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STUDY OF THE CONSULTATIVE GROUP ON INTERNATIONAL
AGRICULTURAL RESEARCH AND INTERNATIONAL
RESEARCH CENTERS RELATED TO
FOOD PRODUCTION

AGENCY FOR INTERNATIONAL DEVELOPMENT

May 4, 1981

Preface

This study was prepared at the request of AID Administrator M. Peter McPherson as the basis for making agency decisions on policies with regard to support for international agricultural research centers, and the CGIAR. The study and the decisions made will in turn provide a reliable expression of U.S. policies in the internal review being conducted during 1981 by the CGIAR through an ad hoc committee.

The study was prepared under the direction of Curtis Farrar of IDCA. Extensive support and much of the drafting was done by the Office of Agriculture of the Development Support Bureau, AID, particularly Floyd Williams and Dana Dalrymple. Major contributions were made by Dr. Vernon Ruttan of the University of Minnesota, a sub-committee of the Joint Research Committee of the Board for International Food and Agricultural Development and the BIFAD staff, and staff of the AID Regional Bureaus, the Bureau for Policy and Program Coordination, the AID/IDCA Science Adviser, and the Office of International Cooperation and Development of the USDA. AID's Technical Program Committee for Agriculture spent a full day going over the draft with the participation of the agencies and individuals mentioned above, under the Chair of Tony Babb, Deputy Assistant Administrator of the Development Support Bureau.

The conclusions presented are probably not shared in all details, but in general the report represents a widely held consensus among the individuals and organizations involved in its preparation.

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I. Conclusions and Policy Proposals

A. Program plan and budget for the CGIAR over the next five years (1982-86).

The existing consensus approach to CGIAR five year budgeting is a nominal 20% growth rate, which was expected to provide up to 3% real growth for mature centers, to bring younger centers up to their planned levels of development and then limit them to a 3 percent maximum growth, and to allow for the addition of one new program per year. On the assumption of about 9% inflation on the average, the real growth would be on the order of 10% per year.

In 1981, the first year of the consensus approach, contributions have increased about 15%, and inflation seems to be running at 15%, so that there was no real growth achieved in the system overall, and some decline in some centers because of the need to provide for capital expenditures.

Based on this experience, a more realistic approach to five year planning should first of all separate increases in the cost of doing business from program content and deal with each separately. Secondly, it should be based on specific planning for each center, not on broad rules of thumb. Thirdly, it should allow enough flexibility to adjust to new program judgments and opportunities, and to changed economic and other circumstances. Fourthly, it should distinguish the capital costs of program expansion from continuing costs such as operating expenses, repair and replacement of plant and equipment, and increases in working capital made necessary by inflation.

This discussion deals first with program substance, then with priorities and lastly with inflation.

Since it is the first AID attempt to design CGIAR long term plans based on center by center analysis, it is subject to refinement in the light of further information and argument. Proposed AID contributions for FY 1982 will be determined through the normal approval process and for FY 1983 during the forthcoming AID budget review.

1. Centers to be kept level: Based on the discussions of each center in Section IV below, it appears that IRRI, CIMMYT, CIP, IBGPR, IFPRI, CIAT and IITA* should be held close to 1981 approved budget levels for the coming five years.

Such an approach assumes that problems identified in the analysis above can be handled without increased real program levels. The conclusions of TAC five yearly evaluations, or other evidence, may lead to revision of these projections. For example, it might be concluded that the CIMMYT method of using regional staff charged to its core budget to cooperate with national research systems is more efficient than the IRRI method of providing technical assistance teams financed through projects outside of the CGIAR budget. In

* See Table of Contents, above, for center names.

that case, a real increase in CIMMYT, and perhaps IRRI as well, might be justified. Keeping the budgets level for planning purposes would not imply a static program. But each TAC evaluation team should be instructed to identify about 10% of the program of each center which it considers to be of lower priority than the rest, in case reductions need to be made, and in proposing any increases in expenditures, to identify compensating reductions that can be considered. Perhaps more important, the review of biennial budgets submitted by each center should identify of low priority items which could be the basis for reductions if required, or could provide scope within any budget level for new activities at the same or another center.

2. Centers to be brought up to planned size and then held level:

ISNAR will reach its planned level of 20-25 professionals in 1982 or 1983. Further budget expansion is expected to be in the form of projects financed by donors outside the CGIAR framework. Since all agree that building the capacity of national research systems is a relatively neglected and critical part of the system for increasing food production in developing countries, the sensible course is to support ISNAR at the planned level for a period of years until its effectiveness can be evaluated.

ILRAD should level off at the planned operations budget of \$11 million in 1981, but the planned additional housing should be built when funds are available.

3. Center requiring expansion not yet approved by the CGIAR:

ICRISAT. The expansion would provide for establishment of sub-center activity in Africa, as discussed in the recent TAC five year review and now proposed by the Board. As this plan is considered thought should also be given to ways of saving costs in India, which has a very accomplished national research system, to which some work might be transferred. Alternative ways of establishing the Africa program should be considered, including placing programs on the premises of national research systems, and combining facilities with the proposed African sub-station of IFDC. ICRISAT would stabilize at about 80 senior staff and \$16 million in operations.

4. Centers requiring special treatment:

WARDA: The U.S. should contemplate ultimate transfer of WARDA out of the CGIAR system through creation of a special donor group for WARDA. The U.S. would be an active member of this group, with funds managed by the Africa Bureau. The new group must include an evaluation and audit structure for the WARDA program. This would be treating WARDA in a similar way to our approach to regional and sub-regional research and extension agencies in general. A similar model could be used for other regional units, such as CATIE. Continued close technical association with the CGIAR would be important.

ILCA: Should be placed in a holding pattern pending establishment and CGIAR acceptance of a clear, achievable mandate and a new strategic plan of attack on the problem of livestock in Africa. There should be no further capital expenditure and a minimal operating expense budget. We should attempt to resolve the mandate and program issues of ILCA during the

1981 TAC review. If they are resolved to reflect a move away from systems analysis, reliance on "shelf technology", and "monitoring" to opportunity identification, development and introduction of technological change with measurement of attributable effects, the U.S. should support the development of ILCA to a senior staff level of about 60-70 (assuming they can function as an international center in Ethiopia). If not, the U.S. should judge whether the current program is worth supporting, assuming gradual shifts in program emphasis as characterized above. If the present program seems certain to continue, we should withdraw our support after 1983, but tell ILCA our intentions during 1982.

ICARDA: The program should be held at current levels pending resolution of the security situation, the interest of OPEC nations and review of the mandate for dry land agriculture. The present research in Syria should be continued at its current level, with no additional capital expenditure. There should be no further capital costs incurred in Lebanon or other countries. The research should be restricted as at present, to serving dryland agriculture. No further consideration should be given to development of sites in Iran, Turkey or other locations. If security conditions do not improve within, say two years, a new implementing agency should be chosen by the CGIAR to work with the existing Board on replanning the center to take account of change in circumstances. On the assumption that OPEC countries will later come in as substantial donors, CGIAR planning should contain conditionally programmed funds for the full capital and operating budget for the Syria site. If the program is expanded, consideration may be given to the case for including irrigated agriculture, which would be responsive to the desires of several of the countries served by ICARDA. In the meanwhile, careful attention should be given to the costs of operation, and ways found to reduce them if possible. Some of the activities might be moved to the sites of existing national or regional research centers which are not making full use of their facilities.

5. Additional priorities for the CGIAR:

Given the general mood of the donors and TAC, the CGIAR is not likely to start another major center involving a large physical plant and scientific staff during the next five years. Each item of high priority will be considered for fit into current centers. For example, if work on plantains is needed, the IITA program will be examined to see how well plantains would fit in. If a high priority area does not fit well into the present centers, alternative models will be examined. This is happening in the case of on-farm water management, and will likely happen in the case of plant nutrition.

The water management program most likely to develop would include a training and quite modest field research effort in India. The learning and teaching would take place within canal command area development schemes funded by India, the World Bank or AID. The operating costs of the international program would be about \$3 million a year. Capital costs for simple labs, equipment and training facilities would cost about \$4 million. The international staff would be 15-20. Our analysis has lead us to conclude that most of the work is highly location specific, and that a research requirement for CGIAR support has not yet been defined. Considering all of these facts, adoption of a new priority program seems some years in the future. It seems likely that the India program will go ahead without CGIAR support.

A plant nutrition program is likely to be based on expansion of work at the existing centers or a network of soil scientists and plant physiologists with a small coordinating unit. A large classical "center" is unlikely.

6. Budgetting for inflation:

Looking back over several years of experience, an average rate of increase of costs of 9% does not seem unreasonable as a basis for long term projections. There is certainly no reason to insist upon 1980 experience as representing a new norm. On the other hand, the financial planning needs to take into account the possibility of variations both up and down, the reality of different experience in different centers, and the need to make management decisions to reduce costs as much as possible. It is therefore desirable that the CGIAR Secretariat become more active in assessing the performance of centers in dealing with rising costs, making as good projections as possible of inflation rates taking account of the markets in which each center purchases and the variation of exchange rates. Excessive cost increases in any one place may call for a new management approach to dealing with a specific research need.

The recent history of IITA is a case in point. Government policies have greatly increased the cost of IITA's program in Nigeria. IITA also needs to move technology components to their client nations. IITA is considering some shift in emphasis in its program from on-campus work to client nation locations both to test technology components and upgrade local research and extension capabilities.

As for the long term budget, the best approach would be to use an average based on several past years applied on a center by center basis to project the cash implications of the program plan. For the short range, the Secretariat should inform donors in time for their budget process (just over a year and a half ahead of the beginning of the calendar year in AID's case) of the cost of the agreed program plan plus expected inflation for that year, as best they can judge it. The assumption would be that both donors and the system would then plan on this basis and that adjustments would have to be made within the total if necessary. That would mean that higher than expected inflation would be reflected in temporary program reductions or postponements. Lower than expected inflation would lead to savings by donors if the change occurred before the grant was made to an individual center. If windfall savings are realized by a center after a grant is made, there should be arrangements to use them to reduce future needs, and not to permit unplanned program expansion.

7. Alternative CGIAR budgets:

There would be a range of possible approaches to the CGIAR budget in purely nominal terms: for example continue growth at 20 percent a year which is the consensus of 1979; or keep the budget fixed in dollars allowing inflation to eat into the program. Neither of these nor any other approach based purely on money figures seems to make sense. It would be better to agree on a broad program strategy and then attempt to meet the costs

of that strategy from year to year unless inflation becomes such an overwhelming problem that the strategy needs to be reconsidered. The choices seem to be:

- a. To plan a reduction in the real level of total CGIAR expenditures.
- b. to hold the real level steady, balancing reductions against increases.
- c. to be willing to consider specific program increases up to a given percentage per year.

In connection with alternatives b and c, it would be necessary to add amounts for capital expenditures in some years depending on the initiatives chosen.

The following paragraphs try to establish priorities for reductions from the present level and priorities for increases, leading to a choice of overall program strategy.

To translate our proposals into specific numbers, we have worked on the basis of approved 1981 budgets, which will be somewhat above the actual funding level for 1981. Forward projections are in 1981 dollars, assuming that the policies recommended could be implemented in 1982. The results are then computed in current dollars on a rough projection of inflation rates.

8. Priorities for reductions (in order):

- a. Eliminate at once any areas of activity within existing centers which are judged to be of lower than acceptable effectiveness, and use the forthcoming set of five yearly evaluations under TAC to identify low priority areas within existing programs which can be cut back. At a moderate level of severity this should probably be done in any case.
- b. Hold ICARDA substantially below planned levels, by restricting to the program to the present work being done in Syria. The present research in Syria should be continued at its current level, with no additional construction or major equipment expenditure. There should be no further capital costs incurred in Lebanon or other countries. The research should be restricted as at present, to serving dryland agriculture. No further consideration should be given to development of sites in Iran, Turkey or other locations.
- c. Hold ILCA at present operating expense levels, with no further capital expenditure, pending resolution of its mandate and conceptual problems.
- d. If a decision were made to reduce program levels by a substantial amount, the same exercise as in a. above could be conducted with a higher target of reductions in mind.

9. Priorities for increases (in order):

- a. ICRISAT/ISNAR: Given the critical nature of enhancing national systems, and of increasing grain production in the semi-arid parts of Africa, highest priority should be given to bringing ISNAR and ICRISAT up to planned levels within any alternative. The moderate investment to complete ILRAD's construction should be made.
- b. ILCA: sufficient operating and capital funds to mount a well considered approach to livestock in African farming systems (assumes resolution of issues).
- c. An unspecified initiative to begin in 1985, perhaps in plant nutrition or water, perhaps a program rising to \$3 million per year plus about \$4 million in capital expenditure.
- d. Allow small increases in the programs of successful existing centers, particularly those that would link with basic research conducted elsewhere, and those that would form more effective working relationships with national systems.
- e. Replan ICARDA at a level adequate to meet the needs of the dry areas and the plateau areas (assumes resolution of issues).

10. Proposed position:

Adopt reductions (a) general comb out of less effective programs in mature centers; (b) hold ICARDA down and replan at a more modest level.

Adopt increases (a) ICRISAT, ILRAD and ISNAR to planned levels; (b) replan ILCA on an adequate basis; and (c) allow for one initiative in 1985, and (d) balancing increases in programs of existing centers.

The overall financial implications of this position cannot be accurately predicted in part because of a number of individual judgments about programs need to be made, and in part because of uncertainties about the rate of inflation. In terms of 1981 dollars the total figure might be \$151 million for the CGIAR in 1983 rising to \$156 million in 1986, and including a very small provision for capital expenditures, as shown in the table.

Inflation should be projected on a center-by-center basis. But for a broad estimate, if it is assumed that there is a 15 percent rise in costs between 1981 and 1982, 12 percent in the following year and 9 percent each year thereafter, the total requirements under this formula in millions would be \$194 in 1983 and \$260 in 1986, compared to projections of \$223 and \$342 under the present consensus formula.

B. The interaction of the centers with national systems in developing countries.

One way of stating the mission of the centers is the production of technology to be received by national research systems in developing countries, and adapted and applied to their food production problems. Thus, the relationship with national systems is critical to the effectiveness of the CGIAR structure. A small but growing number of developing countries have national research systems that require from international centers only genetic material they can incorporate in their own breeding programs, collaboration on complex or novel research problems, information on genotype performance and experience in other countries or relevant work in other laboratories, and an opportunity for professional interchange. Many developing countries, on the other hand, have only rudimentary research systems of their own and need technology that is almost ready for direct dissemination to farmers. The centers have to meet the varied needs of their national clients, and adjust to changes in those needs over time.

National systems play a critical role in center research because they provide the indispensable network of research and experimental sites in different ecological conditions. They are increasingly important as sources of scientific information. Their role in this area should be fostered, including contributions to the more basic knowledge pool. They are, of course, irreplaceable as a source of understanding of specific developing country conditions, agricultural problems and expected usefulness of potential technology.

The issues that have troubled the CGIAR and the centers for many years are how far the centers should be expected to go in helping to strengthen national systems, how deeply they should become involved in national campaigns to raise production using center generated technology, and the best means for cooperating with and helping to strengthen national systems.

It is clear that the centers do not necessarily have a comparative advantage in helping developing countries plan and develop overall national agricultural research systems. Since there is continued demand for assistance in this area beyond what was being provided by bilateral and multilateral assistance agencies, the CGIAR created the International Service for National Agricultural Research (ISNAR) devoted exclusively to this function, but with the expectation that most of its project costs would be met outside of the CGIAR.

On the question of how centers should think about their own role, the first CGIAR review concluded:

- ...cooperation with national programs is a vital component to the research activities of all centers. As a general rule the primary purpose of such cooperation should be research to advance the central mission of the center. However, centers should be alert and responsive to opportunities for additional cooperation with national programs, provided extra-core funds are available, the project is appropriate, it does not distort their central research thrust or place an undue burden on the center's administration personnel, and the review procedures [concerning long-range center planning] are met.

This remains a reasonable approach to the issue today. It has been interpreted flexibly by centers in accordance with their particular circumstances. For AID it is important to recognize that centers may not always be able to undertake technical assistance responsibilities we would like to thrust upon them. We should refrain from putting pressure on centers to accept project implementation roles which they feel are not appropriate for them or would strain their capacity.

Different models of cooperation with national systems persist among the centers, exemplified on the one hand by CIMMYT which maintains relatively large numbers of regional representatives to work actively with a number of national systems; and on the other hand by IRRI which has a large number of contracts to provide technical assistance to individual national systems financed by donors outside the CGIAR framework. There is no agreement within the CGIAR on which of these approaches is more cost-effective, and it is not clear that any one center could easily change its structure. Clearly, the IRRI approach places less burden on the CGIAR budget proper, but the overall impact on aid donors and national systems is unclear.

C. The interaction of centers with research institutions in developed countries.

As the center by center analysis shows, it is usual for an individual center to have several active cooperative relationships with laboratories in advanced countries, some financed through the center budget and some not. Moreover some centers, CIMMYT in particular, produce scientific results which are of importance to the developed countries, so that the relationship is by no means a one way street.

The question of the center role in basic research is a subject of quite active discussion in the CGIAR review. There is a perception that the levels of production increase sought in developing countries over the long term can only be achieved through the discovery of new and fundamental knowledge in such areas as plant nutrition, photosynthesis, nitrogen fixation and stress tolerance. Some centers see themselves evolving over time toward institutions that do more basic research while applied studies are capably handled by national systems in developing countries.

It is misleading to talk in terms of basic and applied research. The centers are, and should remain, rigorously mission oriented. If solving a particular research problem is necessary in order to increase production of a crop within a center mandate, the center should not be deterred from performing the research merely because it involves some elements of basic research. The choice of whether the particular work is done at a center, or contracted to another laboratory, should be resolved on the basis of cost and efficiency. Moreover, the centers need an active concern with quite fundamental studies in order to remain scientifically sharp.

On the other hand, centers should not be doing or financing broad spectrum research aimed at producing greater knowledge without direct relevance to production results. This is a job for institutions with scientific rather than production goals and for budgets other than development assistance.

It would be wasteful, however, not to draw from the centers the clues to requirements for basic research which arise from their experience of the needs of developing countries, and to make such clues available to the world scientific establishment in such a way as to influence the basic research agenda.

There is, moreover, an important need for basic research related to agriculture, and to other fields, of a type that can only be performed in the tropical countries themselves. The program of ILCA offers one example, the ecology of large remnants in tropical Africa is a subject of considerable practical importance which can only be studied in Africa itself and which involves much basic research not immediately oriented toward production. The program of ICIPE on understanding the interaction between the insects of Africa and their environment is another good example.

As illustrated by the CGIAR rejection of ICIPE, present policies for the United States and most donors is to leave basic research to others, even when the basic research is primarily concerned with developing country subjects. If there is no other source of funding for such work, and it is not done, major mistakes in policy and program are likely to occur because of simple lack of knowledge. ?

It is, therefore, important that AID consider how such needs can be met, and how centers of excellence in basic research in developing countries can be built.

Conclusions under this heading:

1. We should oppose a major shift toward broad spectrum fundamental research by centers either now or in the future.
2. We should encourage the centers to pursue specific research problems, even though they involve seeking new fundamental knowledge, when these are critical to the mission of the center.
3. We should encourage the centers also to draw up statements of basic research needs for the consideration of the world scientific community. TAC should include this question in its five year review studies, and should take the initiative in bringing the results to the attention of scientists in developed countries. AID should work with USDA and other science funding and research institutions in the United States to encourage basic research that may make a significant long-term contribution to food production in developing countries.
4. Consideration should be given to ways (outside of CGIAR) of meeting needs for basic research which can be performed only in developing countries.
5. The proposal being developed by BIFAD to support interaction between U.S. research institutions and CGIAR centers should be given sympathetic consideration for AID funding as soon as budget permits.

C. The long-term role of centers:

When the first international agricultural research centers were started, it was expected that they would continue up to the point where national systems could take over and then go out of business. It is clear that none of the existing centers are approaching that point, although CIP has planned to move in that direction at the end of this decade. We are thus still some distance from the need for a decision on long term role. Still, it is helpful to have an appreciation of the long term possibilities in mind as medium term plans are made and decisions taken.

The discussion immediately preceding would rule out turning the centers into laboratories for broad spectrum basic research (though not prohibit using center facilities for this purpose under different sponsorship). A somewhat different model is already evolving in the relationship between the more mature centers such as IRRI and CIMMYT and the most competent national systems in developing countries, such as India, the Philippines, Brazil and Mexico. In relation to these countries the centers act as the hub of a problem solving network, locating quickly the expertise anywhere in the world that may be relevant to a new problem, and offering a channel for mobilizing that expertise, providing a forum for interchange of experience, identifying research priorities and suggesting an allocation of responsibilities on complex matters affecting several countries.

Clearly such a role is not appropriate for all centers. ILRAD, for example, might well just stop when it has developed immunization techniques for the two livestock diseases which are its present concern. But the network hub function is a logical evolution for many centers and is a role they must already begin to exercise to meet the needs of some clients even while others still require much more elementary forms of support. It is therefore a logical possibility that some centers could continue indefinitely in this network role. As that time approaches, this issue will need to be resolved center by center. Support for a network hub function would fall to the participants in the network, that is to those receiving its benefits. One can expect that the United States would have an interest in long term support for some centers, but not others.

E. The U.S. commitment to financing the activities of the CGIAR.

The CGIAR was formed when it became obvious that the concerted research approach used at CIMMYT and IRRI (the wheat and rice centers) should be expanded to other crops and areas and that the Rockefeller and Ford Foundations could not continue as sole supporters of the centers. Four meetings during 1969-70 led to the formation of CGIAR. The United States agreed to supply 25 percent of the required funds, but that statement assumed a quite modest demand. (The total in 1970 was \$14 million.) In private conversation John Hannah told Floyd Williams in 1976 or 1977, that he (John) had made an agreement with "both sides of the aisle" in Congress that the U.S. committed itself to 25 percent funding of CGIAR when it was formed.

Each year since 1972 the U.S. has been prepared to contribute about 25 percent of the total available from all donors. The World Bank also bases its contribution on a formula (currently 10 percent), but apparently uses CGIAR-approved budgets as its base.

The importance of U.S. leadership in obtaining commitments for support for CGIAR activities from others was illustrated in 1979 when we provoked discussion of agricultural research at two economic summit meetings (Tokyo and Venice). With the personal intervention of the President we achieved a consensus on the planned increase of resources over a five-year period at the 20 percent pace.

For a number of years the World Bank assumed the position of "donor of last resort". The World Bank and the United States, and more recent other major donors, have coordinated their funding of individual centers so that each center receives approximately its CGIAR-approved budget. While the flexibility of donors varies, about half the total funding now responds in some degree to residual needs of centers. This has produced a fungibility of money factor that necessitates collective action to reduce or increase the budget of a center from the CGIAR-approved level.

The U.S. contribution to CGIAR is about 2.2 percent of the total U.S. public investment in agricultural research. It is about 6.5 percent of USDA's research budget. The AID contribution of \$35 million to CGIAR in 1981 is about 5 percent of the AID Agriculture, Rural Development and Nutrition budget, 14 percent of the DSB budget, and 45 percent of the DS/AGR budget.

The issue to be addressed is whether the U.S. should maintain its support for the CGIAR system at about 25 percent of the total available funding. Alternatives would be to adopt a lower percentage, to fix our annual contribution based on some appreciation of the needs of the system as a whole without regard to the contributions of others, or to base U.S. funding for each center on our judgment of the priority of that center ignoring other donors.

The way our commitment works is that we pledge each November the amount included in our Congressional Presentation for the year or our latest estimate of a quarter of the total needs of the system, whichever is less, subject to 75 percent matching. In several years other pledges have brought our percentage below 25. In 1981, as in 1980, we may commit less than our pledge because of insufficient matching from others.

The table and chart show all donors, and reflect trends over the life of the CGIAR.

Suggestions that we should reduce our share are based on concern over the absolute amount (\$42.5 million in FY 1982) and its relative size as a portion of the funds, particularly grant funds, available for AID food and agriculture activities.

Suggestions that we should make our own judgment of the priorities of the entire CGIAR program or of centers individually, are based on mistrust of the CGIAR system as a means for making priority judgments and managing effective implementation as compared with what we can do by more direct involvement.

A related point often made is that U.S. funds are contributed to CGIAR centers through a variety of channels, and that the actual U.S. proportion considerably exceeds 25 percent. The attached analysis prepared by PPC is relevant to this point (Tab A). It suggests that only the IFAD and UNDP contributions can be properly ascribed in part to U.S. funding. This would add \$1.6 million to the U.S. total in 1980 of \$29 million. However, these funds are not under U.S. control and if not contributed to the centers would be applied elsewhere. In relation to GNP our share is lower than that of 12 of the other 16 bilateral donors.

AID also contracts with centers for technical assistance services, but funds of this sort are not appropriately counted as support for the system or the centers as such.

A reduction in the U.S. percentage contribution to the CGIAR would lead to a reduction in the total funds available to the system, since there are no donors ready to take over a portion of our share. The likely result would be for others to fall back also, although the overall extent of loss of momentum cannot be estimated.

Such a reduction in the U.S. contribution would have to be based, in logic, on the assumption that taking four to one leverage into account better use could be found at the margin for the funds saved. This in turn relates to the issue discussed first in this section, namely the overall CGIAR program, and whether it can be adjusted to maintain a high level of performance. A reduction to, say, 20 percent achieved over three years would greatly increase financial pressure on the group and would somewhat reduce our influence on actions taken to deal with the pressure, although we would remain by far the largest donor.

Our CGIAR contributions in a fiscal year are spent by the centers in the calendar year which begins only three months later than our relevant fiscal year. Major changes late in our budget cycle would thus create the kind of program disruption for the centers that would seriously hamper their effectiveness. Reasonable certainty of fund availabilities several years in advance is also important for the management and planning system we have been helping the CGIAR establish, and will become more important if the kind of improvement we expect takes place as a result of the current CGIAR review.

Allocation of an absolute amount to the CGIAR as a whole each year without regard to other donors would involve a complex set of judgments which would be hard to defend. It would also tend to undermine the CGIAR's own decision and program management process and would weaken our own influence on that process, since we would have declared in advance our intention to ignore it. It might also lead to our making a more than 25 percent contribution to the system as a whole.

CGIAR CONTRIBUTIONS 1972-1980
(\$ million)

	ACTUAL								ESTIMATED
	1972	1973	1974	1975	1976	1977	1978	1979	1980
African Dev. Bank							.025	.030	.040
Arab Fund						.310	.310		.255
Asian Dev. Bank				.300		.500	-	.700	-
Australia		.005	1.015	1.215	1.745	1.790	2.580	2.650	2.940
Belgium	.140	.60	.380	.620	1.740	2.250	2.720	3.080	3.460
Canada	1.160	1.780	4.675	4.340	5.390	6.800	7.370	6.750	6.900
Denmark	.250	.225	.370	.400	.455	.615	.760	1.045	1.180
EEC						2.500	2.240	3.790	4.550
Ford Foundation	5.315	3.675	3.000	2.800	2.000	1.590	1.000	1.000	1.000
France			.130	.410	.510	.415	.340	.685	.850
Germany		1.805	3.040	3.935	4.475	5.350	6.760	8.480	9.840
IDB			2.030	4.120	5.000	5.700	6.185	6.200	6.700
IDRC	.175	.345	.645	.990	1.780	1.305	1.045	.385	1.605
IFAD							-	1.660	4.050
Iran					1.975	2.000	1.000	-	-
Ireland							-	-	.200
Italy					.100	.030	.100	.100	.700
Japan	.105	.230	.265	.675	1.200	2.500	3.500	5.000	7.000
Kellogg Foundation	.155	.290	.280	.290	.300	.310	.320	-	.130
Leverhulme							-	-	.490
Mexico 1/							-	-	.500
Netherlands	.375	.430	.555	1.235	1.500	1.720	1.780	2.380	2.600
New Zealand					.105	.025	.025	.025	.025
Nigeria				.645	.645	.620	.790	.825	.840 ^{2/}
Norway	.075	.185	.445	.810	1.120	1.510	1.880	1.975	2.005
OPEC Fund							-	-	1.000
Philippines							-	-	.150
Rockerfeller Foundation	3.990	4.545	3.500	2.885	2.165	1.595	1.250	1.220	1.600
Saudi Arabia					1.000	1.000	-	-	-
Sweden	1.000	.150	1.490	2.290	2.255	2.240	2.725	3.110	3.275
Switzerland		.410	.140	.460	.855	1.205	1.350	1.850	2.465
United Kingdom	.690	1.110	1.920	2.410	2.890	3.515	4.765	4.200	6.345
UNDP	.850	1.000	1.465	2.165	1.930	3.500	4.400	6.395	4.870
UNEP				.600	.340	.340	.240		
United States	3.770	5.390	6.805	10.755	14.870	18.140	21.145	24.800	29.000
World Bank	1.260	2.780	2.375	3.195	6.525	7.850	8.675	10.200	12.000
Others									
Kresge	.750								
Total	20.060	24.955	34.525	47.545	62.870	77.225	85.280	98.535	118.565

Source: Centers' Program and Budget Papers and accounts, 1974-1981.

1/ Contribution may be more.

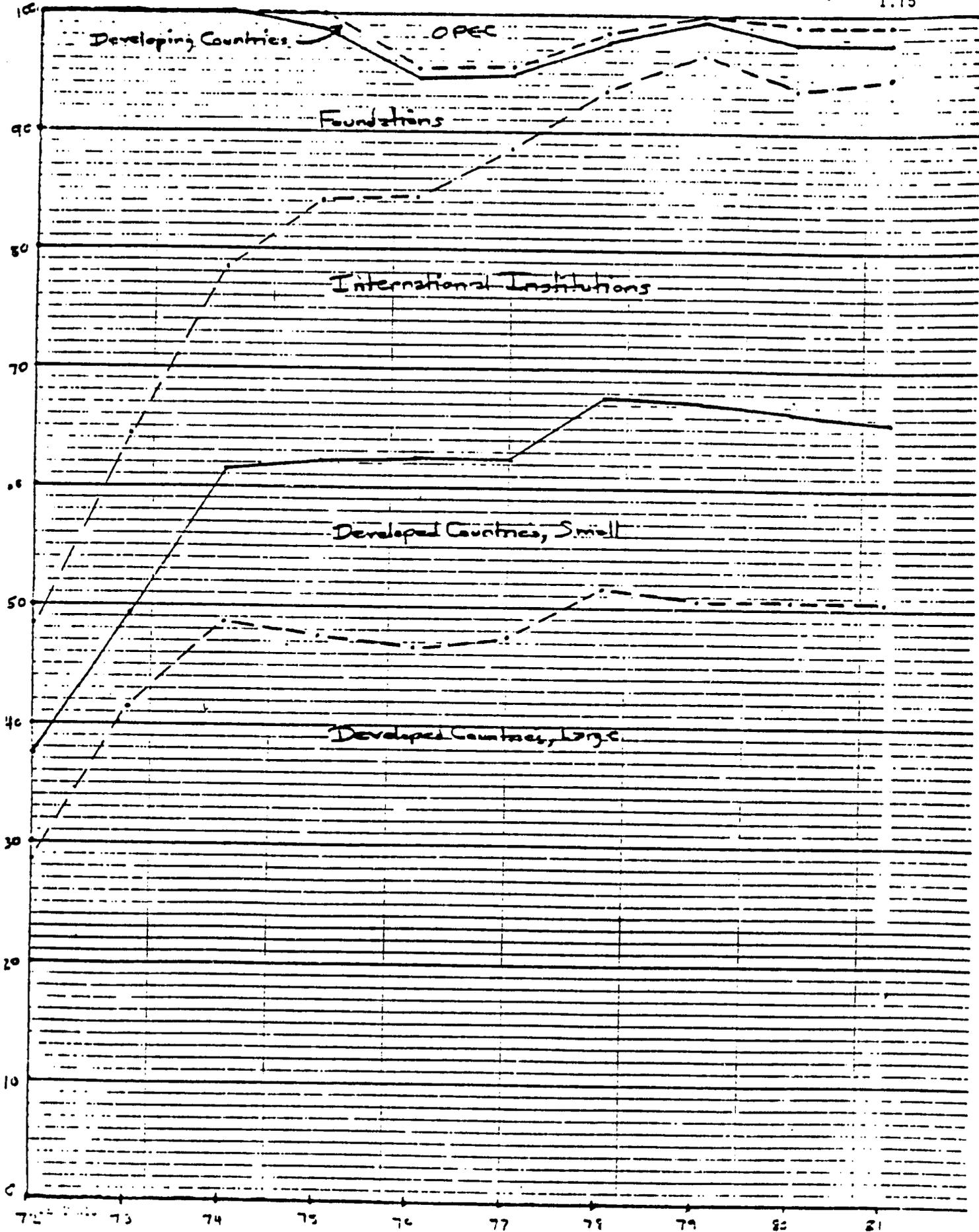
2/ Part of 1978 and 1979 contribution was received in 1980.

October 8, 1980

Percent

PROPORTION OF CGIAR CONTRIBUTIONS BY TYPE OF DONOR

I.15



Finally, dealing with centers one by one would carry the undermining of the system a good deal further. It is possible that other donors would be able to make adjustments to offset the variations we introduced. If so, our changed approach would have little effect except to reduce total contributions. Otherwise, such an approach would lead to overfunding of some centers, underfunding of others, and relegation of the CGIAR to a simple money-raising function with reduced ability for meaningful technical evaluation or management control over the centers themselves. It would also take a good deal more intimate knowledge of individual center programs than we now possess, and have serious implications for increases in staff.

On balance, it seems best to maintain the 25 percent commitment, but to make it clearly conditional on our continuing to judge the system as meriting that level of support. This is a judgment we would need to renew regularly. Such an approach would give us maximum leverage over the decisions of the group, and an opportunity to work effectively for a program on the lines set forth at the beginning of this section.

F. Transfer of responsibility for the Genes Board (IBPGR)

While enormously useful to the centers and to developing countries, the IBPGR has a worldwide view of its responsibilities, meets the needs and protects the interests of all food growing countries and should continue indefinitely. Consideration should therefore be given to transferring responsibility for U.S. funding to USDA a permanent resource. The costs of the IBPGR might appropriately be transferred out of the CGIAR to the budget of the FAO. This would not affect the U.S. share, but would place the requirement in our assessed FAO contribution or in a new voluntary contribution. A possible alternative would be to shift funding within the U.S. Government to the Department of Agriculture.

G. International Agricultural Research Centers not under the CGIAR

This review has included materials on a variety of centers supported by the United States but not through the CGIAR:

International Center for Insect Physiology and Ecology (ICIPE)
 Asian Vegetable Research and Development Center (AVRDC)
 International Fertilizer Development Center (IFDC)
 International Soybean Program (INTSOY)
 International Center for Living Aquatic Resource Management (ICLARM)
 Center for Tropical Agricultural Research and Training (CATIE)

Recommendations concerning each are made in Section V below, and are not repeated here. Some of these centers have been proposed in the past for CGIAR membership. We decided not to press for inclusion of any of these centers in the CGIAR in the near future as regularly sponsored activities. Each of them, however, has a need for some form of cooperation with at least some of the CGIAR centers, and can benefit from an association with the CGIAR itself. We concluded in our discussions that the GC should consider establishing a more regular form of association than that accorded now to AVRDC and IFDC which participate in some CGIAR activities. This is particularly true for regional research institutions, such as CATIE, which

play an important role in the structure linking the international centers to farmers in developing countries. We should raise this matter in the CGIAR review, suggesting among other things that the TAC five year evaluation process might be extended to associated centers when requested and paid for by the group of donors supporting the center concerned.

It was also pointed out that while AID does give budget support to CGIAR centers and other institutions supported with central funds, assistance offered by regional bureaus to regional centers is usually in the form of projects. Regional centers which do not have a national budget to turn to for annual grants and receive only project aid from donors, may have a difficult time on evolving a sustained and balanced program. AID should consider a change in policy that would encourage regional bureaus to provide budget support to regional research centers, in cooperation with other donors, in appropriate cases.

H. A.I.D. priority for national and international agricultural research.

If effective national agricultural research systems had been delivering the needed flow of usable improved technology to their farmer clients, there would have been no recognized need for the international agricultural research centers and the CGIAR would not have formed. The effectiveness of the centers in producing useful technology has both demonstrated the need for more effective national research systems and enhanced their priority to developing countries and donors. The centers and the CGIAR may prove useful adjuncts to effective national research systems, but the centers are not an acceptable longer term substitute for national research capabilities.

A flow of usable improved agricultural technology, usually the product of research, is an essential but not sufficient condition for sustained agricultural development. While every nation needs to adapt and use technology from any source, its ability to use imported technology and mold it to its own conditions will be roughly proportional to its ability to generate such technology in its indigenous institutions. The needed flow of technology thus requires capable institutions within the developing nations that are effectively linked to similar institutions in other nations.

As a part of A.I.D.'s agricultural development strategy we intend to help countries develop effective national agricultural research systems. Effective research institutions understand the conditions and problems of the farmers and provide a flow of improved technology that the farmer can use to increase productivity.

AID's strategy for developing national capabilities will include formation of effective working linkages among national research programs, international centers and U.S. institutions. Usually, we will look to the centers for technologies, technology components and practical training; not for resident technical assistance. We will look to ISNAR to fulfill its role in helping developing countries assess needs and plan their systems. We will look to the U.S. Universities for detailed planning and execution, including provision of long-term technical assistance and degree training of LDC personnel. We note the advantages of regular contacts between national research leaders and (AID research officers and relevant international centers and urge USAID's to sponsor appropriate travel to centers.

The following table shows science and technology activities in the food and nutrition account for FY 1980 and FY 1982 broken down by region. Field programs in agricultural research are growing, particularly in Africa, but seem to be growing less fast than the CGIAR contribution.

It would be a mistake to think of expenditures for international agricultural research centers and for national research systems as being narrowly competitive. Both are high priority activities within the overall Food and Nutrition account, and both could grow if necessary by drawing funds from other purposes within that account.

Grant funds are scarce and international centers are significant users of grant funds. We urge the use of loan funds for appropriate components of national research programs, although long term technical assistance personnel often have to be fully grant funded. USAIDs and host countries should consider the advantages of linking relatively small AID grants for long term technical assistance to research development loans from other sources, such as the World Bank, for capital aid and degree training.

For purposes of this study it is sufficient to say that national agricultural research systems play a critical role in our programs to increase food production in developing countries. We urge more attention to their development, using the best mix of resources available. This judgment reinforces and does not detract from the priority that attaches to the international agricultural research system to which national systems are linked.

SCIENCE AND TECHNOLOGY
IN
A.I.D. FOOD AND NUTRITION PROGRAMS
(Dollars in thousands)

	<u>Science and Technology</u>		<u>Research</u>	
	<u>FY 1980 Estimated</u>	<u>FY 1982 Proposed</u>	<u>FY 1980 Estimated</u>	<u>FY 1982 Proposed</u>
<u>Food and Nutrition</u>				
Near East	8,312	5,407	2,912	2,857
Africa	50,932	57,095	24,431	27,582
Latin America	21,500	12,198	7,840	4,720
Asia	12,800	29,667	7,250	15,369
Regional Bureau Total	(93,544)	(104,367)	(42,433)	(50,528)
Central Bureaus	54,223	73,717	49,352	67,730
CGIAR	(29,600)	(42,500)	(29,600)	(42,500)
Total Food and Nutrition	<u>147,767</u>	<u>178,084</u>	<u>91,785</u>	<u>118,258</u>

NOTE: Research is a sub-category of Science and Technology. Comparative figures for the 1981 request are not available.

SOURCE: Amended FY 1982 Congressional Presentation

9 APR 1981

MEMORANDUM TO: IDCA, Curtis Farrar
FROM : AA/PPC, Charles Paolillo (Acting)
SUBJECT : CGIAR Contributions

With regard to your memo of March 25, 1981 we have investigated the matter of possible indirect flow of U.S. funds to centers affiliated with the CGIAR. We found the following:

IDB - All IDB contributions to CGIAR centers are made from the Social Progress Trust Fund. This fund was granted to IDB by the U.S. in the early 1960's and is now administered by the IDB. The U.S. director to the IDB can veto any proposed contribution. All the projected FY 1982 IDB contributions to CGIAR are in local currencies which stem from reflows to the Fund. Therefore, there doesn't appear to be any percentage of the IDB contribution which might reasonably be ascribed to U.S. Government sources and there would be no benefit to the U.S. Treasury were IDB to make no contribution to CGIAR.

World Bank - The World Bank contributes about 10% of the total CGIAR pledges, and this contribution is made from "profits" of the Bank. These "profits" are made from investments made by the Bank of reflows to the Bank which are awaiting further disbursement. Although the U.S. holds about 23% of the capital of the bank, there is no direct relationship between this and the CGIAR contributions.

IFAD - The IFAD contributions to CGIAR are made from the general fund to which the U.S. contributes about 20%. One could say then that about 20% of any IFAD contribution to any CGIAR center might reasonably be ascribed to U.S. Government sources. If IFAD were not to make any CGIAR contribution, the funds would be contributed elsewhere. To the extent the funds contributed elsewhere were not transferred as swiftly as into CGIAR, future requests for replenishment to IFAD might be less.

UNDP - The UNDP contributions to CGIAR are made from the general fund to which the U.S. will contribute about 16% in FY 81. One could reasonably ascribe 16% of any UNDP contribution to CGIAR to U.S. Government sources. There would not be any benefit to the U.S. Treasury were UNDP not to make a CGIAR contribution because a contribution would be made by UNDP elsewhere.

I hope this information will be useful.

II. Organization and management of the CGIAR system

From its early days the CGIAR has been able to maintain a spirit of cooperation and sense of informality that has served it well, making it unusual among international organizations in its lack of bureaucracy and in the relative absence of international political hassle. The rather complex yet informal structure of the CGIAR begins with the three sponsors, the World Bank, the FAO and the UNDP. Representatives of the sponsors meet from time to time to set the agenda of meetings and select people to fill key positions in the group, such as membership of the Technical Advisory Committee and center broad members selected by the CGIAR.

The CGIAR itself is composed of donors each of which intends to make substantial grants each year to centers sponsored by the system, plus representatives of developing countries selected through the regional conferences of the FAO. The group meets once or sometimes twice per year under the chairmanship of a Vice President of the World Bank. Votes are very rare, and the group operates largely on the basis of consensus.

A small Secretariat headed by an Executive Secretary works in the World Bank under the guidance of the CGIAR Chairman. The Secretariat operates as the eyes and ears of the group. Besides normal ministerial functions, its main role is fund raising to meet budget requirements. In addition it prepares an annual overall statement relating substantive and financial matters, and is the main vehicle for providing budget guidance to centers and for adjusting budgets to match available funds.

The CGIAR also has a Technical Advisory Committee (TAC) composed of twelve part-time members plus a chairman who spends half time on CGIAR business. The TAC is composed of persons with scientific qualifications chosen in part to ensure representation of both donor countries and developing countries. A small TAC secretariat is provided by the FAO and works out of Rome. One TAC function has been to review plans for new activities and recommend action to the group. TAC also prepares a periodic analysis of research priorities, and organizes an overall evaluation of each center's work at five year intervals. TAC reviews each center's budget and program proposals annually and makes recommendations for reductions and other changes which become the basis for CG Secretariat action.

The unique characteristic of the CGIAR, however, is the international agricultural research centers themselves. With some exceptions, each of them is a private entity organized within the laws of the host country, but given special international status and recognized as an international agency. The centers are each controlled by a board of trustees who are entirely responsible for program, budget and staff. There are usually ex-officio board members representing the government of the host country, and in most cases three members chosen by the CGIAR; otherwise the boards are self-perpetuating. The funding relationship runs from each donor directly to the center whose board is responsible to the donor for the proper use of funds.

II.2

1. Perceived problems:

- a. The amount of money involved, now approaching \$150 million per year, and the complexity of the system is felt to exceed what can be handled by a structure in which responsibility and decision-making are as diffuse and informal as they are within the CGIAR.
- b. It is not likely that the group can continue to increase funding at anything like past rates, particularly in real terms. Moreover, some of the activities being supported are clearly less effective than others. This situation calls for an ability to allocate available funds, and to cut back and possibly eliminate some programs. The group does not seem to have an effective means of taking such decisions within the present structure. (It should be noted that the group has been able to deal with significant management problems, as in ILRAD, and to withhold planned growth for a center which lacked program focus, ILCA. It has, however, let the WARDA situation continue and has waffled on the problems presented by ICARDA. There has been some adjustment of programs in response to priority recommendations of the TAC, but in the budget crunch of 1981, reductions were allocated largely on a percentage basis, and the system has reacted mainly by trimming in easy and temporary ways, such as reducing training programs.)
- c. There has been no effective means of setting priorities for new activities and moving promptly to implementation of new programs. The TAC has studied subjects such as water management, plant nutrition, fisheries, vegetables and others for a number of years without concrete result.
- d. Relations among the three co-sponsors have never been entirely easy. The FAO has wished to have a greater voice than it does, while at the same time providing the TAC with a relatively small and weak staff. There is a general feeling that TAC needs to be stronger, both in terms of having more time and technical capacity, and in facing complex issues which are part scientific and substantive program questions, and part political.
- e. A few donors have resented the role played by the CGIAR Secretariat, but on the whole the feeling is that the Secretariat staff is not strong enough, and should be more broadly competent in management and scientific matters. Working relations between the TAC Secretariat and the CGIAR Secretariat need to be further strengthened, which is not easy given their geographic separation, and their separate organizational loyalties.
- f. Some find anomaly in the independent role of the center boards, who owe no formal responsibility to the CGIAR which raises the funding on which the centers depend.

II.3

- g. The boards of some centers are weak, and are dominated by the director. Some boards do not contain the specific skills, such as experience in management of research programs, which are critical to their performance. There is no systematic check on board performance, and no procedure available to the CGIAR or the donors to intervene to change board membership when a board is weak or ineffective.
- h. Considerable anxiety is caused by the ineffectuality of developing country representation in the CGIAR meetings. Developing country representatives, chosen by FAO regional conferences, often do not even attend meetings and play very little role when they are present. Developing countries are represented on the TAC and on the boards of each of the centers, but the danger that centers may be unresponsive to their clients or become isolated from the communities they are intended to serve is thought to be significant.

2. Proposed changes in structure:

Those with experience in the CGIAR over even a relatively short period are in complete agreement that the group must protect its non-bureaucratic nature and avoid becoming entangled in international politics. It remains to be seen, however, what practical proposals will appear to most members to be consistent with those principles, yet provide the minimum of increased management effectiveness necessary to deal with perceived problems. Among the changes being proposed are the following:

- a. A somewhat extreme view, taken by the FAO representative who has long experience in the group and was an early member of the TAC, is that there should be a deliberate halt to expansion of program: the group should avoid growing further because the management problems will otherwise be insoluble. This is somewhat akin to the idea current at the time of the first CGIAR review that individual centers should not grow beyond a certain size because they might lose the ability to innovate and to work effectively within an informal structure if they become too large.
- b. Organizationally, there are proposals firmly held by some, that efficiency can be greatly increased if the TAC and the CGIAR secretariats can be brought together in a single staff at a single location. If the World Bank and the FAO cannot agree on a procedure for doing this--proponents of this move believe the whole operation should be at the Bank in Washington--the donors should consider setting up a combined CGIAR secretariat independent of any of the co-sponsors. This would add something to donor costs, since the co-sponsors now meet the administrative expenses of the two secretariats, but that would be a relatively small matter if the gain in management capability for the system were substantial.

II.4

- c. There are proposals to strengthen the CG Secretariat by adding more scientific capacity, and greater ability to give financial and management oversight to the centers. Single annual audits of center performance in financial management are proposed to replace the variety of audit systems now in effect. Perhaps one auditing firm under the guidance of the CG secretariat would do the entire job, with the results available to all interested donors. The Secretariat might have capacity to provide management technical assistance to centers requesting it.
- d. A related set of ideas concerns the budgeting system for the group. The report of the first review committee suggested a number of steps such as two year budgets for each center, preparation of long term plans, and other steps to improve financial and program planning. These have been only partly implemented. It is proposed now to carry these steps through completely and add features such as requiring centers actually to follow the same guidelines in preparing budget documents, and providing advance budget guidance reflecting overall priority judgments agreed by the group. These steps imply both increased capacity at the CG secretariat and a more cooperative approach from some centers. They also carry the threat of bureaucracy.
- e. Various ideas for strengthening the TAC are being considered, including enhancing TAC staff capacity, and having the TAC chairman serve full time. At the same time it is proposed to restrict the role of the TAC concentrating budget and system management responsibilities in the CG Secretariat.
- f. Some proposals would have the authority of the center boards of directors sharply curtailed, requiring them to conform to policies established by the CGIAR itself. A more likely approach would be to have the CG Secretariat, with help from donors, systematically monitor the performance of boards and use various means of improving that performance when necessary. The CGIAR could use its right to nominate members -- at all but a few of the older centers -- to ensure that each board has strong management, scientific and other needed talent. Perhaps the members named by the CGIAR should be expected to represent CG attitudes in board deliberations and otherwise play a mediating role. Also being discussed are means for the group to intervene when affairs at a center get out of hand. (The recent experience with ILRAD and ILCA suggests that means may already exist, de facto.)

II.5

- g. A central and difficult problem is how to take critical decisions on such matters as allocation of scarce funds, termination of a program, or approval of a change in priorities. The study team appears likely to recommend creation of a management committee within the CGIAR structure, including donors, representatives of center boards, representatives of the sponsors and the TAC, and perhaps a limited number of expert outsiders. This committee would meet as often as necessary during the year to make decisions on matters put before it by the Secretariat, and subject to concurrence by the group as a whole at its next meeting. It would presumably have to operate within a consensus role, but could take considerable leadership and hopefully also restrain the Secretariat staff.
- h. One proposal for enhancing the participation of LDC representatives in the CGIAR itself has been to let the new organizations of agricultural research directors for Asia, Africa and Latin America provide and instruct these representatives. One drawback is that the research directors may not reflect the economic development policies of their governments, which are also important inputs for the CGIAR. An alternative would be to have the countries that play host to centers become members of the CG.

3. U.S. philosophy in considering structural changes in the system:

It is obvious that changes of the type being discussed must reflect broad support among the donors and other agencies involved if they are going to work. It is better, therefore, for us to identify a range of acceptable outcomes rather than to try to specify a single program of organizational change and attempt to sell it to the group.

It is clear that the CGIAR has already grown too large to work precisely as it has in the past, so that some changes are needed whatever the prognosis for program growth in the coming five years.

The idea of taking the secretariat functions away from the FAO and the World Bank has a superficial attractiveness. But it would risk losing support in both those organizations, which remains important financially in the case of the World Bank, and in other ways for both. Given the broad responsibilities of the FAO in world food matters and the tenacity of that agency's leadership, it could be divisive to attempt to cut the CGIAR entirely loose from FAO. The overall administrative and analytical capacity of the World Bank and its willingness to make the cause of the CGIAR its own on many occasions may well continue to be important in the future, as it has been in the past. Therefore we should oppose any effort to do away with the sponsor role of the World Bank or the FAO or both.

25

II.6

On the other hand, most of the proposals for strengthening the CG Secretariat and the TAC do make sense, as does the proposal for a small management committee. We will want to study carefully the proposed make up of the committee in terms primarily of its capacity to take effective action. While strengthening TAC we should probably also circumscribe its role, shifting the main responsibility for budget to the management committee with support from the CGIAR Secretariat, and technical advice from the TAC.

Any significant reduction in the independence of centers and of their governing boards should be opposed as striking at the heart of what makes the center system work. On the other hand, means do need to be found to ensure continued high quality membership on boards, to monitor board performance, and to intervene when necessary to strengthen boards. As for participation of ldc representatives in the CGIAR meetings, we should not oppose any reasonable means of making such participation more effective, so long as there is not a tendency to bring the North/South dialogue onto the annual agenda of Centers Week.

III.1

III. U.S. management of participation in the CGIAR:

In preparing this paper, we have found that while we know a good deal about some of the centers, we should know much more about many of them, not only to discharge the responsibilities connected with our support for centers and for the CGIAR system, but also to make useful connections between center work and other parts of the AID program, particularly mission activities. The size and importance of the enterprise seems clearly to justify some increased management attention.

Before coming to a judgment about how much staff time should be invested, and how it should be organized, it is first necessary to consider whether: we should work mainly to support the CGIAR's own machinery, making it work as well as possible and then basing our own program decisions on the product of that system; or we should treat centers as if they were independent projects and place most of our energy in management of our investment in each center. For the latter approach we would probably need a total of five work years of technical staff devoted to the CGIAR, while to do an adequate job of supporting the CGIAR structure would take at least three professional work years. The present level is estimated to be a work year and a half.

The choice to be made obviously relates to the approach we take to the CGIAR budget: if we decide to concentrate our funds on individual centers we judge to be of high priority, our principal management relationship will presumably be with those centers rather than with the group. On the other hand, if we continue to provide a specified percentage of the total CGIAR program, we have at least the option of concentrating our effort at the level of the whole group.

If we decide to work mainly through the CGIAR system, we would not conduct our own audits or evaluations of center activities, but would spend time instead on helping ensure that these studies as conducted by the CGIAR were directed to the most important issues, and in interpreting the results.

There would be a great deal to do both directly and indirectly to support the system, which can only work if there are well informed donors to serve on the management committee and bringing to that role extensive understanding of what is happening in the system and its various parts. In addition, the A.I.D. staff could take greater interest in the membership of the boards of trustees, canvas U.S. agricultural laboratories, universities and private firms for suitable members, and perhaps provide inducements for them to serve and to spend sufficient time on the work of the center.

We could engage in a continuous search for suitable candidates for various CGIAR posts, such as membership on the TAC, using the field missions as a source of candidates. Contacts with the representatives of other donors could be kept current, along with knowledge of center activities. We could perform our own analysis of CGIAR priority issues, using TAC data and analysis and adding to it.

III.2

More specific attention could be paid to the interface between U.S. research and technical assistance contractors and grantees and individual centers. The BIFAD and JRC could be provided with complete and up-to-date information about the work of the CGIAR and their advice fed back into the system. Time could be spent promoting increased attention by the U.S. scientific community to basic research issues arising from centers' work.

It seems likely that the Ford and Rockefeller Foundations will be pulling back from their engagement in the CGIAR, going on after twenty or more years to new endeavors. Much of what has been suggested above would replace a role these Foundations have played, for example in providing members to the board of centers with enough time to devote substantial attention to center affairs. Another role played particularly by the Rockefeller Foundation has been to provide key scientific staff to the centers with long term job security, thus making it possible for outstanding U.S. scientists to commit themselves to center work for substantial periods. AID might well consider whether actions on this line, and in other ways picking up some of the foundation role, may be needed to strengthen the CGIAR system.

The principal argument for working with individual centers is lack of trust in the capacity of the system to do an adequate overall management job, and the need for the United States to ensure that its contributions are well and appropriately used, whatever happens to the CG and to other aspects of center activities.

If we can assume that the CGIAR will adopt effective measures to improve the functioning of the system, it seems clear that on the grounds of staff efficiency and greater development effectiveness, working through that system is the obvious choice.

1. Staff commitment: In order to carry our weight in the system, assuming a reduced role for the Ford and Rockefeller Foundations, AID should commit three years of professional time, with adequate secretarial and travel support, to the CGIAR. The officers involved need to be protected from other demands on their time, so that they can give first priority to CGIAR matters, even when these seem less pressing.

2. CGIAR representation: In contrast with some other donors, the United States has changed its representation in the CGIAR rather frequently, having no one presently active in a senior role whose experience goes back to the earliest years of the CGIAR. Other donors have managed to keep the same individual as representative to the group for longer period, or have had individuals associated with their CGIAR delegations for long periods as senior advisors. They have been able to establish their people in roles of trust and leadership beyond those justified by the relative size of their contributions.

III.3

Given the prestige attached to the CGIAR and the U.S. system of replacing senior policy officials after each change in the Presidency, it will be difficult for the United States to keep the same person as its CGIAR representative for a great many years. Other means of continuity should be sought, including the possibility of having a senior agriculturalist serve in Washington for a tour of five years or more with lead responsibility for the CGIAR, or associating one or more outside consultants with U.S. participation on a more or less permanent basis.

3. Role of BIFAD and JRC: A JRC subcommittee has made important contributions to the present study. The question remains of what role the JRC should have on a continuing basis with respect to the CGIAR and other international agricultural research centers which are clearly intended to be considered a part of the Title XII program.

Whichever part of the BIFAD structure, the JRC or the JCAD, is held responsible for recommending initiatives in building national research systems in the developing countries, that organ clearly needs to be fully aware of the work of the international agricultural research centers. These centers must be linked to national systems in order to function effectively; national systems can and should draw on the capacities of the centers. Moreover, there is always the possibility of using ISNAR services, whether or not financed by the United States, in assessing country needs and designing appropriate institutions.

More broadly, the work of the CGIAR and other international centers should find a place in the JRC consideration of overall priorities for agricultural research for AID support. The JRC needs to take into account what the CGIAR is doing and plans to do whenever the JRC is considering priorities for the AID research program, and should comment on CGIAR programs and priorities in that light.

To assist the JRC in carrying out its functions, the AID staff concerned with the CGIAR and with other centers should refer to the JRC for information and recommendations any evaluations of centers, analysis of program priorities, or other long term planning documents for the centers or the CGIAR as a whole. When the JRC makes recommendations they should be taken fully into account in determining the U.S. position. The JRC should not deal directly with the CGIAR system on policy or program matters, but should do so through AID.

The JRC should place international center issues on the agenda of the BIFAD whenever it seems appropriate. BIFAD does consider CGIAR budget provisions in the course of its annual review of the AID budget, and that would continue and hopefully be better informed as a result of the consideration suggested above.

III.4

A particular concern of the JRC will continue to be how the work of U.S. agricultural research institutions, and universities engaged in overseas technical assistance, can be tied into the efforts of the international centers, to the benefit of both.

(Note: The above paragraphs are subject to review on behalf of the JRC.)

4. Handling CGIAR funding in the AID budget: In practice, the required annual contribution to the CGIAR is generally known fairly well at the time of AID budget formulation, and tends to hold at or close to its original level through the entire budget process to actual implementation of the program. Central programs as a whole, however, tend to be cut at least proportionally from initial budget levels in response to reductions made in the OMB process or by the Congress. As a result, the food and nutrition activities of DSB, and more particularly the work of the Office of Agriculture, often take a disproportionate reduction because of the necessity to protect the CGIAR contribution. As the CG contribution has grown through the years while AID budgets have not, this effect has become more and more marked.

The solution would appear to be finding a means whereby the CGIAR contribution can compete against the whole food and nutrition account independently of other DSB food and nutrition programs which also should compete with the whole food and nutrition account. Another way of phrasing the desired result is that the CGIAR amount should be fixed as an AID decision, not a DSB decision.

The simplest way of achieving this would be for the CGIAR amount to be placed in the OYB and other budget documents as a separate element, and not merged with the DSB food and nutrition total. Treating the CGIAR figure as a separate item would ensure that other central food and nutrition activities would not be automatically downgraded in priority but could be judged on their own merits.

Another approach would be to have a separate appropriation line for the CGIAR, somewhat like the new program for Science and Technology Cooperation. This would have the drawback of requiring the Congress to make an explicit decision each year on the CGIAR contribution, thus reducing flexibility to adjust to such events as a shortfall in other donor contributions. It would also introduce an apparent reduction in AID's emphasis on food and nutrition. Improved internal management of the allocation of funds, as suggested above, seems the best alternative.

V. Additional Priorities for the CGIAR

IRRIGATION WATER MANAGEMENT

Developing countries and development agencies are making major investments in irrigation to increase food production. The expected investment from 1980 to 2000 is about \$100 billion (1980 dollars). Much of the total will be in new irrigation systems, but the higher priority (and investment return) is for the \$20 billion investment to increase the efficiency of the final watercourses and the on-farm use of water in existing and new irrigation systems.

Significant improvement of the watercourses and the on-farm use will deliver more water to the plants when they need it - the purpose of irrigation. More acres can be planted and higher yields obtained, thus increasing the return on the investment in the whole irrigation system. Water-logging and salinity can be prevented, thereby avoiding losses associated with poor water management.

While AID generally knows what we want to accomplish, we do not know how we can best accomplish it. CGIAR donors and TAC have examined the needs and opportunities for an international effort to improve on-farm water management, but there is not yet a consensus in CGIAR on what needs to be done. TAC recommended a research and training center be established, but CGIAR was not willing to proceed without further analysis. CGIAR apparently wanted a more thorough analysis of the problems within context and the comparative advantages of alternative solution models. TAC has not been responsive to CGIAR's request for further analysis and we do not expect TAC to produce an analysis and strategy that will engender positive action by CGIAR in 1981.

While the function of an international effort on water management has not been set, we see the priority development opportunities centering on our ability to improve the efficiency of final delivery and on-farm use of irrigation water. We need to be able to do two things. First, we need to be able to continuously increase the water management efficiency in existing irrigation systems. Secondly, we need to be able to organize the management of water in new irrigation systems so that its use efficiency will be as high as possible. Moreover, in each of these situations, we cannot be satisfied with a one-time input of technology to increase water management efficiency by an increment. Instead, we see increasing water management efficiency as a continuous process, just as improving a crop or an animal or the management of soil is a continuous process. Each nation having extensive irrigation lands thus needs to be able to monitor what is going on in a given irrigation system; to identify potential improvements in that system; try such improvements on an experimental basis; select those that prove usable; see to their adoption on a widespread scale; and continue monitoring the water management system and continue to identify the next increment of improvement. The products of an international effort in this area must be useful in many locations. One-time pieces of technology will be less useful than the development of national capabilities to continue to improve water management.

On an international level, we can do several things to help developing countries get the needed flow of improved water management technology. We can call attention to the improvements that can be made in this area and show how a flow of such improvements can be developed. This is no small service, and if an international effort did nothing more, it would still be worthwhile. We can develop efficient methods for monitoring an irrigation system to learn

where the water management inefficiencies are occurring. We can train people to do that monitoring and to adapt monitoring principles to their own situation. We can try assumed physical, biological and social improvements in water management and decide whether they are likely usable and cost effective in a given site. We can train people to do that same kind of research in their own situation. We can facilitate communication on methods being used to monitor, research and improve water management and their results. Needed technology on irrigation methods and timing for a given crop or for a given soil will be developed in national stations and international crop centers and should not form a significant part of an international water management effort.

We have not established a firm position on the form of an international effort, but we are not convinced that a major research center with the usual investment in physical plant is the best, or even a usable, model. We see need for the work (mostly learning-by-doing) to take place in the living laboratories of actual command area development projects. Modest analytical laboratory facilities would be needed. We think the effort might best be held to a staff of 10-15 people during the first 5-6 years. A \$3 million per year budget would then cover operating costs. Initial capital might run \$3 or \$4 million. Bilateral donor project and host country funds would likely form major inputs. The concepts should be tried in one location. If successful, additional locations could be developed where the water management problems were significantly different. The costs of additional locations would not be much less than costs of the first location.

India seems anxious to move ahead in this area. A.I.D., Ford Foundation and the Government appear to favor an international effort but may be too impatient to wait for CGIAR action. A.I.D., because of its work in Pakistan, is the technical leader in on-farm water management among donors. The World Bank is the major funder and is making large investments in India. A major effort is almost certain to develop in India during 1982. If compatible with India's needs, A.I.D. could encourage the development of a national effort in India in ways that would facilitate its transformation to an international program. If the CGIAR does not develop an international effort in 1982, a small group of donors could act apart from the CGIAR. In any case, A.I.D. (DS/AGR) needs to have about \$0.5 million to help start an international program in on-farm water management during 1982 and about \$1.0 million in 1983. USAID/Delhi will likely help fund the India-specific portions of the program, perhaps up to \$2 million per year.

A series of bilateral projects could partially substitute for the international effort, but would require much greater total inputs if AID were involved. Many of the benefits of an international effort would be foregone with a series of bilateral efforts, but the U.S. would be more visible.

Williams

PLANT NUTRITION RESEARCH

TAC and CGIAR have considered plant nutrition research important within the total context of agricultural development. The formation of the International Fertilizer Development Center in the U.S. resulted in part from that priority. At the time IFDC was formed there was some discussion with CGIAR of forming a broader effort in the area of plant nutrition. While IFDC began its work on fertilizer technology the companion work on other aspects of plant nutrition did not develop. At the May 1979 meeting of CGIAR in Paris, it became evident that the U.S. proposal that IFDC be accepted as a full member institution in CGIAR was going to be turned down. In part in response to that situation, but also in response to the continued recognition that plant nutrition research was important for development, the CGIAR asked TAC to do an analysis of the global research work in the area of plant nutrition and recommend what actions, if any, the CGIAR should take in this area. Several persons thought that the TAC was being asked to do this analysis simply to avoid having to turn down the U.S. request for IFDC admission into the CGIAR. While there was some element of truth in that, many also consider that an analysis of plant nutrient research, regardless of IFDC, was of sufficient priority to warrant the analysis.

At a later meeting, TAC developed an outline of a paper on plant nutrition and agreed that they would ask two scientists at North Carolina State University to undertake the analysis. These two people had been involved in a similar analysis for AID leading to a proposed CRSP on soil management, and they were expected to have much of the needed base data.. The draft paper prepared by these two scientists has been presented to TAC and we have a copy. The authors relied heavily upon the analysis they had done on soil management and their suggestions in this paper on plant nutrition work seems to give too little emphasis to the plants and their relationships to the nutrients. I understand it is being revised to correct this deficiency. The authors use an agro-ecological zone approach to the subject of plant nutrition, as they did in the subject of soil management. Their zones include the humid tropics, semi-arid tropics, acid savannas, wetlands and steep lands. The authors describe research needs in terms of those related to resource appraisal, alleviation of stress factors, alleviating nutritional constraints, using biological resources, alleviating physical constraints, improving farming systems, and technology transfer. They suggest three alternatives for doing the needed research. One alternative is to strengthen existing organizations for this research, both national and international centers (including IFDC). A second alternative is the development of a center with a small technical staff that would act as a catalyst to foster the needed research in existing organizations. The third alternative is the development of a full-fledged international institute that would do research and training in plant nutrition. TAC has asked the authors to flesh out some of the ideas expressed in the paper on alternatives but to not make recommendations.

In mid 1979, 70 soil scientists met at IRRI to discuss "soil constraints to food production". A major recommendation of that conference was that a steering committee develop a proposal for the establishment of a board to promote coordinated research to alleviate soil constraints to food production

in the tropics. Such a board has now been proposed under the name "International Board for Soil Resource Management (IBSRM)". The recommended structure involves a board with a small permanent secretariat. The Secretariat would maintain soil management and soil characterization functions, offices for training and information services. The proposal for the formation of such a board identifies 4 ecological regions and the major soil limitations that restrict plant growth in each. The proposed board would provide support for networks or cells of research workers working on the alleviation of specific soil constraints for the development of soil management methods for different ecological regions. It would coordinate research on soil constraints by various national and international bodies, particularly the international agricultural research centers. The board would facilitate the translation of soil management and other research findings to other soil conditions by linking the research of the national programs with that of the centers. This approach seems very similar to the Benchmark Soils Project financed by DS/AGR for several years.

In spite of the association of plant nutrition research with the U.S. attempt to have IFDC sponsored by the CGIAR, it is likely that CGIAR will consider research on plant nutrients as fairly high priority for CGIAR action in the future. At this time one cannot prognose accurately the form or the subject of such an effort but it is reasonable to assume that the large international center mode would not be selected.

Much of the thinking on plant nutrition to date seems to have been done by persons whose first consideration is the soil and the soil solution from which plant nutrients are derived and little thought has been devoted to the problem by plant physiologists. It is reasonable to assume that this deficit will not go unnoticed in TAC and the donors and that whatever proposal eventually emerges in the area of plant nutrition will give plants, water and the soil a balanced view. It is probable that any effort by the CGIAR would be in terms of a secretariat and small technical coordinating unit that would require relatively few funds.

Williams

AID CGIAR StudyIV. Conclusions and Policy ProposalsA. Program plan and budget for the CGIAR over the next five years (1982-86).

The existing consensus approach to CGIAR five year budgeting is a nominal 20% growth rate, which was expected to provide up to 3% real growth for mature centers, to bring younger centers up to their planned levels of development and then limit them to a 3% maximum, and to allow for the addition of one new program per year. On the assumption of about 9% inflation on the average, the real growth would be on the order of 10% per year.

In 1981, the first year of the consensus approach, contributions have increased about 15%, and inflation seems to be running at 15%, so that there was no real growth achieved in the system overall, and some decline in some centers because of the need to provide for capital expenditures.

Based on this experience, a more realistic approach to five year planning should first of all separate increases in the cost of doing business from program content and deal with each separately. Secondly, it should be based on specific planning for each center, not on broad rules of thumb. Thirdly, it should allow enough flexibility to adjust to new program judgments and opportunities, and to changed economic and other circumstances. Fourthly, it should distinguish the capital costs of program expansion from continuing costs such as operating expenses, repair and replacement of plant and equipment, and increases in working capital made necessary by inflation.

This discussion deals first with program substance, then with priorities and lastly with inflation.

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IV.2

Since it is the first AID attempt to design center by center plans, it is subject to refinement in the light of further information and argument. Proposed AID contributions for FY 1982 will be determined through the normal approval process and for FY 1983 during the forthcoming AID budget review.

1. Centers to be kept level: Based on the specific discussions in the earlier part of this paper, it appears that IRRI, CIMMYT, CIP, IBGPR, IFPRI, CIAT and IITA should be held close to 1981 approved budget levels for the coming five years.

Such an approach assumes that problems identified in the analysis above can be handled without increased real program levels. The conclusions of TAC five yearly evaluations, or other evidence, may lead to revision of these projections. For example, it might be concluded that the CIMMYT method of using regional staff charged to its core budget to cooperate with national research systems is more efficient than the IRRI method of providing technical assistance teams financed through projects outside of the CGIAR budget. In that case, a real increase in the CIMMYT, and perhaps the IRRI programs as well, might be justified. Keeping the budgets level for planning purposes would not imply a static program. But each TAC evaluation team should be instructed to identify about 10% of the program of each center which it considers to be of lower priority than the rest, in case reductions need to be made, and in proposing any increases in expenditures, to identify compensating reductions that can be considered. Perhaps more important, the review of biennial budgets submitted by each center should focus on identification of low priority items which could be the basis for reductions if required, or could provide scope within any budget level for new activities at the same or another center.

IV.3

2. Centers to be brought up to planned size and then held level:

ISNAR will reach its planned level of 20-25 professionals in 1982. Further budget expansion is expected to be in the form of projects financed by donors outside the CGIAR framework. Since all agree that building the capacity of national research systems is a relatively neglected and critical part of the system for increasing food production in developing countries, the sensible course is to support ISNAR at the planned level for a period of years until its effectiveness can be evaluated.

ILRAD should level off at the planned operations budget of \$11 million in 1981, but the planned additional housing should be built when funds are available.

3. Center requiring expansion not yet approved by the CGIAR:

ICRISAT. The expansion would provide for establishment of a sub-center activity in Africa, as called for in the recent TAC five year review and now proposed by the Board. As this plan is considered thought should also be given to ways of saving costs in India, which has a very accomplished national research system, to which some work might be transferred. ICRISAT would stabilize at about 80 senior staff and \$16 million in operations.

4. Centers requiring special treatment:

WARDA: Thought should be given to transfer of WARDA out of the CGIAR system through creation of a special donor group for WARDA. The U.S. would be an active member of this group, with funds managed by the Africa Bureau. Requires the creation of an evaluation and audit structure for the WARDA program through the new donor group. This would be treating WARDA in a similar way to our approach to regional and sub-regional research and extension agencies in general. The WARDA-derived model could be used for other regional units, such as CATIE.

IV.4

ILCA: Should be placed in a holding pattern pending establishment and CGIAR acceptance of a clear, achievable mandate and a new strategic plan. No further capital expenditure, minimal operating expense budget. The forthcoming TAC review is a critical turning point. Funds can be conditionally programmed in future years to bring ILCA up to the originally intended scale (recognizing that this may need change) both in capital and operating expense categories.

ICARDA: program should be held at current levels pending resolution of the security situation and the interest of OPEC nations. This will permit continuation of good quality but limited research. No further capital expenditure should be made in Syria or Lebanon. At a point when security seems to permit, or after two years whichever is less, a new implementing agency should be chosen by the CGIAR to work with the existing Board on replanning the center to take account of change in circumstances. On the assumption that OPEC countries will later come in as substantial donors, the CGIAR planning budget should contain conditionally programmed funds for the full capital and operating budget originally planned.

5. Additional priorities for the CGIAR:

Given the general mood of the donors and TAC, the CGIAR is not likely to start another major center involving a large physical plant and scientific staff during the next five years. Each item of high priority will be considered or fit into current centers. For example, if work on plantains is needed, the IITA program will be examined to see how well plantains would fit in. If a high priority area does not fit well into the present centers, alternative models will be examined. This is happening in the case of on-farm water management, and will likely happen in the case of plant nutrition.

The water management program most likely to develop would include a training and quite modest field research effort in India. The learning and teaching would take place within canal command area development schemes funded by India, the World Bank or AID. The operating costs of the international program would be about \$3 million a year. Capital costs for simple labs, equipment and training facilities would cost about \$4 million. The international staff would be 15-20.

The plant nutrition program is likely to be based on expansion of work at the existing centers or a network of soil scientists and plant physiologists with a small coordinating unit. A large classical "center" is unlikely.

6. Budgetting for inflation

Looking back over several years of experience, an average rate of increase of costs of 9% does not seem unreasonable as a basis for long term projections. There is certainly no reason to insist upon 1980 experience as representing a new norm. On the other hand, the financial planning needs to take into account the possibility of variations both up and down, the reality of different experience in different centers, and the need to make management decisions to reduce costs as much as possible. It is therefore desirable that the CGIAR Secretariat become more active in assessing the performance of centers in dealing with rising costs, making as good projections as possible of inflation rates taking account of the markets in which each center purchases and the variation of exchange rates. Excessive cost increases in any one place may call for a new management approach to dealing with a specific research need.

IV.6

The recent history of IITA is a case in point. Government policies have greatly increased the cost of IITA's program in Nigeria. IITA also needs to move technology components to their client nations. IITA is considering some shift in emphasis in its program from on-campus work to client nation locations both to test technology components and upgrade local research and extension capabilities.

As for the long term budget, the best approach would be to use an average based on several past years applied on a center by center basis to project the cash implications of the program plan. For the short range, the Secretariat should inform donors in time for their budget process (just over a year and a half ahead of the beginning of the calendar year in AID's case) of the cost of the agreed program plan plus expected inflation for that year, as best they can judge it. The assumption would be that both donors and the system would then plan on this basis and that adjustments would have to be made within the total if necessary. That would mean that higher than expected inflation would be reflected in temporary program reductions or postponements. Lower than expected inflation would lead to savings by donors if the change occurred before the grant was made to an individual center. If windfall savings are realized by a center after a grant is made, there should be arrangements to use them to reduce future needs, and not to permit unplanned program expansion.

7. Alternative CGIAR budgets:

There would be a range of possible approaches to the CGIAR budget in purely nominal terms: for example continue growth at 20 percent a year which is the consensus of 1979; or keep the budget fixed in dollars allowing inflation to eat into the program. Neither of these nor any other approach based purely on money figures seems to make sense. It would be better to agree on a broad program strategy and then attempt to meet the costs

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of that strategy from year to year unless inflation becomes such an overwhelming problem that the strategy needs to be reconsidered. The choices seem to be:

- a. To plan a reduction in the real level of total CGIAR expenditures.
- b. to hold the real level steady, balancing reductions against increases.
- c. to be willing to consider specific program increases up to a given percentage per year.

In connection with alternatives b and c, it would be necessary to add amounts for capital expenditures in some years depending on the initiatives chosen.

The following paragraphs try to establish priorities for reductions from the present level and priorities for increases, leading to a choice of overall program strategy.

To translate our proposals into specific numbers, we have worked on the basis of approved 1981 budgets, which will be somewhat above the actual funding level for 1981. Forward projections are in 1981 dollars, assuming that the policies recommended could be implemented in 1982. The results are then computed in current dollars on a rough projection of inflation rates.

8. Priorities for reductions (in order):

- a. Eliminate at once any areas of activity within existing centers which are judged to be of lower than acceptable effectiveness, and use the forthcoming set of five yearly evaluations under TAC to identify low priority areas within existing programs which can be cut back. At a moderate level of severity this should probably be done in any case.

b. Eliminate WARDA on the grounds that it does not fit the CGIAR policy, would not be admitted if suggested now, and is best sponsored and monitored by a group of donors who consider research and extension aspects and overall organizational performance together in the light of West African needs. WARDA would continue to receive U.S. support; it would be linked to the CGIAR through relationships with IITA and IRRI.

c. Hold ICARDA substantially below planned levels. The present research in Syria should be continued at its current level, with no additional capital expenditure. There should be no further capital costs incurred in Lebanon or other countries. The research should be restricted as at present, to serving dryland agriculture. No further consideration should be given to development of sites in Iran, Turkey or other locations. The OPEC nations should be asked if they are sufficiently interested in ICARDA to fund construction of the physical plant (\$30 million). If they will do that, and agree to put up half the operations budget we will agree to allow ICARDA to devote up to half its core research program to service to irrigated agriculture. If the OPEC nations are not interested, we should maintain ICARDA as a dryland research unit if it can function from a security standpoint and at reasonable cost.

d. We should attempt to resolve the mandate and program issues of ILCA during the 1981 review. If they are resolved to reflect a move away from systems analysis, reliance on "shelf technology", and "monitoring" to opportunity identification, development and introduction of technological change with measurement of attributable effects, the U.S. should support the development of ILCA to a senior staff level of about 60-70 (assuming they can function as an international center in Ethiopia). If not, the U.S. should judge whether the current program is worth supporting, assuming gradual shifts

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in program emphasis as characterized above. If the present program seems certain to continue, we should withdraw our support after 1983, but tell ILCA our intentions during 1982.

e. If a decision were made to reduce program levels by a substantial amount, the same exercise as in a. above could be conducted with a higher target of reductions in mind.

9. Priorities for increases (in order):

a. ICRISAT/ISNAR: Given the critical nature of enhancing national systems, and of increasing grain production in the semi-arid parts of Africa, highest priority should be given to bringing ISNAR and ICRISAT up to planned levels within any alternative.

b. Water management: ranked high because of the leverage which improved water use technology has on enormous investments being made and planned. This would be a program rising to \$3 million per year plus about \$4 million in capital expenditure. Issue: could this be handled equally well outside of the CGIAR?

c. ILCA: sufficient operating and capital funds to mount a well considered approach to livestock in African farming systems.

d. An unspecified initiative to begin in 1985, perhaps in plant nutrition, on the same scale as water management.

e. Allow small increases in the programs of successful existing centers, particularly those that would link with basic research conducted elsewhere, and those that would form more effective working relationships with national systems.

f. Replan ICARDA at a level adequate to meet the needs of the dry areas and the plateau areas.

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CENTER BUDGETS (\$ millions)

Center	1979 act.			1980 est.		1981 est.		Future budgets (1981 \$), U.S. Plan				
	Total (cap)			Total (cap)	Avail.	Total (cap)		1982 (cap)	1983 (cap)	1984 (cap)	1985 (cap)	1986 (cap)
A. Stable												
1. CIAT	14.3 (1.7)*			15.0 (0.6)	14.4	17.4 (0.6)		18.0	(Some shifts may occur among centers.)			
2. CIMMYT	14.8			17.0 (0.3)	16.3	20.4 (0.5)	21.0					
3. CIP	7.2 (0.6)			8.0 (0.4)	7.2	9.4 (0.9)	9.0					
4. IITA	16.9 (3.5)			15.1 (0.8)	14.5	17.1 (1.2)	18.0					
5. IRR1	14.2 (0.6)			15.9 (0.4)	15.7	19.4 (0.5)	20.5					
6. IBPCR	2.4			3.1	2.9	3.4	3.5					
7. IFPRI	1.9			2.4	2.4	3.0	3.0					
								Subtotal \$93 million. *				
B. Planned Growth												
8. ISNAR	-			1.2	1.1	2.3		3.5	3.5	4	4	4
9. ILRAD	7.4 (1.8)			10.4 (1.6)	10.0	11.5 (1.6)		11.5 (0.5)	11.0	11	11	11
10. ICRISAT	12.2 (3.5)			12.4 (2.2)	10.4	13.9 (1.7)		15.5 (1.5)	17.5 (1.5)	16	16	16
C. Special Treatment												
11. WARDA	1.8 (0.3)			2.8 (0.2)	2.6	2.9 (0.2)		3.0	3.0	0	0	0
12. ILCA	9.0 (1.5)			9.0 (1.1)	8.9	10.1 (1.5)		9.0	9.0	9	9	9
13. ICARDA	10.1 (3.6)			11.8 (3.1)	11.5	14.9 (3.0)		12.0	12.0	12	12	12
								Subtotal (\$1981) 147.5		149	145	145
								(\$Current) 170.0		193	204	222
D. Provisional Additional												
14. Water								1.0	5.0 (4)	2	3	3
15. ILCA								-	2.0	3	3	3
16. Unspecified								-	-	-	1	5(4)
17. ICARDA								-	-	7(7)	7(5)	7(5)
Totals												
(\$Current)	112.2 (17.1)			124.2 (10.7)	117.8	145.6 (12.0)		148.5(2.0)	156(5.5)	157(7)	159(5)	163(9)
								171	201	220	243	272

* For 1979, '80, '81 figures in parentheses are capital component of total budget. Amounts up to about five percent of the total budget are usually for increases in working capital, routine replacement and repair. From 1982 onward these are included as part of ordinary operating costs and only significant capital costs are shown.

1982 Planned Budgets.
CGIAR Secretariat and A.I.D. compared:

<u>Center</u>	<u>CGIAR Plan</u> Total (cap)	<u>AID Plan</u> Total (cap)
A. Stable		
1. CIAT	20.5 (0.5)	20.7
2. CIMMYT	24.4 (0.5)	24.2
3. CIP	11.0 (0.4)	10.4
4. IITA	21.0 (0.8)	20.7
5. IRRI	23.2 (0.8)	23.6
6. IBPGR	4.0	4.0
7. IFPRI	3.5	3.5
B. Planned Growth		
8. ISNAR	4.2	4.0
9. ILRAD	12.7 (1.2)	13.2 (0.6)
10. ICRISAT	18.3 (2.4)	17.8 (1.7)
C. Special Treatment		
11. WARDA	3.4 (0.1)	3.5
12. ILCA	12.7 (1.8)	10.4
13. ICARDA	18.5 (2.5)	13.8
Totals	177.2 (10.8)	169.8 (2.3) **

* AID figures include increases in working capital, routine equipment replacement and repair and upkeep of buildings as part of ordinary operations. Only significant capital costs are identified (at ILRAD and ICRISAT).

** Significant variations are at ILCA and ICARDA where AID suggests no significant additional capital investment or increase in operations over 1981.

10. Proposed position:

Adopt reductions (a) general comb out of less effective programs; (b) move WARDA off CGIAR funding; and (c) phase ICARDA down and replan at a more modest level.

Adopt increases (a) ICRISAT, ILRAD and ISNAR to planned levels; (b) initiative in water management; (c) replan ILCA on an adequate basis; and (d) allow for one additional initiative in 1985, and (e) balancing increases in programs of existing centers.

The overall financial implications of this position cannot be accurately predicted in part because of a number of individual judgments about programs need to be made, and in part because of uncertainties about the rate of inflation. In terms of 1981 dollars the total figure might be \$156 million for the CGIAR in 1983 rising to \$163 million in 1986, and including provision for capital expenditures in the following amounts:

1983	\$ 5.5 million
1984	\$ 7.0 million
1985	\$ 5.0 million
1986	\$ 9.0 million

Inflation should be projected on a center-by-center basis. But for a broad estimate, if it is assumed that there is a 15 percent rise in costs between 1981 and 1982, 12 percent in the following year and 9 percent each year thereafter, the total requirements under this formula in millions would be \$201 in 1983 and \$272 in 1986, compared to projections of \$223 and \$342 under the present formula.

B. The interaction of the centers with national systems in developing countries.

One way of stating the mission of the centers is the production of technology to be received by national research systems in developing countries, and adapted and applied to their food production problems. Thus, the relationship with national systems is critical to the effectiveness of the CGIAR structure. A small but growing number of developing countries have national research systems that require from international centers only genetic material they can incorporate in their own breeding programs, collaboration on complex or novel research problems, information on genotype performance and experience in other countries or relevant work in other laboratories, and an opportunity for professional interchange. Many developing countries, on the other hand, have only rudimentary research systems of their own and need technology that is almost ready for direct dissemination to farmers. The centers have to meet the varied needs of their national clients, and adjust to changes in those needs over time.

National systems also play a critical role in center research because they provide the indispensable network of research and experimental sites in different ecological conditions.

The issues that have troubled the CGIAR and the centers for many years are how far the centers should be expected to go in helping to strengthen national systems, how deeply they should become involved in national campaigns to raise production using center generated technology, and the best means for cooperating with and helping to strengthen national systems.

It is clear that the centers do not necessarily have a comparative advantage in helping developing countries plan and develop overall national agricultural research systems. Since there is continued demand for assistance

in this area beyond what was being provided by bilateral and multilateral assistance agencies, the CGIAR created the International Service for National Agricultural Research (ISNAR) devoted exclusively to this function, but with the expectation that most of its project costs would be met outside of the CGIAR.

On the question of how centers should think about their own role, the first CGIAR review concluded:

...cooperation with national programs is a vital component to the research activities of all centers. As a general rule the primary purpose of such cooperation should be research to advance the central mission of the center. However, centers should be alert and responsive to opportunities for additional cooperation with national programs, provided extra-core funds are available, the project is appropriate, it does not distort their central research thrust or place an undue burden on the center's administration personnel, and the review procedures [concerning long-range center planning] are met.

This remains a reasonable approach to the issue today. It has been interpreted flexibly by centers in accordance with their particular circumstances. For AID it is important to recognize that centers may not always be able to undertake technical assistance responsibilities we would like to thrust upon them. We should refrain from putting pressure on centers to accept project implementation roles which they feel are not appropriate for them or would strain their capacity.

Different models of cooperation with national systems persist among the centers, exemplified on the one hand by CIMMYT which maintains relatively large numbers of regional representatives to work actively with a number of

national systems; and on the other hand by IRRI which has a large number of contracts to provide technical assistance to individual national systems financed by donors outside the CGIAR framework. There is no agreement within the CGIAR on which of these approaches is more cost-effective, and it is not clear that any one center could easily change its structure. Clearly, the IRRI approach places less burden on the CGIAR budget proper, but the overall impact on aid donors and national systems is unclear.

C. The interaction of centers with research institutions in developed countries.

As the center by center analysis shows, it is usual for an individual center to have several active cooperative relationships with laboratories in advanced countries, some financed through the center budget and some not. Moreover some centers, CIMMYT in particular, produce scientific results which are of importance to the developed countries, so that the relationship is by no means a one way street.

The question of the center role in basic research is a subject of quite active discussion in the CGIAR review. There is a perception that the levels of production increase sought in developing countries over the long term can only be achieved through the discovery of new and fundamental knowledge in such areas as plant nutrition, photosynthesis, nitrogen fixation and stress tolerance. Some centers see themselves evolving over time toward institutions that do more basic research while applied studies are capably handled by national systems in developing countries.

It is misleading to talk in terms of basic and applied research. The centers are, and should remain, rigorously mission oriented. If solving a particular research problem is necessary in order to increase production of a crop within a center mandate, the center should not be deterred from

performing the research merely because it involves some elements of basic research. The choice of whether the particular work is done at a center, or contracted to another laboratory, should be resolved on the basis of cost and efficiency. Moreover, the centers need an active concern with quite fundamental studies in order to remain scientifically sharp.

On the other hand, centers should not be doing or financing broad spectrum research aimed at producing greater knowledge without direct relevance to production results. This is a job for institutions with scientific rather than production goals and for budgets other than development assistance.

It would be wasteful, however, not to draw from the centers the clues to requirements for basic research which arise from their experience of the needs of developing countries, and to make such clues available to the world scientific establishment in such a way as to influence the basic research agenda.

Conclusions under this heading:

1. We should oppose a major shift toward broad spectrum fundamental research by centers either now or in the future.

2. We should encourage the centers to pursue specific research problems, even though they involve seeking new fundamental knowledge, when these are critical to the mission of the center.

3. We should encourage the centers also to draw up statements of basic research needs for the consideration of the world scientific community. TAC should include this question in its five year review studies, and should take the initiative in bringing the results to the attention of scientists in

developed countries. AID should work with USDA and other science funding and research institutions in the United States to encourage basic research that may make a significant long-term contribution to food production in developing countries.

4. The proposal being developed by BIFAD to support interaction between U.S. research institutions and CGIAR centers should be given sympathetic consideration for AID funding as soon as budget permits.

D. The long-term role of centers:

When the first international agricultural research centers were started, it was expected that they would continue up to the point where national systems could take over and then go out of business. It is clear that none of the existing centers are approaching that point, although CIP has planned to move in that direction at the end of this decade. We are thus still some distance from the need for a decision on long term role. Still, it is helpful to have an appreciation of the long term possibilities in mind as medium term plans are made and decisions taken.

The discussion immediately preceding would rule out turning the centers into laboratories for broad spectrum basic research (though not prohibit using center facilities for this purpose under different sponsorship). A somewhat different model is already evolving in the relationship between the more mature centers such as IRRI and CIMMYT and the most competent national systems in developing countries, such as India, the Philippines, Brazil and Mexico. In relation to these countries the centers act as the hub of a problem solving network, locating quickly the expertise anywhere in the world that may be relevant to a new problem, and offering a channel for mobilizing that expertise, providing a forum for interchange of experience, identifying research priorities and suggesting an allocation of responsibilities on complex matters affecting several countries.

Clearly such a role is not appropriate for all centers. ILRAD, for example, might well just stop when it has developed immunization techniques for the two livestock diseases which are its present concern. But the network hub function is a logical evolution for many centers and is a role they must already begin to exercise to meet the needs of some clients even while others still require much more elementary forms of support. It is therefore a logical possibility that some centers could continue indefinitely in this network role. As that time approaches, this issue will need to be resolved center by center. Support for a network hub function would fall to the participants in the network, that is to those receiving its benefits. One can expect that the United States would have an interest in long term support for some centers, but not others.

E. The U.S. commitment to financing the activities of the CGIAR.

The CGIAR was formed when it became obvious that the concerted research approach used at CIMMYT and IRRI (the wheat and rice centers) should be expanded to other crops and areas and that the Rockefeller and Ford Foundations could not continue as sole supporters of the centers. Four meetings during 1969-70 led to the formation of CGIAR. The United States agreed to supply 25 percent of the required funds, but that statement assumed a quite modest demand. (The total in 1970 was \$14 million.) In private conversation John Hannah told Floyd Williams in 1976 or 1977, that he (John) had made an agreement with "both sides of the aisle" in Congress that the U.S. committed itself to 25 percent funding of CGIAR when it was formed.

Each year since 1972 the U.S. has been prepared to contribute about 25 percent of the total available from all donors. The World Bank also bases its contribution on a formula (currently 10 percent), but apparently uses CGIAR-approved budgets as its base.

The importance of U.S. leadership in obtaining commitments for support for CGIAR activities from others was illustrated in 1979 when we provoked discussion of agricultural research at two economic summit meetings (Tokyo and Venice). With the personal intervention of the President we achieved a consensus on the planned increase of resources over a five-year period at the 20 percent pace.

For a number of years the World Bank assumed the position of "donor of last resort". The World Bank and the United States, and more recent other major donors, have coordinated their funding of individual centers so that each center receives approximately its CGIAR-approved budget. While the flexibility of donors varies, about half the total funding now responds in some degree to residual needs of centers. This has produced a fungibility of money factor that necessitates collective action to reduce or increase the budget of a center from the CGIAR-approved level.

The U.S. contribution to CGIAR is about 2.2 percent of the total U.S. public investment in agricultural research. It is about 6.5 percent of USDA's research budget. The AID contribution of \$35 million to CGIAR in 1981 is about 5 percent of the AID Agriculture, Rural Development and Nutrition budget, 14 percent of the DSB budget, and 45 percent of the DS/AGR budget.

The issue to be addressed is whether the U.S. should maintain its support for the CGIAR system at about 25 percent of the total available funding. Alternatives would be to adopt a lower percentage, to fix our annual contribution based on some appreciation of the needs of the system as a whole without regard to the contributions of others, or to base U.S. funding for each center on our judgment of the priority of that center ignoring other donors.

The way our commitment works is that we pledge each November the amount included in our Congressional Presentation for the year or our latest estimate of a quarter of the total needs of the system, whichever is less, subject to 75 percent matching. In several years other pledges have brought our percentage below 25. In 1981, as in 1980, we may commit less than our pledge because of insufficient matching from others.

The table and chart show all donors, and reflect trends over the life of the CGIAR.

Suggestions that we should reduce our share are based on concern over the absolute amount (\$42.5 million in FY 1982) and its relative size as a portion of the funds, particularly grant funds, available for AID food and agriculture activities.

Suggestions that we should make our own judgment of the priorities of the entire CGIAR program or of centers individually, are based on mistrust of the CGIAR system as a means for making priority judgments and managing effective implementation as compared with what we can do by more direct involvement.

A related point often made is that U.S. funds are contributed to CGIAR centers through a variety of channels, and that the actual U.S. proportion considerably exceeds 25 percent. The attached analysis prepared by PPC is relevant to this point (Tab A). It suggests that only the IFAD and UNDP contributions can be properly ascribed in part to U.S. funding. This would add \$1.6 million to the U.S. total in 1980 of \$29 million. However, these funds are not under U.S. control and if not contributed to the centers would be applied elsewhere. In relation to GNP our share is lower than that of 12 of the other 16 bilateral donors.

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CGLAR CONTRIBUTIONS 1972-1980

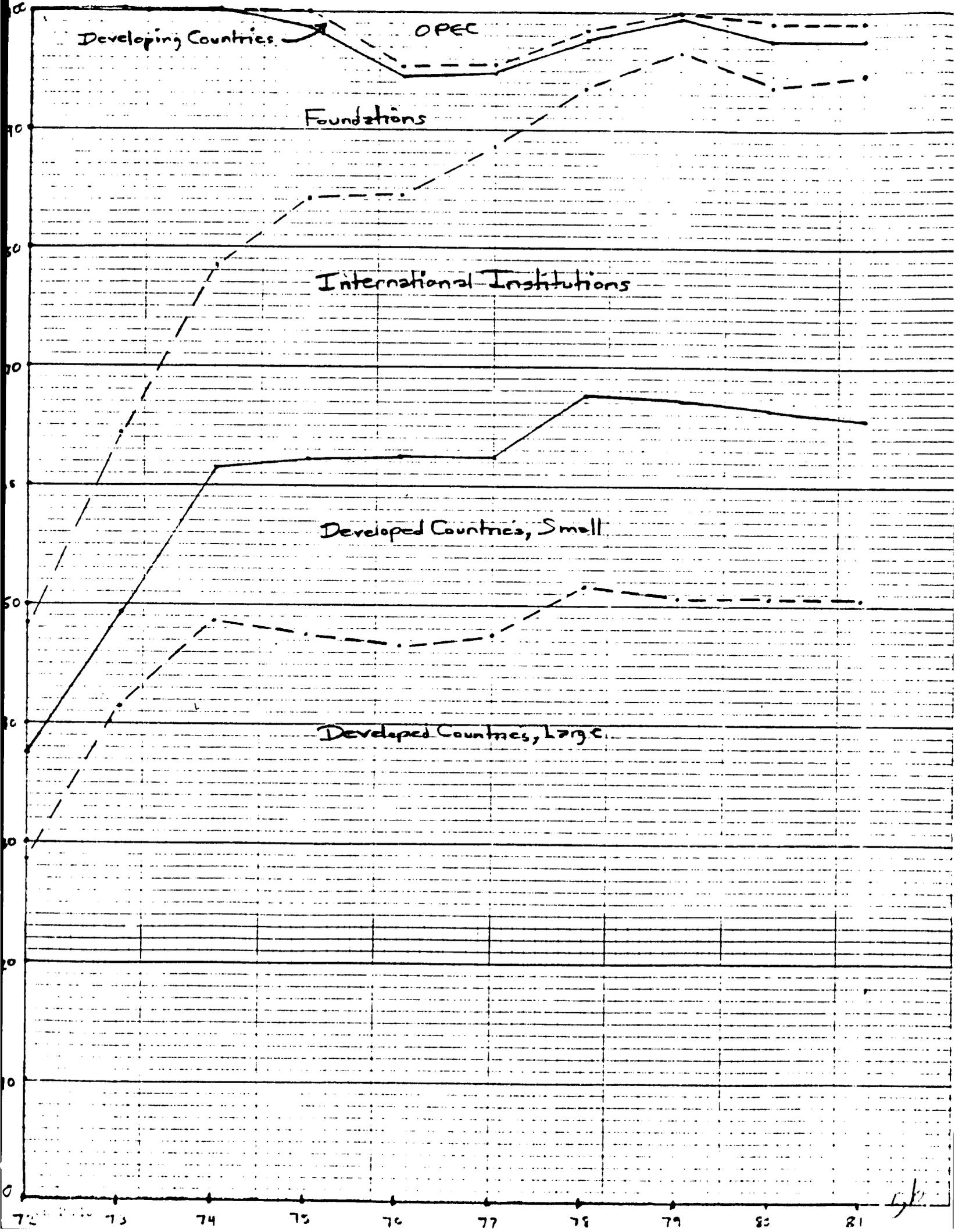
(\$ millions)

	Actual								Estimated
	1972	1973	1974	1975	1976	1977	1978	1979	1980
African Dev. Bank							.025	.030	.040
Arab Fund						.310	.310		.255
Asian Dev. Bank				.300		.500	-	.700	-
Australia		.005	1.015	1.215	1.745	1.790	2.580	2.650	2.940
Belgium	.140	.600	.380	.620	1.740	2.250	2.720	3.080	3.460
Canada	1.160	1.780	4.675	4.340	5.390	6.800	7.370	6.750	6.900
Denmark	.250	.225	.370	.400	.435	.615	.760	1.045	1.180
EEC						2.500	2.240	3.790	4.550
Ford Foundation	5.315	3.675	3.000	2.800	2.000	1.590	1.000	1.000	1.000
France			.130	.410	.510	.415	.340	.685	.850
Germany		1.805	3.040	3.935	4.475	5.350	6.760	8.480	9.840
IDB			2.030	4.120	5.000	5.700	6.185	6.200	6.700
IDRC	.175	.345	.645	.990	1.780	1.305	1.045	.385	1.605
IFAD							-	1.660	4.050
Iran					1.975	2.000	1.000	-	-
Ireland							-	-	.200
Italy					.100	.030	.100	.100	.700
Japan	.105	.230	.265	.675	1.200	2.500	3.500	5.000	7.000
Kellogg Foundation	.155	.290	.280	.290	.300	.310	.320	-	.130
Leverhulme							-	-	.490
Mexico ^{1/}							-	-	.500
Netherlands	.375	.430	.555	1.235	1.500	1.720	1.780	2.380	2.600
New Zealand					.105	.025	.025	.025	.025
Nigeria				.645	.645	.620	.790	.825	.840 ^{2/}
Norway	.075	.185	.445	.810	1.120	1.510	1.880	1.975	2.005
OPEC Fund							-	-	1.000
Philippines							-	-	.150
Rockefeller Foundation	3.990	4.545	3.500	2.885	2.165	1.595	1.250	1.220	1.600
Saudi Arabia					1.000	1.000	-	-	-
Sweden	1.000	.150	1.490	2.290	2.255	2.240	2.725	3.110	3.275
Switzerland		.410	.140	.460	.855	1.205	1.350	1.850	2.465
United Kingdom	.690	1.110	1.920	2.410	2.990	3.515	4.765	4.200	6.345
UNDP	.850	1.000	1.445	2.165	1.930	3.500	4.400	6.395	4.870
UNEP				.600	.340	.340	.240	-	-
United States	3.770	5.390	6.805	10.755	14.870	18.140	21.145	24.800	29.000
World Bank	1.260	2.780	2.375	3.195	6.525	7.850	8.675	10.200	12.000
<u>Others</u>									
Kresge		.750							
TOTAL	20.060	24.955	34.525	47.545	62.870	77.225	85.280	98.535	118.565

Source: Centers' Program and Budget Papers and accounts, 1974-1981.

^{1/} Contribution may be more.^{2/} Part of 1978 and 1979 contribution was received in 1980.

PROPORTION OF CGIAR CONTRIBUTIONS BY TYPE OF DONOR



gk

AID also contracts with centers for technical assistance services, but funds of this sort are not appropriately counted as support for the system or the centers as such.

There is no reason to think that a reduction in the U.S. percentage contribution to the CGIAR, particularly if implemented gradually and with notice, would necessarily disrupt unduly the overall work of the GC. It would lead to a reduction in the total funds available to the system, since there are no donors ready to take over a portion of our share. In fact, the likely result would be for others to fall back also, although the overall extent of loss of momentum cannot be estimated.

Such a reduction in the U.S. contribution would have to be based, in logic, on the assumption that taking four to one leverage into account better use could be found at the margin for the funds saved. This in turn relates to the issue discussed first in this section, namely the overall CGIAR program, and whether it can be adjusted to maintain a high level of performance. A reduction to, say, 20 percent achieved over three years would greatly increase financial pressure on the group and would somewhat reduce our influence on actions taken to deal with the pressure, although we would remain by far the largest donor.

Our CGIAR contributions in a fiscal year are spent by the centers in the calendar year which begins only three months later than our relevant fiscal year. Major changes late in our budget cycle would thus create the kind of program disruption for the centers that would seriously hamper their effectiveness. Reasonable certainty of fund availabilities several years in advance is also important for the management and planning system we have been helping the CGIAR establish, and will become more important if the kind of improvement we expect takes place as a result of the current CGIAR review.

Allocation of an absolute amount to the CGIAR as a whole each year without regard to other donors would involve a complex set of judgments which would be hard to defend. It would also tend to undermine the CGIAR's own decision and program management process and would weaken our own influence on that process, since we would have declared in advance our intention to ignore it. It might also lead to our making a more than 25 percent contribution to the system as a whole.

Finally, dealing with centers one by one would carry the undermining of the system a good deal further. It is possible that other donors would be able to make adjustments to offset the variations we introduced. If so, our changed approach would have little effect except to reduce total contributions. Otherwise, such an approach would lead to overfunding of some centers, underfunding of others, and relegation of the CGIAR to a simple money-raising function with reduced ability for meaningful technical evaluation or management control over the centers themselves. It would also take a good deal more intimate knowledge of individual center programs than we now possess, and have serious implications for increases in staff.

On balance, it seems best to maintain the 25 percent commitment, but to make it clearly conditional on our continuing to judge the system as meriting that level of support. This is a judgment we would need to renew regularly. Such an approach would give us maximum leverage over the decisions of the group, and an opportunity to work effectively for a program on the lines set forth at the beginning of this section.

F. Transfer of responsibility for the Genes Board (IBPGR)

While enormously useful to the centers and to developing countries, the IBPGR has a worldwide view of its responsibilities, meets the needs and protects the interests of all food growing countries and should continue

indefinitely. Consideration should therefore be given to transferring responsibility for U.S. funding to USDA beginning in 1983; alternatively, the costs of the IBPGR might appropriately be transferred to the regular budget of the FAO. This would not affect the U.S. share, but would place the requirement in our assessed FAO contribution.

G. International Agricultural Research Centers not under the CGIAR

This review has included materials on a variety of centers supported by the United States but not affiliated with the CGIAR. Some of them have been proposed at various times for CGIAR membership:

International Center for Insect Physiology and Ecology (ICIPE)

Asian Vegetable Research and Development Center (AVRDC)

International Fertilizer Development Center (IFDC)

International Soybean Program (INTSOY)

International Center for Living Aquatic Resource Management (ICLARM)

Center for Tropical Agricultural Research and Training (CATIE)

(Material will be added at this point in the paper on any one of these centers where a policy or budget decision is required at this time.)

H. A.I.D. priority for national and international agricultural research.

If effective national agricultural research systems had been delivering the needed flow of usable improved technology to their farmer clients, there would have been no recognized need for the international agricultural research centers and the CGIAR would not have formed. The effectiveness of the centers in producing useful technology has both demonstrated the need for more effective national research systems and enhanced the priority of their development to developing countries and donors.

The centers and the CGIAR may prove useful adjuncts to effective national research systems, but the centers are not an acceptable longer term substitute for national research capabilities.

A flow of usable improved agricultural technology, usually the product of research, is an essential but not sufficient condition for sustained agricultural development. While every nation needs to adapt and use technology from any source, its ability to use imported technology and mold it to its own conditions will be roughly proportional to its ability to generate such technology in its indigenous institutions. The needed flow of technology thus requires capable institutions within the developing nations that are effectively linked to similar institutions in other nations.

As a part of A.I.D.'s agricultural development strategy we intend to help countries develop effective national agricultural research systems. Effective research institutions understand the conditions and problems of the farmers and provide a flow of improved technology that the farmer can use to increase productivity.

The following table shows science and technology activities in the food and nutrition account for FY 1980 and FY 1982 broken down by region. Field programs in agricultural research are growing, particularly in Africa, but seem to be growing less fast than the CGIAR contribution.

SCIENCE AND TECHNOLOGY
IN
A.I.D. FOOD AND NUTRITION PROGRAMS
(Dollars in thousands)

	<u>Science and Technology</u>		<u>Research</u>	
	<u>FY 1980 Estimated</u>	<u>FY 1982 Proposed</u>	<u>FY 1980 Estimated</u>	<u>FY 1982 Proposed</u>
<u>Food and Nutrition</u>				
Near East	8,312	5,407	2,912	2,857
Africa	50,932	57,095	24,431	27,582
Latin America	21,500	12,198	7,840	4,720
Asia	12,800	29,667	7,250	15,369
Regional Bureau Total	(93,544)	(104,367)	(42,433)	(50,528)
Central Bureaus	54,223	73,717	49,352	67,730
CGIAR	(29,600)	(42,500)	(29,600)	(42,500)
Total Food and Nutrition	<u>147,767</u>	<u>178,084</u>	<u>91,785</u>	<u>118,258</u>

NOTE: Research is a sub-category of Science and Technology. Comparative figures for the 1981 request are not available.

SOURCE: Amended FY 1982 Congressional Presentation

It would be a mistake to think of expenditures for international agricultural research centers and for national research systems as being narrowly competitive. Both are high priority activities within the overall Food and Nutrition account, and both could grow if necessary by drawing funds from other purposes within that account.

National research programs can also use loan funds in some cases, and there are opportunities for AID technical assistance to combine with capital aid from other sources such as the World Bank as well.

For purposes of this study it is sufficient to say that national agricultural research systems play a critical role in our programs to increase food production in developing countries. This judgment reinforces and does not detract from the priority that attaches to the international agricultural research system to which national systems are linked.

V. Organization and management of the CGIAR system

From its early days the CGIAR has been able to maintain a spirit of cooperation and sense of informality that has served it well, making it unusual among international organizations in its lack of bureaucracy and in the relative absence of international political hassle. The rather complex yet informal structure of the CGIAR begins with the three sponsors, the World Bank, the FAO and the UNDP. Representatives of the sponsors meet from time to time to set the agenda of meetings and select people to fill key positions in the group (membership of the Technical Advisory Committee, members of center boards selected by the CGIAR, etc.).

The CGIAR itself is composed of donors each of which intends to make substantial grants each year to centers sponsored by the system, plus representatives of developing countries selected through the regional conferences of the FAO. The group meets once or sometimes twice per year under the chairmanship of a Vice President of the World Bank. Votes are very rare, and the group operates largely on the basis of consensus.

A small Secretariat headed by an Executive Secretary works in the World Bank under the direction of the CGIAR Chairman. The Secretariat operates as the eyes and ears of the group. Besides normal ministerial functions, its main role is fund raising to meet budget requirements. In addition it prepares an annual overall statement relating substantive and financial matters, and is the main vehicle for providing budget guidance to centers and for adjusting budgets to match available funds.

The CGIAR also has a Technical Advisory Committee (TAC) composed of twelve part-time members plus a chairman who spends half time on CGIAR business. The TAC is composed of persons with scientific qualifications chosen in part to ensure representation of both donor countries and developing countries. A small TAC secretariat is provided by the FAO and works out of Rome.

One TAC function has been to review plans for new activities and recommend action to the group. TAC also prepares a periodic analysis of research priorities, and organizes an overall evaluation of each center's work at five year intervals. TAC reviews each center's budget and program proposals annually and makes recommendations for reductions and other changes which become the basis for CG Secretariat action.

The unique characteristic of the CGIAR, however, is the international agricultural research centers themselves. With some exceptions, each of them is a private entity organized within the laws of the host country, but given special international status and recognized as an international agency. The centers are each controlled by a board of trustees who are entirely responsible for program, budget and staff. There are usually ex-officio board members representing the government of the host country, and in most cases three members chosen by the CGIAR; otherwise the boards are self-perpetuating. The funding relationship runs from each donor directly to the center whose board is responsible to the donor for the proper use of funds.

1. Perceived problems:

a. The amount of money involved, now approaching \$150 million per year, and the complexity of the system is felt to exceed what can be handled by a structure in which responsibility and decision-making are as diffuse and informal as they are within the CGIAR.

b. It is not likely that the group can continue to increase funding at anything like past rates, particularly in real terms. Moreover, some of the activities being supported are clearly less effective than others. This situation calls for an ability to allocate available funds, and to cut back and possibly eliminate some programs. The group does not seem to have an

effective means of taking such decisions within the present structure. (It should be noted that the group has been able to deal with significant management problems, as in ILRAD, and to withhold planned growth for a center which lacked program focus, ILCA. It has, however, let the WARDA situation continue and has waffled on the problems presented by ICARDA. There has been some adjustment of programs in response to priority recommendations of the TAC, but in the budget crunch of 1981, reductions were allocated largely on a percentage basis, and the system has reacted mainly by trimming in easy and temporary ways, such as reducing training programs.)

c. There has been no effective means of setting priorities for new activities and moving promptly to implementation of new programs. The TAC has studied subjects such as water management, plant nutrition, fisheries, vegetables and others for a number of years without concrete result.

d. Relations among the three co-sponsors have never been entirely easy. The FAO has wished to have a greater voice than it does, while at the same time providing the TAC with a relatively small and weak staff. There is a general feeling that TAC needs to be stronger, both in terms of having more time and technical capacity, and in facing complex issues which are part scientific and substantive program questions, and part political.

e. A few donors have resented the role played by the CGIAR Secretariat, but on the whole the feeling is that the Secretariat staff is not strong enough, and should be more broadly competent in management and scientific matters. Working relations between the TAC Secretariat and the CGIAR Secretariat need to be further strengthened, which is not easy given their geographic separation, and their separate organizational loyalties.

f. Some find anomaly in the independent role of the center boards, who owe no formal responsibility to the CGIAR which raises the funding on which the centers depend.

g. The boards of some centers are weak, and are dominated by the director. Some boards do not contain the specific skills, such as experience in management of research programs, which are critical to their performance. There is no systematic check on board performance, and no procedure available to the CGIAR or the donors to intervene to change board membership when a board is weak or ineffective.

h. Considerable anxiety is caused by the ineffectuality of developing country representation in the CGIAR meetings. Developing country representatives, chosen by FAO regional conferences, often do not even attend meetings and play very little role when they are present. Developing countries are represented on the TAC and on the boards of each of the centers, but the danger that centers may be unresponsive to their clients or become isolated from the communities they are intended to serve is thought to be significant.

2. Proposed changes in structure:

Those with experience in the CGIAR over even a relatively short period are in complete agreement that the group must protect its non-bureaucratic nature and avoid becoming entangled in international politics. It remains to be seen, however, what practical proposals will appear to most members to be consistent with those principles, yet provide the minimum of increased management effectiveness necessary to deal with perceived problems. Among the changes being proposed are the following:

a. A somewhat extreme view, taken by the FAO representative who has long experience in the group and was an early member of the TAC, is that there should be a deliberate halt to expansion of program: the group should avoid growing further because the management problems will otherwise be insoluble.

This is somewhat akin to the idea current at the time of the first CGIAR review that individual centers should not grow beyond a certain size because they might lose the ability to innovate and to work effectively within an informal structure if they become too large.

b. Organizationally, there are proposals firmly held by some, that efficiency can be greatly increased if the TAC and the CGIAR secretariats can be brought together in a single staff at a single location. If the World Bank and the FAO cannot agree on a procedure for doing this--proponents of this move believe the whole operation should be at the Bank in Washington--the donors should consider setting up a combined CGIAR secretariat independent of any of the co-sponsors. This would add something to donor costs, since the co-sponsors now meet the administrative expenses of the two secretariats, but that would be a relatively small matter if the gain in management capability for the system were substantial.

c. There are proposals to strengthen the CG Secretariat by adding more scientific capacity, and greater ability to give financial and management oversight to the centers. Single annual audits of center performance in financial management are proposed to replace the variety of audit systems now in effect. Perhaps one auditing firm under the guidance of the CG secretariat would do the entire job, with the results available to all interested donors. The Secretariat might have capacity to provide management technical assistance to centers requesting it.

d. A related set of ideas concerns the budgeting system for the group. The report of the first review committee suggested a number of steps such as two year budgets for each center, preparation of long term plans, and other steps to improve financial and program planning. These have been only partly implemented. It is proposed now to carry these steps through

completely and add features such as requiring centers actually to follow the same guidelines in preparing budget documents, and providing advance budget guidance reflecting overall priority judgments agreed by the group. These steps imply both increased capacity at the CG secretariat and a more cooperative approach from some centers. They also carry the threat of bureaucracy.

e. Various ideas for strengthening the TAC are being considered, including enhancing TAC staff capacity, and having the TAC chairman serve full time. At the same time it is proposed to restrict the role of the TAC concentrating budget and system management responsibilities in the CG Secretariat.

f. Some proposals would have the authority of the center boards of directors sharply curtailed, requiring them to conform to policies established by the CGIAR itself. A more likely approach would be to have the CG Secretariat, with help from donors, systematically monitor the performance of boards and use various means of improving that performance when necessary. The CGIAR could use its right to nominate members -- at all but a few of the older centers -- to ensure that each board has strong management, scientific and other needed talent. Perhaps the members named by the CGIAR should be expected to represent CG attitudes in board deliberations and otherwise play a mediating role. Also being discussed are means for the group to intervene when affairs at a center get out of hand. (The recent experience with ILRAD and ILCA suggests that means may already exist, de facto.)

g. A central and difficult problem is how to take critical decisions on such matters as allocation of scarce funds, termination of a program, or approval of a change in priorities. The study team appears likely to recommend creation of a management committee within the CGIAR structure,

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including donors, representatives of center boards, representatives of the sponsors and the TAC, and perhaps a limited number of expert outsiders. This committee would meet as often as necessary during the year to make decisions on matters put before it by the Secretariat, and subject to concurrence by the group as a whole at its next meeting. It would presumably have to operate within a consensus role, but could take considerable leadership and hopefully also restrain the Secretariat staff.

h. One proposal for enhancing the participation of LDC representatives in the CGIAR itself has been to let the new organizations of agricultural research directors for Asia, Africa and Latin America provide and instruct these representatives. One drawback is that the research directors may not reflect the economic development policies of their governments, which are also important inputs for the CGIAR. An alternative would be to have the countries that play host to centers become members of the CG.

3. U.S. philosophy in considering structural changes in the system:

It is obvious that changes of the type being discussed must reflect broad support among the donors and other agencies involved if they are going to work. It is better, therefore, for us to identify a range of acceptable outcomes rather than to try to specify a single program of organizational change and attempt to sell it to the group.

It is clear that the CGIAR has already grown too large to work precisely as it has in the past, so that some changes are needed whatever the prognosis for program growth in the coming five years.

The idea of taking the secretariat functions away from the FAO and the World Bank has a superficial attractiveness. But it would risk losing support in both those organizations, which remains important financially in the case of the World Bank, and in other ways for both. Given the broad

responsibilities of the FAO in world food matters and the tenacity of that agency's leadership, it could be divisive to attempt to cut the CGIAR entirely loose from FAO. The overall administrative and analytical capacity of the World Bank and its willingness to make the cause of the CGIAR its own on many occasions may well continue to be important in the future, as it has been in the past. Therefore we should oppose any effort to do away with the sponsor role of the World Bank or the FAO or both.

On the other hand, most of the proposals for strengthening the CG Secretariat and the TAC do make sense, as does the proposal for a small management committee. We will want to study carefully the proposed make up of the committee in terms primarily of its capacity to take effective action. While strengthening TAC we should probably also circumscribe its role, shifting the main responsibility for budget to the management committee with support from the CGIAR Secretariat, and technical advice from the TAC.

Any significant reduction in the independence of centers and of their governing boards should be opposed as striking at the heart of what makes the center system work. On the other hand, means do need to be found to ensure continued high quality membership on boards, to monitor board performance, and to intervene when necessary to strengthen boards. As for participation of ldc representatives in the CGIAR meetings, we should not oppose any reasonable means of making such participation more effective, so long as there is not a tendency to bring the North/South dialogue onto the annual agenda of Centers Week.

VI. U.S. management of participation in the CGIAR:

In preparing this paper, we have found that while we know a good deal about some of the centers, we should know much more about many of them, not only to discharge the responsibilities connected with our support for centers and for the CGIAR system, but also to make useful connections between center work and other parts of the AID program, particularly mission activities. The size and importance of the enterprise seems clearly to justify some increased management attention.

Before coming to a judgment about how much staff time should be invested, and how it should be organized, it is first necessary to consider whether: we should work mainly to support the CGIAR's own machinery, making it work as well as possible and then basing our own program decisions on the product of that system; or we should treat centers as if they were independent projects and place most of our energy in management of our investment in each center. For the latter approach we would probably need a total of five work years of technical staff devoted to the CGIAR, while to do an adequate job of supporting the CGIAR structure would take at least three professional work years. The present level is estimated to be a work year and a half.

The choice to be made obviously relates to the approach we take to the CGIAR budget: if we decide to concentrate our funds on individual centers we judge to be of high priority, our principal management relationship will presumably be with those centers rather than with the group. On the other hand, if we continue to provide a specified percentage of the total CGIAR program, we have at least the option of concentrating our effort at the level of the whole group.

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If we decide to work mainly through the CGIAR system, we would not conduct our own audits or evaluations of center activities, but would spend time instead on helping ensure that these studies as conducted by the CGIAR were directed to the most important issues, and in interpreting the results.

There would be a great deal to do both directly and indirectly to support the system, which can only work if there are well informed donors to serve on the management committee and bringing to that role extensive understanding of what is happening in the system and its various parts. In addition, the A.I.D. staff could take greater interest in the membership of the boards of trustees, canvas U.S. agricultural laboratories, universities and private firms for suitable members, and perhaps provide inducements for them to serve and to spend sufficient time on the work of the center.

We could engage in a continuous search for suitable candidates for various CGIAR posts, such as membership on the TAC, using the field missions as a source of candidates. Contacts with the representatives of other donors could be kept current, along with knowledge of center activities. We could perform our own analysis of CGIAR priority issues, using TAC data and analysis and adding to it.

More specific attention could be paid to the interface between U.S. research and technical assistance contractors and grantees and individual centers. The BIFAD and JRC could be provided with complete and up-to-date information about the work of the CGIAR and their advice fed back into the system. Time could be spent promoting increased attention by the U.S. scientific community to basic research issues arising from centers' work.

It seems likely that the Ford and Rockefeller Foundations will be pulling back from their engagement in the CGIAR, going on after twenty or more years to new endeavors. Much of what has been suggested above would replace a role

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these Foundations have played, for example in providing members to the board of centers with enough time to devote substantial attention to center affairs. Another role played particularly by the Rockefeller Foundation has been to provide key scientific staff to the centers with long term job security, thus making it possible for outstanding U.S. scientists to commit themselves to center work for substantial periods. AID might well consider whether actions on this line, and in other ways picking up some of the foundation role, may be needed to strengthen the CGIAR system.

The principal argument for working with individual centers is lack of trust in the capacity of the system to do an adequate overall management job, and the need for the United States to ensure that its contributions are well and appropriately used, whatever happens to the CG and to other aspects of center activities.

If we can assume that the CGIAR will adopt effective measures to improve the functioning of the system, it seems clear that on the grounds of staff efficiency and greater development effectiveness, working through that system is the obvious choice.

1. Staff commitment: In order to carry our weight in the system, assuming a reduced role for the Ford and Rockefeller Foundations, AID should commit three years of professional time, with adequate secretarial and travel support, to the CGIAR. The officers involved need to be protected from other demands on their time, so that they can give first priority to CGIAR matters, even when these seem less pressing.

2. CGIAR representation: In contrast with some other donors, the United States has changed its representation in the CGIAR rather frequently, having no one presently active in a senior role whose experience goes back to the earliest years of the CGIAR. Other donors have managed to keep the same

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individual as representative to the group for longer period, or have had individuals associated with their CGIAR delegations for long periods as senior advisors. They have been able to establish their people in roles of trust and leadership beyond those justified by the relative size of their contributions.

Given the prestige attached to the CGIAR and the U.S. system of replacing senior policy officials after each change in the Presidency, it will be difficult for the United States to keep the same person as its CGIAR representative for a great many years. Other means of continuity should be sought, including the possibility of having a senior agriculturalist serve in Washington for a tour of five years or more with lead responsibility for the CGIAR, or associating one or more outside consultants with U.S. participation on a more or less permanent basis.

3. Role of BIFAD and JRC: A JRC subcommittee has made important contributions to the present study, and there will be an opportunity for the presentation of any separate views which the JRC or the BIFAD staff wish the Administrator to consider along with the action document based on the report. The question remains of what role the JRC should have on a continuing basis with respect to the CGIAR and other international agricultural research centers which are clearly intended to be considered a part of the Title XII program.

Whichever part of the BIFAD structure, the JRC or the JCAD, is held responsible for recommending initiatives in building national research systems in the developing countries, that organ clearly needs to be fully aware of the work of the international agricultural research centers. These centers must be linked to national systems in order to function effectively; national

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systems can and should draw on the capacities of the centers. Moreover, there is always the possibility of using ISNAR services, whether or not financed by the United States, in assessing country needs and designing appropriate institutions.

More broadly, the work of the CGIAR and other international centers should find a place in the JRC consideration of overall priorities for agricultural research for AID support. The JRC needs to take into account what the CGIAR is doing and plans to do whenever the JRC is considering priorities for the AID research program, and should comment on CGIAR programs and priorities in that light.

To assist the JRC in carrying out its functions, the AID staff concerned with the CGIAR and with other centers should refer to the JRC for information and recommendations any evaluations of centers, analysis of program priorities, or other long term planning documents for the centers or the CGIAR as a whole. When the JRC makes recommendations they should be taken fully into account in determining the U.S. position.

The JRC should place international center issues on the agenda of the BIFAD whenever it seems appropriate. BIFAD does consider CGIAR budget provisions in the course of its annual review of the AID budget, and that would continue and hopefully be better informed as a result of the consideration suggested above.

A particular concern of the JRC will continue to be how the work of U.S. agricultural research institutions, and universities engaged in overseas technical assistance, can be tied into the efforts of the international centers, to the benefit of both.

(Note: The above paragraphs, drafted at the request of BIFAD staff, are subject to review on behalf of the JRC.)

4. Handling CGIAR funding in the AID budget: In practice, the required annual contribution to the CGIAR is generally known fairly well at the time of AID budget formulation, and tends to hold at or close to its original level through the entire budget process to actual implementation of the program. Central programs as a whole, however, tend to be cut at least proportionally from initial budget levels in response to reductions made in the OMB process or by the Congress. As a result, the food and nutrition activities of DSB, and more particularly the work of the Office of Agriculture, often take a disproportionate reduction because of the necessity to protect the CGIAR contribution. As the CG contribution has grown through the years while AID budgets have not, this effect has become more and more marked.

The solution would appear to be finding a means whereby the CGIAR contribution can compete against the whole food and nutrition account independently of other DSB food and nutrition programs which also should compete with the whole food and nutrition account. Another way of phrasing the desired result is that the CGIAR amount should be fixed as an AID decision, not a DSB decision.

The simplest way of achieving this would be for the CGIAR amount to be placed in the OYB and other budget documents as a separate element, and not merged with the DSB food and nutrition total. Treating the CGIAR figure as a separate item would ensure that other central food and nutrition activities would not be automatically downgraded in priority but could be judged on their own merits.

Another approach would be to have a separate appropriation line for the CGIAR, somewhat like the new program for Science and Technology Cooperation. This would have the drawback of requiring the Congress to make an explicit decision each year on the CGIAR contribution, thus reducing flexibility

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to adjust to such events as a shortfall in other donor contributions. It would also introduce an apparent reduction in AID's emphasis on food and nutrition. Improved internal management of the allocation of funds, as suggested above, seems the best alternative.

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PER CAPITA CONTRIBUTIONS TO THE CGIAR
(1980 Contribution; 1977 Population)

<u>Rank</u>	<u>Developed Country¹⁾</u>	<u>CGIAR Contribution</u>		<u>Index of GNP PerCapita (1977)³⁾</u>
		<u>PerCapita</u> - cents -	<u>Index²⁾</u>	
1	Norway	49.7	3.71	0.98
2	Sweden	39.6	2.96	1.07
3	Switzerland	39.0	2.91	1.27
4	Canada ⁴⁾	36.5	2.72	0.95
5	Belgium	35.1	2.62	0.94
6	Denmark	23.2	1.73	1.05
7	Australia	20.9	1.56	0.83
8	Netherlands	18.8	1.40	0.88
9	Germany	16.0	1.19	0.99
10	United States	13.4	1.00	1.00
11	United Kingdom	11.3	0.84	0.52
12	Ireland	6.3	0.47	0.35
13	Japan	6.2	0.46	0.74
14	France	1.6	0.12	0.86
15	Italy	1.2	0.09	0.40
16	New Zealand	0.8	0.06	0.51

Notes:

1) The CGIAR also receives contributions from 3 developing nations: Mexico, Nigeria, and the Philippines.

2) National contribution divided by U.S. contribution.

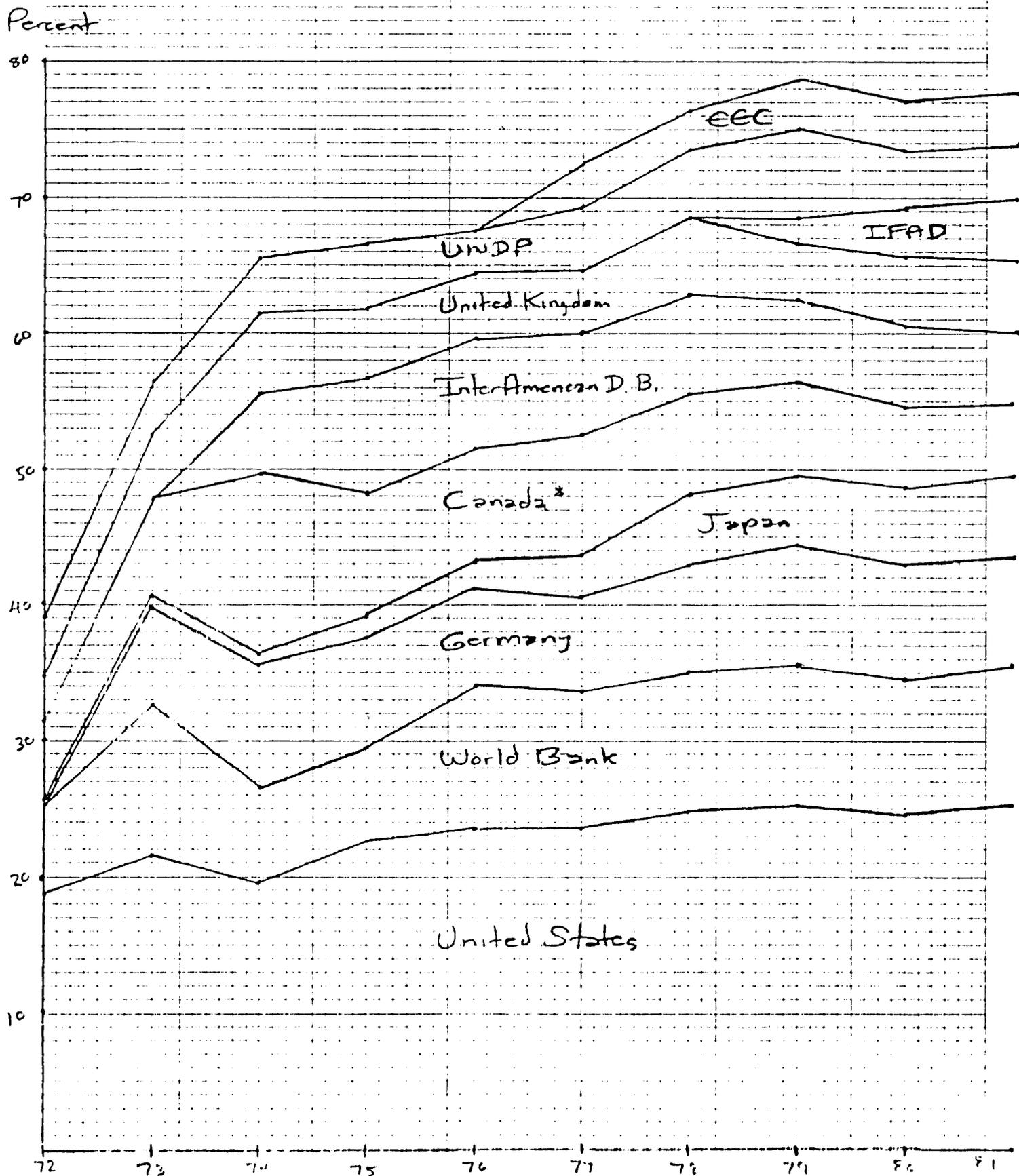
3) National GNP divided by U.S. GNP.

4) Includes IDRC; without IDRC the Canadian contribution would drop to 29.6 cents, placing that country in 5th place.

Sources of data used in making calculations:

- CGIAR contribution. Revision of Annex III for Integrative Paper, October 8, 1980
- Population and GNP per capita: 1979 World Bank Atlas, pp. 6, 8.

TRENDS IN CONTRIBUTIONS MAJOR DONORS
(AS OF 1981), PROPORTION OF TOTAL CONTRIBUTIONS



* Excluding IDRS.

8 APR 1981

Paolillo

MEMORANDUM TO: IDCA, Curtis Farrah
FROM : AA/PPC, Charles Paolillo (Acting)
SUBJECT : CGIAR Contributions

With regard to your memo of March 25, 1981 we have investigated the matter of possible indirect flow of U.S. funds to centers affiliated with the CGIAR. We found the following:

IDB - All IDB contributions to CGIAR centers are made from the Social Progress Trust Fund. This fund was granted to IDB by the U.S. in the early 1960's and is now administered by the IDB. The U.S. director to the IDB can veto any proposed contribution. All the projected FY 1982 IDB contributions to CGIAR are in local currencies which stem from reflows to the Fund. Therefore, there doesn't appear to be any percentage of the IDB contribution which might reasonably be ascribed to U.S. Government sources and there would be no benefit to the U.S. Treasury were IDB to make no contribution to CGIAR.

World Bank - The World Bank contributes about 10% of the total CGIAR pledges, and this contribution is made from "profits" of the Bank. These "profits" are made from investments made by the Bank of reflows to the Bank which are awaiting further disbursement. Although the U.S. holds about 46% of the capital of the bank, there is no direct relationship between this and the CGIAR contributions.

IFAD - The IFAD contributions to CGIAR are made from the general fund to which the U.S. contributes about 20%. One could say then that about 20% of any IFAD contribution to any CGIAR center might reasonably be ascribed to U.S. Government sources. If IFAD were not to make any CGIAR contribution, the funds would be contributed elsewhere. To the extent the funds contributed elsewhere were not transferred as swiftly as into CGIAR, future requests for replenishment to IFAD might be less.

UNDP - The UNDP contributions to CGIAR are made from the general fund to which the U.S. will contribute about 16% in FY 81. One could reasonably ascribe 16% of any UNDP contribution to CGIAR to U.S. Government sources. There would not be any benefit to the U.S. Treasury were UNDP not to make a CGIAR contribution because a contribution would be made by UNDP elsewhere.

I hope this information will be useful.

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