. Includes IUFRO.

Source: 1986–90: Hennie Deboeck-De Zutter, “1986–1990 Funding of Non-Associated Centers,” (CGIAR Secretariat 1990, pp. 10–22). 1991, 1992: Centers 1,2,4,7,8,9: Memorandum from Michel Petit and Alexander von der Osten to Winfried P. Thalwitz (“Allocation of FY91 Linkage Fund Contributions”), December 18, 1990; memo from Shey Tata to Barbara Shear (“FY92 Linkage Fund Commitments”), July 22, 1991. Centers 3,5,6: memo from Paul Isenman to Alexander von der Osten (“FY91 CGIAR Budget”), July 17, 1990; memo from Zmarak Shalizi to V. Rajagopalan, L. Summers, and A. Shakow (“FY92 Special Grants Program”), June 11, 1991.

an African Agricultural Research category, which was later shortened to African Agriculture (1988, 1989), and then listed as Research Management. The first group initially included irrigation management (IIMI), soils (IBSRAM), and aquaculture (ICLARM); by 1990, AVRDC, INIBAP, and ITC had been added. The second group included entomology (ICIPE), forestry and agroforestry (ICRAF and IUFRO), fertilizer (IFDC), and a scattering of other activities, some for only individual years. Funding provided through the Linkage Fund, which the CGIAR Secretariat administered, was \$2 million per year from 1988 to 1991, and then dropped to \$1.4 million in 1992, \$0.8 million in 1993, and appeared to cease in 1994. The second category averaged about \$2.7 million annually from 1986 to 1991, and \$2 million from 1992 to 1995.

The term “transition fund” was not inappropriate. The grants were made in an effort to strengthen the nonassociated Centers, particularly those involved with natural resources, for possible entry into CGIAR.³ During this period, the CGIAR impact study of 1985 (Anderson, Herdt, and Scobie 1988) and the TAC priorities and strategy paper of 1985 (TAC Secretariat 1987) had identified a number of topics requiring further explicit evaluation. At its May 1998 meeting, CGIAR asked TAC to undertake an examination of possible expansion in the number of Centers.⁴ All those listed in table A.1 were included, along with IUFRO (TAC Secretariat 1990). In May 1988, the Group decided to expand its work into natural resources.⁵ The TAC report was first reviewed at the Fall 1990 meeting (CGIAR Secretariat 1990).

Meanwhile, the CGIAR Secretariat, in cooperation with the Office of Agriculture and Rural Development, had not been idle. In January 1987, the Secretariat proposed the allocation of SGP funds for “new ventures—to provide temporary [up to three years] core support to non-CGIAR centers whose work is judged by TAC to be vital to the success of the Group.”⁶ The fund was mentioned in a subsequent memo to the president of the Bank, which noted that the initial three centers to be supported focused on resource management and that their work was seen as underpinning parts of the technology-generation efforts of the CGIAR.⁷ Another memo nearly two years later stated that “The CGIAR linkage fund was established . . . to provide transitional support to non-CGIAR centers until the CGIAR made decisions regarding their admission.”⁸ When it did, the fund was phased out.

World Bank Contributions to SPAAR

The Special Program for African Agricultural Research (SPAAR) was conceived at the Mid-Term Meeting of the CGIAR in Tokyo in 1985 by the Bank and a group of other donors. There was growing concern about the weak institutional capacity in NARSs in Sub-Saharan Africa that threatened to compromise the effectiveness of linkages with the CGIAR System, and a perception of difficulties in coordination among the concerned donors in their many and varied interventions in this sector in Africa. The idea took concrete form in 1987 when a Reviewing Committee agreed on the objectives, and an institutional base for the Secretariat was found in the Africa Regional Office of the World Bank. These objectives included the strengthening of NARSs in Africa, improving donor coordination, exchanging information, and exploring collaborative research initiatives to address problems of wider than national significance. It was recognized that there should be advantages in collaboration among countries in producing technology for shared agroecological regions.

SPAAR has sought to support research within a regional context and to initiate new modes of cooperation among donors and NARSs in which the comparative advantages and strengths of individual NARSs would be utilized. Four regional frameworks for action have now been initiated and are beginning to make concrete contributions (Purcell and Anderson 1997, box 9.1, pp. 154–55). This concept is consistent with the proposition that the size of agricultural sectors and the scarcity of funding and experienced staff in many African countries preclude the independent development of complete coverage of all technology needs in each. Despite this, there is still some reticence among many donors to adjust their support in accordance with defined priorities, rather than for the research areas they have traditionally sponsored. Also, the willingness of national governments to fund research outside their own borders has thus far not been as strong as it could have been, although it seems that concrete progress is being made now.

The World Bank, through the SGP, has supported SPAAR consistently and has been the dominant donor from the outset. The overall profile of support is set out in table A.2. SPAAR has been subjected to two external reviews, first in 1993 and again in 1997–98. The reviews were generally positive about the continuing need for servicing of the type offered by SPAAR, although they were often critical of the style and pace of implementation. The criticism included such matters as insufficient attention being paid to articulation of research policy in client countries and inadequate focus on gender issues in national agricultural research efforts. The present intention is to scale back direct support for SPAAR itself, put more focused effort into the smooth launching of the new (SPAAR-assisted) Forum for Agricultural Research in Africa (FARA), with its greater attention to both stakeholder engagement and greater involvement of universities, and to continue support for the multi-donor Sustainable Funding Initiative begun in 1996.

Table A.2: World Bank Contributions to SPAAR, 1987–97

<i>Fiscal Year</i>	<i>Bank Contribution (in millions of nominal dollars)</i>	<i>Total Contributions (in millions of nominal dollars)</i>	<i>Bank Proportion (percentage)</i>
1987	0.23	0.23	98.6
1988	0.26	0.31	81.7
1989	0.39	0.39	99.3
1990	0.39	0.46	85.3
1991	0.47	0.74	63.1
1992	0.68	1.00	68.6
1993	0.88	1.60	55.0
1994	1.16	2.03	57.1
1995	1.72	1.82	94.5
1996	1.19	2.01	59.2
1997	0.60	1.29	46.5
Total	7.85	11.88	66.1

Sources: SPAAR Secretariat and SGP database, World Bank.

Endnotes

Preface

1. "Process Review of World Bank Grant Programs," Report No. 18317, OED, July 22, 1998.

Chapter 1

1. Published sources are included in the References section at the end of this report. More informal documents and "gray" literature items are mainly handled in footnotes. The line is fuzzy in the case of some CGIAR and TAC documents, and we may not always have been consistent.

2. Data provided by CGIAR Secretariat, May 1998. The figure represents support for the approved research agenda. Additional funding for nonagenda activities raised the total to \$334 million.

3. Increased attention has been placed on Central Asia.

4. Two Centers, and a Center and a program, were merged, reducing the total number of Centers to 16.

5. A short summary of the major steps is provided by Serageldin (1996, p. ix). Two publications were issued after the Lucerne Meeting under the general title of *Renewal of the CGIAR: Sustainable Agriculture for Food Security in Developing Countries: Summary of Proceedings and Decisions*, May 1995, and *Background Documents on Major Issues*, May 1995.

Chapter 2

1. For further details on the Forum, see CGIAR Secretariat 1998a, pp. 35–36.

2. A more comprehensive and up-to-date set of diverse study findings is provided in J. M. Alston, M. C. Marra, P. G. Pardey, and T. J. Wyatt, "Research Returns Redux: A Meta-Analysis of the Returns to Agricultural R&D," IFPRI, EPTD Discussion Paper No. 38, November 1998.

Chapter 3

1. The chairman is, by tradition, named by the president of the Bank, following consultation with other cosponsors and donors.

2. The incoming director of AGR was the former chairman of TAC, and the new director of ESDAR was the former director of AGR. Conversations (there do not seem to be written records) suggest that several considerations may have been involved: the need to reduce the heavy workload of the director of AGR; the desirability of providing an interval between service on TAC and assuming a representational role for the Bank; and the compatibility of the representational function with the background and task of the new director of ESDAR.

3. The Bank made a “one-time only” additional grant of \$20 million to be disbursed on a 1:2 ratio, with the new funds provided by the donors to close an estimated gap of \$60 million over 1994 and 1995. The funds came out of “savings from the 1994 budget.” (Memoranda from Lewis Preston to the Executive Directors, May 12 and June 15, 1994.)

4. “The Development Grant Facility: A Proposal,” Strategy and Resource Management Partnerships Group, April 29, 1997 (draft), p. 1 (fn. 1).

5. “The Development Grant Facility: A Proposal,” *op. cit.*, July 18, 1997 (final), p. 3. The first two additions to this category appear to have been: FY74, the Riverblindness (Onchocerciasis) Control Program; FY76, Research and Training in Tropical Diseases (*Ibid.*, pp. 32, 33).

6. “Process Review of World Bank Grant Programs” (Report No. 18317, July 22, 1988), p. 13 (drawn from Memorandum to Executive Directors, November 8, 1972); “The Development Grant Facility: A Proposal,” *op. cit.*, April 29, 1997, p. 1, July 18, 1997, p. 3; “Grant Financing of International Development Activities; Review of the Special Grants Program,” Committee on Cost Effectiveness and Budget Practices, CEBP 91-1, January 23, 1991, p. 14; Kapur, Lewis and Webb (1997, p. 1084).

7. *Ibid.* Italics added.

8. “The Development Grant Facility: A Proposal,” *op. cit.*, (July 18), p. 6; “Initiating Memorandum; Process Review of Grant Programs,” December 15, 1997, p. 2. The additional administratively funded grant activities include: through FY94, McNamara Fellowship; FY93–FY97, Institutional Development Fund, FY93, emergency assistance to Somalia, FY95–FY97, Consultative Group to Assist the Poorest, FY95, Rwanda Relief Fund, and the Preston education program. In addition, there are other basically one-time grants from net income/surplus that are not included, but which will be swept into the DGF.

9. “Special Grant Program: FY97 Grant Allocations,” February 9, 1997, p. 2.

10. “Review of Special Grants Program,” memorandum from David W. Hopper to Barber B. Conable, April 28, 1988, p. 11. We have also benefited from a discussion with Dr. Hopper about this matter. In his memo, he went on to comment about an alternative course that would have the Bank “shepherd the CGIAR through an evolutionary change,” which over the longer run “should see the emergence of a new CGIAR pattern that will need fewer resources to maintain a more focused program” (p. 11). In reality, the Group went on to add programs in natural resources in the early 1990s (see the Annex to this report).

11. “Grant Financing of International Development Activities: Review of the Special Grants Program,” October 9, 1990, pp. 3, 9, 12–13. The report was prepared for the “Committee on Cost Effectiveness and Budget Practices.” The Task Force was headed by Robert Picciotto. We have discussed the report with Michel Petit, who was an alternate member of the Task Force.

12. Memorandum from Barun Chatterjee, Secretary, SGP Oversight Committee (“Minutes of April 14 Meeting”), April 27, 1993.

13. The first known Secretariat paper on this issue is “Resource Allocation in the CGIAR—Role of Incentives,” 12 pp. (attachment to memorandum of May 17, 1991, from Alexander von der Osten). The fullest and most balanced treatment is provided in Wolfgang Siebeck, Jean-Pierre Jacqmotte, and Ravi Tadvalkar, “Resource Allocation in the CGIAR—Does the Balancing Donor Concept Need Adjusting?,” CGIAR Secretariat, September 21, 1993, 14 pp. A more limited treatment of pros and cons of the balancing concept is provided in the “Issues Paper Prepared for the CGIAR Systems Review” on behalf of the Finance Committee (attachment 5 to the “Report of the Twelfth Meeting of the CGIAR Finance Committee [October 25 and 29, 1997],” pp. 4–6).

14. We have benefited from the comments of Curtis Farrar, former Executive Secretary of the CGIAR, in drawing up the classification portion of this paragraph.

15. Background information on the fund is provided in Baum (1986, pp. 165–66, 261); and “Principles and Policies for the Stabilization Mechanism,” CGIAR Secretariat, March 9, 1990, 13 pp. A brief audit report of the program was prepared by Price Waterhouse on November 29, 1994.

16. Siebeck, Jacqmotte, and Tadvalkar, *op. cit.*, p. 7; “Report of the First Meeting of the CGIAR Finance Committee, 20–21 October 1993,” CGIAR Secretariat, December 3, 1993, p. 3. Little information was found on the implementation of this policy.

17. Memo from Robert Picciotto to Ernest Stern, "Special Grants Program (SGP)—FY93 Budget Envelope," January 13, 1992, p. 1.
18. Memo from Barun Chatterjee, Secretary, SGP Oversight Committee ("Minutes of April 14 Meeting"), April 27, 1993, p. 2.
19. "Final Report of the CGIAR Working Group on Deliberation and Decision-Making Processes," Agenda Item 10, Mid-Term Meeting, May 23–29, 1993, San Juan, CGIAR Secretariat, pp. 8–9. The idea of a Budget Review Committee was raised during the establishment of the CGIAR ("Notes on Procedures and Cycles of Meetings of Consultative Group and TAC," attachment to letter from Harold Graves, Executive Secretary of the CGIAR to Joel Bernstein, USAID, November 22, 1971) and a proposal to establish such a committee was considered in the second review of the CGIAR system (*Second Review of the CGIAR*, CGIAR, November 1981, pp. 89–90). According to Baum, this proposal "had been the single most contentious matter of debate in the review committee" (1986, p. 149); much the same situation prevailed in the subsequent CGIAR meeting largely because of the question of membership. By contrast, the establishment of the Finance Committee in 1993, when the Oversight Committee was also established, went very smoothly.
20. Full citation in footnote 13.
21. Full citation in footnote 16.
22. "Report of the Second Meeting of the CGIAR Finance Committee, Rome, 28–29 March 1994," CGIAR Secretariat, April 24, 1994, p. 12, "Report of the Fifth Meeting of the Finance Committee (October 21 and 27, 1994)," CGIAR Secretariat, April 24, 1995, p. 2, attachment 2 (memo to Center Directors); "Report of the Eighth Meeting of the CGIAR Finance Committee (October 28 and November 2, 1995)," CGIAR Secretariat, March 14, 1996, p. 2.
23. This was, of course, a reversal of the policy followed by some donors in the 1980s noted earlier in the text.
24. This account draws from the "Report of the Ninth Meeting of the CGIAR Finance Committee" (May 1996), CGIAR Secretariat, May 5, 1997, pp. 6–7 ("Modifications in CGIAR Financing Arrangements") (also attached to "Chairman's Letter to the Heads of Delegation," June 28, 1996). The expression of percentages has been modified here for expository purposes. At the meeting reference was made to the 15 percent of total funding to be provided by the Bank, which in turn was divided into 12 to 13 percent for the DFR match and 2 to 3 percent for the remainder. The idea of a reserve fund to help cope with fluctuations in donor contributions was presented in a Secretariat note, "Strengthening CGIAR Finances," September 26, 1996, 2 pp.
25. Again, these percentages have been transformed from those used at the meeting: 9 percent for the DFR match, 4 percent for the one-time payment, and 1 percent each for competitive grants and the System reserve (for a total of 15 percent).
26. "Report of the Tenth Meeting of the CGIAR Finance Committee" (October 26, November 1, 1996), CGIAR Secretariat, May 5, 1997, p. 3. This report was presented in terms of some dollar figures and some percentages, and a certain amount of interpolation has been done.
27. In 1996, the actual expenditures for CGIAR committees out of the Secretariat budget were: NGO, \$73,000; private sector, \$52,000; and genetic resources, \$12,000, for a total of \$137,000 ("CGIAR Business Plan, FY97–99," CGIAR Secretariat, August 29, 1996, p. 15).
28. "Report of the Eleventh Meeting of the CGIAR Finance Committee (May 24 and 27, 1997)," CGIAR Secretariat, December 1, 1997, p. 2.
29. "Report of the Twelfth Meeting of the CGIAR Finance Committee (October 25 and 29, 1997)," CGIAR Secretariat, December 1, 1997, p. 4. During the meeting, the \$33 million was thought of as representing 11 percent of the Bank's 15 percent contribution, or the 73.3 percent reported on the table. One member of the committee felt strongly that 10 percent (or 66.7 percent) was a more appropriate figure, and it will be the base figure for 1999 discussions.
30. This has also, to follow-up on fn. 23, encouraged a reversal of the situation experienced in the 1980s, and encouraged Centers and donors to classify everything as "approved agenda" in order to qualify for Bank matching funds.

31. These have been referred to as the “heartland” of the System by one donor-participant. An elaboration of this concept and an alternative approach are provided in Robert B. Bertram, “Strengthening the Heartland: Fortifying System-Level Support of CGIAR Strategic Research,” USAID/G/EGAD/AFS, draft, March 14, 1997, 6 pp.

32. On a more general policy level, IFPRI has had extensive interaction with the World Bank in collaborative research, consultations, and two-way movement of staff. Perhaps the best-known product of this collaboration was Krueger, Schiff, and Valdés (1991, 1992). Also, see Lipton and van der Gaag (1993). Further detail will be provided in a forthcoming history of IFPRI by Curtis Farrar.

33. “Report on an Audit of CGIAR Reporting Arrangements,” Internal Auditing Department, FY 95–53, June 29, 1995, 17 pp., plus annexes.

34. Memorandum from Alexander von der Osten to Christine Stover (“CGIAR FY 1998–2000 Business Plan”), March 18, 1997, Attachment A, p. 4.

35. “Grant Financing of International Development Activities: Review of the Special Grants Program,” Committee on Cost Effectiveness and Budget Practices, October 9, 1990, pp. 6, 7, 20.

36. “Report on an Audit of the Special Grants Program,” Internal Auditing Department, FY96–06, July 31, 1995, pp. 1, 3–4, 9–13.

37. “Review of Special Grants Program,” memo from W. David Hopper (SVPPR) to Barber B Conable, April 28, 1988, p. 3–6.

38. Memoranda from Lewis Preston to the Executive Directors, May 11 and June 15, 1994.

Chapter 4

1. The earliest examples include: *CIAT in the 1980s*, November 1981; *CIMMYT Looks Ahead—A Planning Report for the 1980s*, July 1980; *Tasks for the Eighties: A Long-Range Plan*, IITA, June 1981; and *IRRI Long-Range Planning Committee Report*, February 1979.

2. *Report of the First Review Committee*, CGIAR, January 1977, pp. 98–100; *Report of the [Second] Review Committee*, CGIAR, November 1981, pp. 71–76; “Budgeting, Financial Management and Reporting in the CGIAR” (the Clifford Report), October 1985 (considered as agenda item 5 at MTM in May 1986).

3. “Resource Allocation in the CGIAR,” CGIAR Secretariat, August 1990, p. 1 (the McWilliam report; reviewed at ICW 1990 as agenda item 10). Also see: TAC/CGIAR (1994, pp. 195–96); and “CGIAR Medium-Term Resource Allocation, 1994–1998; Analysis and Recommendations,” TAC Secretariat, September 1993, p. 3 (considered at ICW 1993 as agenda item 16).

4. “CGIAR Priorities and Strategies for Resource Allocation During 1998–2000,” TAC Secretariat, April 1997, 87 pp. plus 88 pp. of Annexes (considered at MTM 1997). For further details on the annual process, see “CGIAR Resource Allocation: Developing and Financing the CGIAR Research Agenda,” CGIAR Secretariat, Financial Guidelines Series No. 4, revised November 1997, 25 pp.

5. “Medium-Term Resource Allocation 1998–2000: Center Proposals and TAC Recommendations,” TAC Secretariat, April 1997, 62 pp.

6. “1998 Financing Plan: TAC Observations,” TAC Secretariat, October 1997, 7 pp.

7. Alston, Norton, and Pardey (1995, pp. 473–74, 494–98) have expressed some constructively critical concerns about this scoring process.

8. Background on the Center review process is provided in Selcuk Ozgediz, “Evaluating Research Institutions: Lessons from the CGIAR,” January 16, 1998 (draft), and Baum (1986, pp. 96–99). The first review was of IRRI in 1976; followed by CIMMYT, 1976; CIAT, 1977; and IITA and ICRISAT in 1978.

9. Selcuk Ozgediz, "Strengthening Evaluation in the CGIAR: Needs and Options," CGIAR Secretariat, March 10, 1995 (draft), p. 3.
10. It is also generally exhausting for everyone involved on the team, especially the chair of the review, who subsequently has to present the report to TAC and the CGIAR. Many swear that they will never do it again, but after a while a surprising number reappear.
11. Ozgediz, *op. cit.* ("Evaluating"), p. 7.
12. *Report of the [Second] Review Committee*, November 1981, p. xvi (recommendations 9a and 9b).
13. "Improving the Quality and Consistency of the CGIAR's External Center Reviews," CGIAR Secretariat, October 24, 1995); Ozgediz, *op. cit.* ("Evaluating") pp. 9–10.
14. Ozgediz, *op. cit.* ("Evaluating"), pp. 10–11, 25.
15. Vernon W. Ruttan, "Study of the External Review Processes in the CGIAR," CGIAR Secretariat, April 1987, 37 pp. plus 5 appendices (187 pp. overall). The four recommendations were: placing more emphasis on strategic issues; giving more attention to internal review processes by the Center; making provisions for interim reviews; and including an assessment of the Board. Appendices 4 and 5, by Keith Fuglie, cover staff responses to a survey and a detailed (87 pp.) analysis of previous external reviews; they were subsequently summarized in a journal article (Fuglie and Ruttan 1989).
16. Selcuk Ozgediz, *Governance and Management of the CGIAR Centers*, CGIAR Study Paper 27, 1991, 175 pp.; Ozgediz (1993). Exceptions to this general observation include chapter 5, "The Review Process," by J. Anderson, *Report of the Third External Review of the International Center for Agricultural Research in the Dry Areas (ICARDA)*, TAC and CGIAR Secretariats, Washington, D.C., May, 1993, and the deliberations of a TAC Working Group on Evaluations in 1993–1994.
17. Ozgediz, *op. cit.*, ("Evaluating") (p. 26), fn. 5.
18. See Baum (1986, pp. 151–54) for more detail.
19. *Report of the First Review Committee*, CGIAR, January 1977, 104 pp., plus annexes; *Report of the [Second] Review Committee*, CGIAR, September 1981, 193 pp.
20. Dana G. Dalrymple and Robert B. Bertram, "Preliminary Thoughts About the CGIAR Review," USAID/EG/AFS, July 11, 1996, p. 1.
21. *Ibid.*
22. "CGIAR Renewal: Beyond Catchy Wording?" *Seedling* (published by GRAIN), June 1996, p. 17. The article states that "one of the NGO demands on the CGIAR was to carry out a full and effective external review of the system as a whole." Further details are provided in Pat Roy Mooney, "The Parts of Life: Agricultural Biodiversity, Indigenous Knowledge, and the Role of the Third System," *Development Dialogue*, 1996: 1–2, 61–64. Mooney, the most vocal proponent of the review, subsequently was appointed to one of the panels.
23. Details are provided in "CGIAR System Review: Proceedings of the First Panel Meeting, October 27–31, 1997, Washington, D.C.," CGIAR System Review Secretariat, 38 pp.
24. The report (CGIAR Secretariat 1998d) was tabled as "CGIAR System Review Report," September 30, 1998, ICW/98/06, CGIAR Secretariat, Washington, D.C.
25. "Examination of the Roles and Performance of the CGIAR Secretariat," Report of the CGIAR Oversight Committee, July 21, 1988, 23 pp.; "Report of the TAC Secretariat Review Team," June 7, 1989, 48 pp. (One of the authors of this report [DGD] participated in both reviews.)
26. Another important and neglected dimension is the link between rural poverty and land degradation (e.g., Malik 1998).

27. A useful summary is provided in Julian M. Alston and Philip G. Pardey, "Research Evaluation Requirements in the CGIAR," a report commissioned by the Impact Assessment Task Force for the Public Awareness and Resource Mobilization Committee of the CGIAR, April 1995, pp. 21–25.

28. "Report of the Study Panel on the CGIAR's Long-Term Governance and Financing Structure," CGIAR Secretariat, September 30, 1994, pp. 20–21.

29. *Summary of Proceedings and Decisions, CGIAR Mid-Term Meeting, Nairobi, May 22–26, 1995*, CGIAR Secretariat, July 1995, p. 55.

30. *Summary of Proceedings and Decisions, International Centers Week, Washington, D.C. October 30–November 3, 1995*, CGIAR Secretariat, January 1996, p. 82.

31. This discussion builds on some comments by Selcuk Ozgediz in "The CGIAR Model: Principles, Challenges, Prospects," CGIAR Secretariat, February 4, 1993, pp. 13–14.

32. Memorandum from Selcuk Ozgediz to Donald Winkelmann and Alexander von der Osten ("External Review Process: Refinements Suggested by the Secretariats"), March 6, 1998, p. 5 in "Centre-Commissioned External Reviews," TAC Secretariat, March 1998 (agenda item 5, TAC 74). By comparison, the direct costs of 15 Center reviews conducted over the 1980–86 period averaged \$115,600 (Ruttan, *op. cit.*, Table 3.1, p. 35; Fuglie and Ruttan 1989, p. 375).

33. Ozgediz recently estimated that the indirect costs of organizing a review, including costs incurred by the Secretariats, are roughly the same as the direct costs (*op. cit.*). Fuglie and Ruttan placed the indirect costs to the Centers during the 1980–86 period as about 72 percent of direct costs (Fuglie and Ruttan 1989, p. 375; Ruttan, *op. cit.*, Appendix 4.3). While the indirect costs fall on all staff members, they are particularly felt, to judge from their comments, by the scientific staff.

Chapter 5

1. *Quality-Protein Maize*, National Academy Press, Washington, D.C., 1988.

2. The divisions between the categories are a bit arbitrary. In the case of IFPRI, for example, all of the work is classified under policy (88 percent in 1996) and strengthening NARSs (12 percent), whereas programs relating to productivity and protecting the environment exist, but are not counted. Thus, a more focused inquiry on a specific area might produce somewhat different numbers.

3. Changes in retail wheat prices in India from 1961 to 1992, as well as changes in wheat production, are summarized in a chart presented by Pabhu Pingali and M. Shah of CIMMYT at an India Day celebration in New Delhi in April 1998; it is expected to be published in the proceedings of that event.

4. The price data are also available for government support or procurement price, farm harvest price, and wholesale price. When the four series were compared, they followed a generally similar pattern, but there were some notable exceptions. Similar data are provided for Colombia (although for producer prices, and in separate graphs) for the period from the late 1950s to the early 1990s by Pachico (1996).

5. Donald Mitchell, "Promoting Growth in Bangladesh Agriculture," Development Prospects Group, Development Economics, World Bank, draft, March 18, 1998, p. 6 (presents chart; back-up data provided by Mitchell).

6. "Evolution of the CGIAR: Briefing for the CGIAR System Review Working Group Meeting," CGIAR Secretariat, August 25, 1997.

7. J. M. Alston, M. C. Marra, P. G. Pardey, and T. J. Wyatt, "Research Returns Redux: A Meta-Analysis of the Returns to Agricultural R&D," IFPRI, EPTD Discussion Paper No. 38, November 1998.

8. "Transcripts of Proceedings," CGIAR, ICW 1997, October 28, 1998, pp. 38–39.

9. *Ibid.*, pp. 59–60

10. “Report of the Fourth External Programme and Management Review of the Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT),” TAC Secretariat, April 1998, p. xv (further discussion on pp. 26–27).

11. “Draft Report of the Mid-Term Review of the West Africa Rice Development Association (WARDA),” TAC Secretariat, May 1986, 97 pp., plus annexes (agenda item 6, MTM 1986).

12. John Walsh, “Wide Crossing: WARDA in Transition, 1987–1996”. The study was done by Walsh—a former reporter for *Science* who is familiar with CGIAR—on his own initiative, but with the cooperation of WARDA.

13. “ISNAR Medium-Term Plan, 1999–2001,” April 1998, 80 pp.

14. “Report of the 15th Meeting of the CGIAR Oversight Committee,” Brasilia, May 23, 24, and 27, 1998, CGIAR Secretariat, June 22, 1998, p. 2.

15. Dana G. Dalrymple, “Child Survival and the CGIAR,” USAID/G/EGAD/AFS, January 19, 1996, pp. 4–5. Drawn from Rosegrant, Agcaoili-Sombilla, and Perez (1995).

Chapter 6

1. It is difficult to be precise because definitions vary somewhat between Centers and because there are several different categories. Recent data indicate that internationally recruited staff in the research and research-support category, including both scientists hired by the Centers and by others (such as ORSTOM in France), and excluding postdoctoral fellows and associated professionals, totaled 769 in 1997. If research-support staff are sorted out, and are estimated to average roughly 2.5 per Center, the total is reduced to 729. If the scientists supported by others are deducted, the number is reduced to 677. (Derived from data provided in “Financial Summary, 1999–2001 Medium-Term Plans,” CGIAR Secretariat, March 19, 1998, table 8, p. 9; also discussions with CGIAR Secretariat, March 25, 1998. More aggregate estimates for previous years are reported in the annual *CGIAR Financial Report*.)

2. Calculated from the data provided in the annexes of the annual *CGIAR Financial Report*, issued by the CGIAR Secretariat. The data are not, as mentioned in footnote 1, always fully comparable because of changes in definition of international staff, both between Centers and from year to year within a Center (this happened in one Center in 1996, and the 1995 figure has been carried forward).

3. Based on data prepared for the CGIAR Finance Committee by the CGIAR Secretariat, May 1998. Unrestricted attribution funding is, in practice, much more like unrestricted than specific unrestricted funding.

4. The latter category includes, in decreasing order, CIMMYT, CIAT, IITA, ICARDA, and ILRI. Unrestricted funding at CIMMYT dropped from 77 percent in 1993 to 48 percent in 1997. In the case of the natural resource Centers, the pattern over the same period has been more variable.

5. Lewin (1982 pp. 866–67). One member of TAC was quoted as saying—prematurely as it turned out—that “We are now at a point where we might have to contemplate closing a Center.”

6. In 1996, total “institutional” funding available to the System was \$194.9 million, of which \$44.9 million, or 23.04 percent, was provided by the World Bank. Total agenda funding was \$304.1 million, of which \$44.9 million, or 14.76 percent, came from the Bank. The 23.04 percent is 1.56 times as large as the 14.76 percent. (*CGIAR 1996 Financial Report*, p. 32).

7. The overall cost of the IAEG is, however, shared by the other cosponsors.

8. There is one situation where the level of Bank funding could be automatically reduced under the existing rules of play. This would occur if the matching funds provided by other donors were reduced sufficiently to bring the Bank contribution above the 15 percent level (it was 14.1 percent in 1997 and could be as little as 13.4 percent in 1998). Presumably, the Bank contribution would then be

lowered to keep it within the 15 percent level. This would, of course, accentuate the financial problems of the Centers, but that is the nature of the matching fund arrangement.

9. This idea is by no means new, as alluded to earlier (in Chapter 3) in the 1993 discussion of the SGP.

Chapter 7

1. See, for example: "To Quell Riots, Zimbabwe Plans Price Controls on Basic Foods," *New York Times*, January 22, 1998, p. A9; "Newly Jobless (and Newly Angry) Upset Indonesia," *New York Times*, January 29, 1998, p. A3.

2. During FY98, ESDAR was assigned to fall within RDV for budgetary, and more recently, for administrative oversight as well, including a review of its role and function. The review (presented to the Rural Sector Board July 20, 1998) was chaired by one of us (JRA) and drew upon material in the draft of this section of this report.

3. RDV initiated recruitment for an Agricultural Adviser: Research in September 1998. The position description contains three components: (a) managing Bank support to the CGIAR, (b) managing policy dialogue and strategic partnerships in the global R&D system, and (c) providing strategic input into Bank operations.

4. The figure peaked at \$25.2 million in 1992 and then dropped by half to \$12.8 million, in 1993. This information was compiled from the annual audited financial reports of the Centers, with some further follow-up in a few cases. It has not been tabulated since 1993.

5. It is difficult to track the overall extent of such activities in the System from Secretariat documents because of changes in classification and reporting over time. Currently, some such projects are counted as part of the Agreed Agenda and some are not. The audited Center financial reports, noted above, seem to be the best source.

6. "Report of the First Meeting of the CGIAR Finance Committee, 21–22 October 1993," CGIAR Secretariat, December 3, 1993, pp. 4, 5, 7, 8.

7. "Report of the Ninth Meeting of the CGIAR Finance Committee" (May 1996), CGIAR Secretariat, May 5, 1997, pp. 6–7.

8. "Report of the Tenth Meeting of the CGIAR Finance Committee" (October 1996), May 5, 1997, p. 3; "Report of the Eleventh Meeting of the CGIAR Finance Committee," May 24 and 27, 1997, p. 2.

9. One reviewer, formerly associated with the CGIAR Secretariat, expressed the concern that such a program could be "administratively costly, and generate needs for appraisal and management well beyond its value."

10. One view is that the overall situation will not change a great deal while the current chairman of the CGIAR is in place, but that this could change when the day comes that he moves on. Then the question will arise whether the chair should continue to be the vice president for special programs or revert back to the vice president for environmentally and socially sustainable development. Should closer financial and technical ties be developed with the operations side of the Bank, as discussed in this report, the latter option would—other things being equal—appear to merit increased consideration.

Chapter 8

1. Dana G. Dalrymple, "Improved Monitoring of CGIAR Center Operations," USAID/G/EG/AFS, draft 1, April 1, 1997, p. 5.

2. In the language of the "Process Review of World Bank Grant Programs" (Report No. 18317, July 22, 1998), this would be an example of "mainstreaming" the grant activities into network or country programs.

3. Some key elements, however, will be restored in the new *agricultural adviser: research position*, which was advertised in September 1998.

Annex

1. The SGP documents reviewed were: Memorandum from W. David Hopper to B. Conable (“Review of Special Grants Program”) February 4, 1988; memorandum from W. David Hopper to Barber B. Conable (“Review of the Special Grants Program”) February 28, 1988; memorandum from Gregory K. Ingram to Distribution (“PPR FY90 Management Contract”), August 24, 1989, p. 36; memorandum from Paul Isenman to Alexander von der Osten (“FY91 CGIAR Budget”), July 17, 1990; memorandum from Zmarak Shalizi to V. Rajagopalan, L. Summers, and A. Shakow (“FY92 Special Grants Program”), June 11, 1991; memorandum from R. Picciotto to Ernest Stern (“Special Grant Program (SGP)—FY93 Budget Envelope”); memorandum from Barun Chatterjee to Distribution (“R96 Special Grants”), September 27, 1994.
2. The summary of the April 14, 1993, meeting of the SGP Oversight Committee, contained the following entry: “AVRDC: The earlier decision to discontinue the grant, which was endorsed by the Office of the President, was reaffirmed” (p. 3). Up to 1993, AVRDC had been included in the Linkage Fund (discussed in the next paragraph).
3. Personal communication from Curtis Farrar, April 6, 1998.
4. “Proceedings and Summary Conclusions, Consultative Group meeting, May 16–20, 1998, Berlin,” CGIAR Secretariat, pp. i, 10–16.
5. “Summary of Proceedings and Decisions, Consultative Group Meeting, May 1–June, 1989, Canberra, CGIAR Secretariat, July 17, 1989, pp. i, 25–28. Special attention was given to forestry.
6. Memorandum from Curtis Farrar to G. Edward Schuh (“1998 Budget Request”), January 21, 1987.
7. Memorandum from W. David Hopper to Barber B. Conable, *op.cit.*, p. 6, para. 15.
8. Memorandum from Michel Petit and Alexander von der Osten to Wilfried P. Thalwitz (“Allocation of FY91 Linkage Fund Contributions”), December 18, 1990.

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