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THE INTEGRATION OF AID RESEARCH AND LDC UTILIZATION OF FINDINGS

This paper has a two-fold purpose: 1) to report to the R&DC and to RAC on progress made toward utilization of the results of centrally funded research, and 2) to open up for discussion with these advisory committees what we hope will be a thorough exploration of AID-wide changes that appear needed in our approach to knowledge production and utilization.

I. A PROGRESS REPORT ON TAB UTILIZATION EFFORTS

My first report on research utilization was made in May 1971 shortly after joining AID. The study, prepared for a Spring Review of Centrally Funded AID Research, was based on available documentation of active and completed projects and attempted to clarify the problem by analyzing the kinds of utilization situations posed by various projects.[1] When we reported to RAC two years later [2] in May 1973 we were able to describe progress in three areas: 1) a utilization focus on research management, 2) special utilization activities, and 3) information management. We also had begun to examine the potential of a network approach to information management. An update to March 1975 shows the following.

A. Utilization Focus on Research Management

Our first approach was to review all completed projects and search for utilizable results meriting broad dissemination. Unfortunately the documentation gave little indication of the significant results, or the presentation made

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1. "The Uses of Research: Introduction to Four Typologies" (mimeo) 1971.
2. "Research Utilization and Information Management" (mimeo) 1973.

it difficult to identify the significant and operationally useful results. Consequently our first measure was the formulation of guidelines for the preparation of the project annual reports. These guidelines were issued to all contractors in January 1972 and have had a significant role in improving the quality of reporting. Based on the experience of the past three years only modest changes have been made in the new guidelines now in final draft. These guidelines require greater attention to interpretation of data in terms of utilizable results and to reporting on the dissemination and utilization that has occurred.

We soon realized, however, that we lacked an adequate tool for strengthening ongoing research projects and thereby improving the probabilities of producing utilizable results. Although annual reviews were held they were not structured so that hard questions had to be asked about progress towards producing utilizable results. Consequently, after considerable discussion, in September 1972, TAB issued revised instructions and guidelines for the annual evaluations of centrally funded research projects requiring a yearly utilization review of each research project. The responsibility for conducting these reviews and preparing a Project Appraisal Report (PAR) resides with the project manager in the technical office.

The PAR produced as a result of a review must do three things: 1) report utilization and impact of the project in the LDCs, 2) provide a utilization plan for the future, and 3) assess its potential for producing results that can be utilized in the LDCs. Later the PARs must be attached to any requests for extension of projects.

Finally, we have moved back even onestep further in the management process to look carefully at the formulation of the research statement which defines the original project and is revised when the project comes up for extension. When a problem for research has been identified, the first step is to define a project which may discover the solution. To improve the probabilities of success, TAB has a corps of subject matter specialists to elaborate projects and locate capable contractors. In addition projects are reviewed by an internal review committee, earlier RIGC and now R&DC, made up of representatives of the various bureaus and finally the Research Advisory Committee, (RAC), made up of scientists from outside of AID. The point where we felt that significant improvement could be made in this overall process was in the research project statement prepared by the technical office to go forward to the review committees. For this reason, revised guidelines for the project statement were prepared.

As you can see, our first thought was to approach utilization as a follow-up of research. Later we found it desirable to move back to the earlier steps of the research management process to increase the probabilities of producing utilizable results. We felt that this was in keeping with our inter-related objectives of planning, analysis and utilization. In this case utilization was the cutting edge, much of the analysis was in relation to utilization, and this directly influenced research planning.

B. Programmatic Utilization Efforts

Obviously a research program cannot carry the knowledge produced all the way through to ultimate use in all of the LDCs. On the other hand it is not enough to simply disseminate the results. Thus an effort was initiated to provide for innovative work in developing utilization strategies in order to incorporate R&D results into action programs in LDCs. These utilization

efforts cover the intermediate testing and adaptation activity between the stage where a research project produces usable results and the stage where AID missions and host governments are willing to budget funds and launch nation-wide extension activity. In the past there have sometimes been long delays in the use of results because of lack of attention to this crucial in-between stage.

During the past year particular attention has been given to a few projects that have reached a point where important usable results have been achieved. In each case the utilization officer, the program analyst and the project manager of the respective technical office, have developed jointly a strategy to bring about the use of results. This has required close cooperation with the AID missions and regional bureaus and makes use of consultants and experienced contractors to provide expert assistance in developing and executing the strategy. The strategy is based on a careful analysis of the nature of the results, the areas of potential application and the kinds of persons and institutions to be benefitted. It analyzes the new knowledge, procedures or products that can be used, identifies the programs and efforts of LDCs to which the research results are relevant, seeks special opportunities for insinuating results into public and private activities in LDCs, and provides for collaborative efforts in applied research, field testing and extension. The work under this activity may include workshops, handbooks, how-to-do-it manuals, etc., as needed, but only if they are part of a well-conceived strategy.

To carry out this work, the utilization officer, jointly with research project managers and contracted expertise:

1. Identifies, in conjunction with the annual utilization reviews, research projects with findings ready for field application.

2. In cooperation with regional bureaus, designs strategies for delivering the results of research to the field in usable and acceptable form. Special attention is given to interpreting results in the form of readily usable recommendations.
3. Carries out utilization strategies for the selected research projects.
4. Obtains feed back and modifies approaches as needed.

At present there are special utilization efforts on the following projects: 1) the control of the vampire bat, using materials and techniques developed under the research contract with U.S. Fish and Wildlife Service, 2) LDC introduction of high lysine/maize germ plasm, selected under projects at Purdue and CIMMYT, 3) the local manufacture, sale and distribution of small scale farm equipment for rice production designed at IRRI, 4) field testing of premunization, a method developed under support to Texas A&M and CIAT for control of hemoprotozoal diseases in cattle, and 5) village testing of a Battelle designed hand pump for drinking water supply. The readiness of other advances for field trials and local adaptation is being examined.

Over the long range these programmatic utilization efforts will also help to build a body of knowledge about the effective mechanisms by which various kinds of research results can be put into use in LDCs.

C. <u>Information Management and Dissemination</u>

The larger number of well trained persons in the developing countries now makes possible the beginnings of a network approach to research with LDC scientists participating as equals. TAB information efforts take this into account.

A comprehensive system has been organized to manage information generated by the TAB funded R&D program. In designing this system, provision has been made for precise information retrieval and document delivery, with special emphasis on availability of publications to research institutions in developing nations. By the end of CY 75 the system will make publications from AID funded R&D permanently accessible, will make potential LDC users aware of the publications and will facilitate distribution. The following progress has been made:

1. Research Bibliography. During FY 74 two bibliographic volumes were issued covering documentation produced by centrally funded research contracts during the period 1962-72. Approximately 1,900 titles were listed, reporting research findings throughout the range of key problem areas. All of the documents listed, including those out of print, were stored and made accessible both in the AID Reference Center and the National Technical Information Service (NTIS). Duplicate hard copies or microfiche can be readily produced in response to requests.

2. Comprehensive Bibliography of Centrally Funded R&D. A project was initiated in late FY 74 to expand coverage to include all research, GTS and 211(d) publications. This project will span the period from 1962 through FY 75. In addition to the comprehensive catalogue, an automated data base will permit constant updating and on-demand information searches.

3. Research and Development Abstracts (ARDA). With the initiation of ARDA in July 1973, current research documentation from all centrally funded projects has been reported quarterly. Each abstract gives sufficient information about the publication so that those who receive the ARDA are able to make an intelligent decision as to whether a particular publication will be of use. The LDC scientist can then request the publication directly from the contractor or make an arrangement for interchange of publications. At

the same time the document is placed in the AID Reference Center, and the AID Reproduction Center so that when the contractor's supply runs out, it will be permanently available at the ARC or may be purchased at a nominal fee. Up through January 1975, seven issues of ARDA had been published and distributed, containing more than 750 abstracts of R&D reports. Many of the documents are available from the R&D contractors or grantee institutions. In addition all are available on demand in microfiche and hard copy from a contracted AID Reproduction Center.

4. AID Document Distribution System (ADDS). A computerized worldwide mailing list has been designed and tailored to quickly reach key persons and institutions in the LDCs with new R&D results. The list has been built with the cooperation of AID missions, regional bureaus, technical offices and others. It now includes about 5,000 addresses in developing countries and will be coded to handle mailings by fields of interest. A quarterly output report assists in evaluating demand by countries and subject matter.

5. Microfiche and On-Demand Printing. The issue of ARDA mailed July 1974 announced a new service under which developing country institutions were invited to order at no cost up to five copies of documents--in either paper or microfiche copy--abstracted in that issue. The response of developing country institutions has been very favorable. Communications among institutions concerned with development have also increased as a result of journal distribution; for example, 30 developing country institutions have offered to exchange their journals with those published by other developing country institutions, and U.S. universities report greater exchanges of communications with these institutions.

6. A Catalog of Selected AID Publications, published in 1974, compiles in pocket-book format a list of AID sponsored materials now in print. Publications are grouped into 17 categories by development sector or major subject. Each publication listed includes an abstract and information on where to obtain that publication. The Catalog also includes an index, and a section on AID-sponsored periodicals concerned with development. A first printing of 5,000 copies was quickly depleted, and a second printing is now available. Many universities, research institutions, and voluntary agencies not included in the initial distribution, learned of the Catalog and have asked for copies.

7. Biennial Report of the Research Program. The publication, AID Research, 1971-73 was the first of a series intended to up-date biennially the 10 year report published in 1971. A 1973-75 report is now being planned. The intent of this report is to summarize briefly and in simple straight-forward terms the progress that has been made in each of the centrally funded research projects.

8. A Directory of Institutional Resources. This directory of competence developed under 211(d) funding was first issued in 1973 and updated in January 1975 in order to make broadly known throughout LDCs and international development organizations the ample resources in numerous subject matter fields that are available at these institutions.

9. Smithsonian Science Information Exchange (SSIE). TAB research in progress is reported regularly to the SSIE to be included in its computerized data base. Information is provided about the scope and objectives of each of the ongoing research projects funded by TAB. Thus anyone querying the SSIE system about research in a particular field will also receive information about the AID funded Research in that area.

The efforts mentioned above indicate that some progress has been made. This was also noted in Audit Report No. 75-002 issued in late 1974 which acknowledged that, "from a utility standpoint the overall performance of the research program has improved in recent years..."

The progress up to now has also given a new perspective on the problems and the potential. There is much to be done if the LDCs are to be provided effective technological support to contend with the major problems of education, agriculture, nutrition, health and population that they will be facing during the next decade.

II. A COLLABORATIVE APPROACH TO IMPROVED LDC UTILIZATION OF AID FUNDED RESEARCH

The first problem in obtaining improved integration of research and action programs appears to be a faulty analysis of the problem. There is still much concern about a supposed bureaucratic conflict centering around which--TAB or the regional bureaus--has the central development role and which should provide essentially backstopping.

A similar conflict seems to exist in regard to the respective roles of missions vs. AID/W.* I contend that these should be non-issues, though obviously they are not, for the simple reason that the main role for any component of AID is to support and catalyze the work of other LDC and LDC-oriented institutions. Thus all components of AID share a common task--oriented outside of the Agency--to which each can make a unique contribution.

The importance of this perspective emerges when we examine the nature of the research-utilization dichotomy. We see three inter-related facts:

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*In a perceptive comment on this point, James Dalton has pointed out that "operators or 'line' agencies only adopt research results when it 'profits' them in such forms as additional allocations of funds, manifest cost-savings, increased staff, or visible improvements in management efficiencies". He holds that there is no natural proclivity to support and adopt research so there must be bureaucratic reward mechanisms which facilitate integration of research and operations. Dalton memo to Herbert Rees, February 11, 1975.

1) the major potential breakthroughs in development appear to be found in the discovery and application of new knowledge,

2) most knowledge is not site specific, nation specific, nor even region specific, and

3) much knowledge production and testing, as well as the ultimate use, must be carried out in each nation.

The potential economic return to successful research has been well documented in recent years. It is also clear, and understood by many LDCs, that a sound research under-pinning is essential for the development of a nation. There is growing awareness that similar soil and water problems occur in many countries of the tropics. There are no known insects or diseases that respect national boundaries. Poor people throughout the world have similar aspirations and are striving in similar ways to attain them. The obstacles they encounter, while varying in intensity from country to country, appear to have similarity. And there is good reason to believe that there may be considerable commonality in the nature of viable solutions. Thus it is reasonable to anticipate efficiencies in collaborative multi-national research.

Faced, as both donor nations and LDCs are, with limited availability of funds, there is an urgent need to avoid repeating the same research in forty or fifty countries. In fact, there is good evidence that if research is carefully phrased, using adequate categories or an adequate taxonomy, the results will have applicability to similar situations over a large number of countries. To determine the extent of possible application, however, requires local research networks in each country, tuned in to the latest research.

The principal efficiencies are to be found in collaborative planning and execution of research, and in sharing the results. The mission funded

project in Ecuador or Nepal need not serve only the citizens of those countries. It should also contribute to solving similar problems in Kenya and Pakistan. And it should help the scientist working at a more abstract level to make a step forward in basic knowledge which will be of use in a broader category of problems.

Many AID missions are well aware of this and have placed appropriate emphasis in supporting the development of national research institutes and have given increased support to graduate level training. In the case of agriculture, a recent reviewof the FY 75 Congressional Presentation shows that AID's current portfolio of assistance to national research in LDCs consists of about 35 projects in 26 countries plus four regional projects.* By regions, there are projects in: 9 countries of Asia, 8 countries of Africa, plus 3 regional projects; and 9 countries in Latin America plus one regional project. The total loan and grant expenditures on these projects appears to be between 10 and 15 million.

At the same time AID is making roughly equivalent expenditures through its contribution of up to one-fourth of the annual budgets of the international agricultural research centers (13.5 million from AID in FY 1975) and for centrally funded research (11.3 million in FY 1975).

The key point to make here is that technical and financial support for knowledge production is not now limited to a single bureau. Each bureau is supporting some key elements of what might become an efficient world wide system.

The essential "integration" task before AID, is not the limited one of improving relations between the bureaus. The challenge is to use the technical and financial resources available to all sectors of AID to assist

*Thomas Arndt. Notes on AID Projects to Assist National Agriculture Research Systems. Mimeo, 1975.

in the development of knowledge production and utilization systems of maximum benefit to the LDCs. The question we must answer jointly is, How can AID, as one of several donor nations and organizations, be most helpful in its lending and TA programs to identify and support the essential elements of a world wide approach to improving the effectiveness and efficiency of knowledge production oriented to the needs of the majority of farmers of the less developed countries?

What is needed to accomplish this? A complete operational system is mind stretching in its complexity. Yet there are components--discrete measures--that are well within the scope of AID action. Here is a partial list:

1. Measures to insure that all TA projects and loan supported efforts are undertaken with adequate cognizance of the present "state of the art" in the subject matter covered.

2. Measures to insure that the research will make a maximum contribution to improving the "state of the art", by complementing or knowingly replicating aspects of work being conducted in similar areas.

3. Measures to obtain greater programatic integration of worldwide research and development efforts by subject area through international networking.

4. Measures to facilitate adequate "state of the art" reviews before undertaking research or action programs in any subject area.

5. Measures that will serve as catalytic agents for structuring and improving international information networks in subject areas of key development importance.

6. Measures to integrate existing knowledge from AID research and other sources in order to assist LDCs to design better action programs.

7. Measures to create or support institutions that can provide expert assistance to LDCs in both design and implementation of development projects and programs.

To carry out such measures, the following is a list of specific actions that could be undertaken by missions, regional bureaus and TAB.

Suggested Action by TAB

1. Provide specialized assistance to missions and LDCs in project design and implementation of development projects. In American state universities there is a separate staff to attend to extension or utilization. In TAB offices this is an extra activity that is somehow squeezed in. If, as it appears, it is not possible to obtain ceilings for adequate permanent staff to accomplish this, then one or more specially designed international institutes should be created either by AID alone or in cooperation with other donors to fill this need.

2. Develop facilities and expertise to assist missions and LDCs in carrying out reviews of world literature and experience as a basis for action programs or needed local research.

3. Establish one or more utilization positions in each technical office of TAB with the responsibility to work with research project managers, missions and LDC institutions to develop research networks and apply existing knowledge. This would not be just an occasional TDY to assist with a PROP but a full time program responsibility.

4. The utilization officer would also provide assistance in linking country projects with similar efforts being conducted by other countries and by international networks. Here again there is some similarity to the role of the Extension subject matter specialist at a land grant university.

5. Take leadership in developing information systems to backstop the research networks. This will include a range of activities related to communications back-up of specific research networks--access to sophisticated facilities for literature reviews, design and funding of "state of the art" studies, building de-centralized bibliographic resources in priority subject areas at network institutions, etc. The goal of this activity is to bring LDC institutions and scientists into a worldwide effort to advance the frontiers of knowledge. In many cases it will be possible to make a program linkage but in all cases there should be a solid information linkage. At present the institutions funded under our grants and contracts are taking an extremely variable role as nerve cells of such information networks. Where the Agency wants the contractor/grantee to be a key element in information networking, funding for such a role should be provided in the contract/grant documents.

6. Continue with Agency efforts in technical information management. The R&D abstracts should be expanded to announce all technical reports, including those prepared under mission and geographic bureau auspices. Many of these reports merit broad availability.

7. In providing AID representation on the Consultative Group for International Agricultural Research and similar bodies, assure: 1) that there is adequate input from the missions as to present and potential mission needs for technical expertise in the subject areas covered by the centers, and 2) that missions are informed of center results that merit incorporation into national action programs or testing in local research.

8. Develop more effective ways to obtain LDC involvement in the planning and operation of research networks. A more collaborative style is needed in planning and execution. The international agricultural centers and some university contractors are beginning to find ways to surmount this

problem, but more effort is needed.

Suggested Actions by Missions and Regional Bureaus

Rationale: Wide gaps remain between the availability of: new findings from development related research, other technical knowledge, institutional capabilities, technical talent, and utilization by LDC development programs and AID missions. As a result of these gaps there are missed opportunities for planning and program implementation.

In the LDCs, the research organizations, libraries, and academic institutions are frequently not directly involved in the process of planning and implementing development programs. Their links to the institutions concerned with development may be non-existent or weak. As a result, technical knowledge and resources available within LDCs may be only partially utilized. Where these links are weak, new knowledge from the developed world tends to be under utilized. The AID missions, operating with small staffs, may also reduce the complexity of their tasks by making use of techniques and knowledge already in hand and hesitate to invest in searching for or requesting additional technical information or products of recent research.

To strengthen the mission funded projects and contribute more effectively to a worldwide knowledge production and development effort, the following actions should be considered by geographic bureaus:

1) Require that the documentation needed for project planning and implementation include a "state of the art" statement.

2) Require that project planners consider whether recent technical findings could be effectively included in the project design.

3) At the project design stage, assure that needed research be included in the project if locally tested knowledge or techniques do not appear adequate for the success of the project.

4) At the AID/W project approval stage, assure the inclusion of relevant findings from AID funded studies or other research.

5) Collaborate with TAB to develop in-house or out-of-house competence to assist AID missions and LDC institutions in designing development projects to make use of research findings. An adequate intermediary might be either regional or international in scope but should have a cadre of social scientists and technical experts, from LDCs or with LDC experience, with the requisite skills to provide sound and efficient help in both project design and implementation.

6) Use their participation in the Research and Development Committee (R&DC) to introduce more bureau interests into the design of TAB initiated projects. Of equal importance, represent the missions in suggesting research problems and projects for central funding.

7) Obtain greater involvement of local scientists and information centers in reviewing the "state of the art" and in project design. Partly because of the long approval process in AID/W, missions frequently attempt to do much of this important spade work themselves rather than obtaining optimum involvement of host government scientists and documentation specialists.

8) The role of R&DC might be enlarged, or a similar committee be established, to review and advise on mission projects in order to assure technical quality and to improve the probabilities that the work will contribute to expanding the frontiers of knowledge.

9) In each mission, consider naming one professional in the program office as "utilization officer". As such he would assure that the actions listed above and others related to utilization are effectively carried out at the mission level.