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**CONFERENCE  
ON  
ENVIRONMENT  
AND  
DEVELOPMENT**

**Conducted for  
The Agency for  
International Development**

**December 1 - 6, 1974 and  
February 2 - 7, 1975**

**ADVANCED STUDY PROGRAM**



**The Brookings Institution  
Washington, D. C.**

**R E P O R T  
SUMMARY OF HIGHLIGHTS  
WITH  
RECOMMENDATIONS**

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    -- DECEMBER 1974  
    -- FEBRUARY 1975

CONFERENCES  
ON  
ENVIRONMENT AND DEVELOPMENT

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The Brookings Institution  
Advanced Study Program

for

The Agency for International Development

HIGHLIGHTS AND RECOMMENDATIONS

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## Purpose

Under Contract No. AID/otr-C-1297 two educational conferences were conducted for senior AID officials on the subject of: "Environment and Development."

The stated purpose of these conferences was to provide AID officials with an educational experience to enhance their knowledge, appreciation, and understanding of:

- the nature and importance of environmental factors in development programs;
- the perspectives and concerns of less-developed countries in respect to environmental problems;
- how environmental factors can be taken into account effectively in formulating development plans and programs;
- how to assist recipients of development assistance to consider environmental factors in planning and executing development programs.

Two conferences were held in Williamsburg, Virginia. The first was conducted during the period December 1 - 6, 1974 at the Hospitality House with an average of twenty-seven officials in attendance at each seminar. The second conference was held

in the restored Colonial Williamsburg at the Cascades/Motor House during the period February 2 - 7, 1975, with approximately fourteen officials in attendance.

Copies of each of the conference programs are included in this report as Appendix A. The basic design adopted for the first conference proved to be satisfactory. The format was altered only in minor respects for the second conference. The most significant change in pattern was to have a preconference luncheon meeting in Washington to discuss official AID policies on environmental protection and to have officials from the Council on Environmental Quality and the Environmental Protection Administration evaluate AID's performance under the National Environmental Policy Act (NEPA). This allowed greater opportunity for participants to delve more deeply into the technical and professional issues relating to economic development programs during their seminar at Williamsburg.

### Highlights

The first seminars at both conferences dealt with the broad issues of man's effect on the environment in time and space, his damaging and permanent impact--at short term and long term--on a finite world. A seminar was devoted to discussion of the perspectives and views of the less-developed world in respect to environmental problems. Succeeding seminars dealt with environmental consequences of development programs in specific areas: agriculture, land use, water resources, overall industrialization problems, and urbanization. Then in the final two sessions, alternative approaches to environmental planning were discussed and AID's responsibility in relation to the environmental effects of AID-supported projects. AID's general function and its capacity to render general technical assistance in environmental planning was also reviewed.

### Conceptual Base

In both conferences William E. Cooper of Michigan State University was the resource expert on the nature of the environment and its natural dimensions and limitations.

He provided a conceptual base for the conference. This involved (a) defining "ecology" and "environment," (b) exploring the limitations of the environment in relation to the overall consequences for the environment of economic growth.

These sessions emphasized the natural conflict between environment and economic development; and the environmental change--and possible damage--that always occurs with economic development. Yet development must and will proceed: can it proceed without irreversible disfigurement of the natural world?

Since all man-engineering change has impact on the environment and more often than not alters it in an injurious manner, the crucial unresolved question is the extent to which the world can absorb the waste and heat generated by such industrial development.

There is as yet inadequate knowledge to provide answers on which experts can agree. Man depends upon basic resources (energy, in effect) of the natural world and upon its capacity to absorb wastes resulting from economic growth.

A burning and controversial issue among experts is whether new technology can be generated rapidly enough to meet the demands for energy and to dispose of wastes before catastrophic results accrue.

We can drive the industrial system faster by changing the flow rates of chemicals in the system. But then we must account for the tremendous energy demands to accomplish this change. Can we afford, in terms of the required resources and energy and the disposal of the ensuing waste to develop the underdeveloped two-thirds of the world so that the population can enjoy the standards of living to which the Western industrialized world has become accustomed? The combination of physical and behavioral changes required is beyond comprehension.

But a policymaking process to confront this challenge has to be evolved. In the Western world, heavy reliance is placed on the free market system in economics and on the democratic step-by-step, trial-and-error decisions that are made by the political and social institutions at national, state, and local levels. Some express doubt that these institutions are adequate to meet the demands of the confrontation between economic development and environmental protection. Maybe they can.

Cooper illustrated the difficulties involved and how questionable decisions had been made in such instances as the dumping of taconite in Lake Superior by the Reserve Mining Company (a possible irreversible damage to a unique resource); the restoration of Great Lakes' fishing, a resource without the long-range consequences known; and the possibly uneconomic and ecologically damaging development of large beef feeding operations.

#### LDC Perspectives

An analysis of perspectives on environment and development from the view of the less-developed countries (LDCs) of the world was presented in the first conference by Shahid Javed Burki, an economist at the World Bank, and at the second conference by Newton C. Cordeiro of the Organization of American States. At the first conference, Don King of the U. S. Department of State also reviewed the types of arrangement--bilateral, regional, and international--made to deal with the LDC development needs and the environment.

The principle of additionality that came to the fore at Stockholm is still dominant in LDC thinking. Most of the countries believe that it the industrial countries responsible for

the deterioration of the environment want to reverse--or rather slow--the global trend they started, they should themselves pay the additional expense involved in LDC project development.

The LDCs claim that the developed countries' current concern over environmental factors is already costing too much. The LDC chief export markets impose nontariff barriers and domestic restrictions on the quality of imported primary products. For example, 10 percent to 15 percent of the oranges from Pakistan do not meet USDA standards; nor do Indian cashew nuts. And there are regulations on packaging produce that make production costs prohibitive.

Why then should LDCs comply with other governments' provisions on projects within their own borders? Poverty appears as the chief pollutant and what happens in the biosphere is irrelevant to LDC needs at the present time. Of course, this is the short-term view and Stockholm triggered a turnabout in many countries' thinking, especially about the environmental impact of industrial processes and the long-term effects of overdevelopment.

The Office of Environmental Affairs (OEA) at the World Bank follows a pragmatic project-by-project approach

depending largely upon the attitude of the LDCs involved. If an LDC accepts them, UN guidelines are adhered to. But, because of the LDCs' great need for development capital to raise living standards and prolong life, the Bank has rarely turned down a project. When OEA has done so, alternate routes were found for funding the "additional" environmental costs, such as using other bank members' counterpart funds.

It might not be advisable for AID to follow the Bank's somewhat elastic practices, especially with its legal obligations under NEPA. In any event, AID's interest in and involvement with large capital projects are steadily declining.

Another concern of the LDCs expressed by Newton Cordeiro of the OAs in the second conference is timing: when should environmental planning be considered in development projects? Resentments build up when the aid-giving nations or their international instruments challenge projects in the late stages of planning and financing because the environmental impact was not considered early enough. Late challenges and requirement of additional analysis, causing delay in the project, is construed frequently as an excuse for denying a grant or loan or at best a delaying tactic. The OAS is attempting to avoid such impasses by assisting South American countries to place ecological considerations

in the analytical process in prefeasibility studies. Some success is being achieved on this score in projects undertaken with AID from OAS.

This OAS perspective was also stressed by Kirk Rodgers at the first conference in relation to the discussion on alternative approaches to environmental planning.

Don King at the first conference pointed out what great strides had been made since Stockholm. Twenty-odd countries have established environmental agencies. This reflects the LDCs' interest in environmental problems. It also represents a new focus by international agencies on some old problems. There are, for example, twenty or so bilateral agreements on environmental issues; regional organizations such as NATO's Committee on the Challenges of Modern Society, OECD and ECE committees, and the UN Environmental Program (UNEP).

Bilateral diplomatic exchanges on a country-to-country basis are not the most efficient way to do substantive business, especially if any agreements arrived at are in such general terms as the one between the United States and the Soviet Union.

The regional organizations, especially those in Europe, have operated at the policy level. People have participated who can influence political decisions at home. NATO's CCMS has

concentrated on such things as oil pollution (bilge flushing near the shore) and pilot projects. The OECD also has a pollution-oriented program and tends to advocate the "polluter pays" principle. The ECE, which was for a long time the only contact with the communist world, is preparing for the 1977 water conference in Buenos Aires.

International as distinguished from regional organizations are quite rightly concerned with coordination and long-term effects on the environment, according to Donald King. They should have no policy function. For example, a small part of UNEP's very small budget is invested in new projects. The organization's main concern is coordinating the work of the UN specialized agencies and other international bodies and in developing a pool of specialists to assist the LDCs. This is likely to lead to friction between LDCs and developed countries because of their differing perspectives.

Within this international framework, AID should not duplicate the work of other organizations. It should use the expertise available to it to present the LDCs with the best series of options it can to meet their urgent development needs and that bear environmental considerations in mind.

### Agricultural Development

Analysis of the environmental consequences of agricultural development included concerns about the total environment and the way in which production, marketing, and government policies influence development; how social, economic, and political factors help or hinder the use of relevant technology; and what the ecological impact is likely to be on agricultural projects in differing climates in the less-developed regions. Milo Cox, an agricultural consultant formerly with AID, led the sessions at both conferences.

At the subsistence level, the farmer throughout the world is generally a reasonably good ecologist in his natural environment. Experience and tradition has taught him its limitations. But, with the introduction of technical assistance to increase production, behavioral patterns are revealed that are little understood by the specialists, and that thwart the long-term objectives both of the distant host-country government and of the technical assistance advisers.

AID and others provide a myriad of specialists, but the only generalist is usually the local farmer who wants to get the most from his land at the least cost to himself, not the

environment. He is a realist. Every day he has to make decisions that he hopes will be to his economic advantage. He cannot afford to concern himself with the farmers downstream, maybe across the border, or with the general good of the agricultural economy--including the inadequate diets of the masses in the cities. Neither AID nor his government can pressure the farmer to consider anything but his own interests; he can be influenced only by demonstration--if possible, of how it might be to his personal advantage to take into account the broader agricultural issues and the environment.

The farmer will not bother to produce unless he has an adequate market at a beneficial price. He may not be able to read or write, but he is good at calculating risks. Needed most is a systematic approach to the agricultural economy that would balance three major elements: price policies by the government; production incentives for the farmer; and the consumer's demands, needs, and ability to pay. Host governments and assistance sources can be most effective if they would devote attention to the development of an efficient competitive market operation that benefits those who need the food in the cities and those who produce it on the farms. This depends on government policies that favor an effective distribution system.

Farm production can be stimulated, but in the processes the long-term environmental consequence must be taken into account. Our experience and that of the Western aid-giving nations is not automatically transferable to much of the developing world. Among the most urgent LDC needs is regional research on agricultural development, especially for tropical areas. It is in such largely unknown, unexamined regions that the greatest potential exists. Knowledge garnered in the temperate zone is not automatically transferable--only the investigative skills of the specialists.

#### Rangeland Management and Livestock Development

Here debate centered on (1) the importance of rangeland and livestock to the world's food supplies; (2) the problems resulting from lack of understanding of the principles of range ecology by those using the lands and by the governments involved; and (3) the ways in which rangeland management interferes with the hydrologic cycle, and what the alternatives are in tackling this problem. Harold Heady of the University of California (Berkeley) was the resource guest at the first conference, and Thadis Box of Utah State University at the second.

Treatment of the subject differed only in the emphasis on the ecological processes in rangelands. Heady was particularly concerned about this aspect.

Discussion highlighted how very little is known about subtropical and tropical rangelands--or how they should be managed. The natural succession of seasonal and yearly changes on these marginal lands that are neither forest nor farm has been studied extensively in the American Midwest, but the knowledge and technique learned there are not transferable in full to the LDCs, mainly in the subtropical and tropical zones with marginal lands. Yet one-third to one half of the world's surface is devoted to rangelands.

Significant characteristics of rangelands and the rangeland development problem may be summarized as follows:

- this is a resource that is slow to heal once damaged;
- the density of people and weakness in the power structure encourage inefficient and sometimes damaging government policies;
- support facilities, such as communications, are weak or nonexistent;
- financial institutions to support rangeland development are grossly inadequate.

Add to these characteristics the fact that, by and large, range technicians who are sent to aid developing countries have generally been insulated from basic ecological research sources.

The principal problems that confront technical advisers in developing countries are:

1. There is usually no governmental commitment to nomadism and ranging.
2. There is no ecological understanding of the carrying capacity of ranges.
3. Development efforts are unbalanced with minor attention paid to rangelands and major attention to water development.
4. Too little attention is given to the management of new schemes and projects largely because of inadequate government organization and a paucity of personnel available for travel.
5. Most important, the input into range planning by the local people (who have the most to offer) is frequently ignored.

Bilateral aid in rangeland development often founders because of inadequate understanding of the ecosystems involved. For instance, there is a heavy "beef bias" in the development of rangelands whereas in many parts of the world other livestock development would be far more efficient in the production of food. Generally there is also too little concern on the part of technical assistants for the cultural constraints of the country and region.

Crash programs geared to immediate results also disappoint and sometimes seriously injure the long-term potential of a rangeland. Time is a most important element in analyzing and prescribing for delicate rangelands ecosystems.

Finally, bilateral aid efforts frequently discount the importance of providing careful monitoring and follow-up programs in rangeland development projects.

#### Water Resources Development

The chief preoccupation was with the social and cultural effects of the modification of river ecosystems when large dams are built and irrigation systems developed. This

includes such problems as the alteration of social patterns and human settlements; the aggravation of waterborne diseases; and the impact on health and food production.

Milo Cox led the discussion in the first conference, and Thayer Scudder of the California Institute of Technology in the second. Both emphasized the fascination of LDC and aid-giving planners for large-scale river developments involving high dams. This is referred to as the "development-from-above syndrome." It attracts intense political interest and purports to serve as a national integrating force, but most often the local people involved are left out of the planning process. In fact, planners often develop systems that are alien both to the environment and to the natural systems; the most significant side effects are not calculated in advance.

Milo Cox emphasized the technical-engineering unseen and unplanned aspects. Thayer Scudder drew the discussion to the social and cultural side effects of large water-system developments. His information rests on linear studies extending as far back as ten years in a number of areas of the world (including the Kariba Lake development, the Volta dam and the Asswan dam) of the impact of relocation of people on health and social and political institutions. The impact has been significant and not for the good in many respects.

The analysis led to discussion of the multidimensional stress on the population affected by large dam developments: the physiological effects of large resettlement operations; the psychological consequences of undermining the normal patterns of leadership when rural tribes are integrated into large urban settlements; and the socio-cultural shock to the family unit coping with change on a smaller scale than the larger tribal unit. Furthermore, in water development planning the record shows that the cost of relocation of large numbers of people has been underestimated by a factor of three or four.

#### Industrialization

How economic development and industrialization have threatened the environment and quality of life was discussed by Clifford S. Russell and Blair Bower at the first and second conferences, respectively. Both are associated with Resources for the Future. Special attention was given to the possible trade-offs available to balance drives for economic development against the long-term benefits to be derived from conservation of resources and the preservation of environmental quality. Consideration of the question "Is more industry always better?"

is a luxury the developing countries have not afforded themselves, stated Russell at the first conference.

Unlike us, they have not been concerned about economists' debates whether industrial progress or environmental quality is paramount. To countries whose populations have a short life expectancy and face increasing famines, decisions affecting economic growth give little consideration to the probability that in twenty years these populations will have to confront affliction from pollutants. Nonetheless some LDCs are beginning to see the disadvantages of offering "pollution havens" to dirty industries that other nations will no longer allow. The same sets of choices and the same alternatives face everyone.

How much pollution is acceptable?

Discussions on ambient standards are political. They depend on entrepreneurs' willingness to pay for averting the most noxious effects of pollution, how much of the cost they can pass on to the consumers, and how much pollution the community will tolerate.

Assuming a decision on acceptable standards, what are the options to meet those standards?

One option is to collect available data and use it to

contain pollution, realizing that entrepreneurs seek to maximize profits. They will recycle, develop byproducts, rechannel residuals, and so forth, depending on the cost of recovery, government regulation, and other local considerations.

Another is to insist on standard treatments, such as collecting particulates from industrial stack emissions, and secondary and tertiary treatment of sewage. Costs are fairly easily determined and the removal efficiency is generally known, so long as there are no exotic wastes and people are willing to live with a margin of existing error.

A third option is to find out how any discharge affects a given area and impose appropriate regulations. For example, when a plant is built in a valley, does it affect the flora on the nearby hills? Is the effect lasting--the trees die--or temporary--do the adjacent leaves brown or wilt? On-the-spot investigations in each local situation are needed to determine the ecological-biological factors relevant to the environmental measures decided upon. This kind of specific knowledge about how certain types of projects affect the surroundings and the people has been acquired and complicated computer models built for the temperate zone incorporating up to ten variables.

Most LDCs are in the tropics. So...

The most complicated approach would be to develop models of industrial plant processes that incorporate environmental factors. Benefit-cost analyses should include the options described above related to objectives that govern the choice of technology--for example, alternate designs for a steel mill that stress safe residual removal and environmental factors, that produce at least cost or, more usually, compromise with moderate pollution and moderate cost.

Blair Bower focused more precisely on industrial development and its consequences in contrast to Russell's general treatment of the effects of economic development.

Bower's main thrust, like Russell's, was on ways to deal with the residual problem, but he saw it more in terms of policy and strategy.

Besides the options mentioned by Russell of improved engineering techniques Bower also suggested incentive mechanisms, such as taxes or special institutional arrangements, which AID or another similar organization could help the LDC to implement.

Bower laid even greater emphasis than Russell on the profit motive. He placed great faith in the conclusion he has drawn from his studies that in a large number of cases it is either less expensive (in other words profitable) or not more expensive for

industry to reduce the residual problem if the requirements for it are laid down and technical assistance is rendered.

The wastes can actually become profitable if proper technology is applied and regulation of it insisted upon. An integrated approach to industrial development is essential to accomplish this.

#### AID in the Cities

Wilfred Owen of the Brookings Institution and Brian J. L. Berry of the University of Chicago approach the big-city issue from quite different perspectives. The points at issue were the environmental consequences of the development of large human settlements as economic development takes place and people migrate to the metropolises, and how such an impact affects social organization and human health. Wilfred Owen at the first conference stressed that the development process has to include some form of urbanization but to date no one has been satisfied with the variety of "solutions" and experiments. AID's efforts in the city have been fragmented but there should be an integrated program for the urban poor similar to the one that already exists for rural development. The two are interrelated.

Three areas--Singapore, Bogotá, and Karachi-- were chosen by Owen to illustrate different planning approaches: nationwide dispersal, satellite communities, and urban redevelopment. In Singapore there is a government plan to move the poor from the inner city slum areas. In Bogotá, alternative futures for satellite development are being projected for a city that is to grow from 3 million to 9 million people by 1990. In Karachi, the concept of metrovilles--five new cities within the old city, each 50,000 strong--is taking shape, but essentially for those who can pay to participate, not for the really poor. AID should concentrate on helping to relocate those who cannot pay for it.

The features common to all three approaches are:

(a) a single agency that chooses among alternative futures, builds the whole community, and plans land use; (b) development that is on a large enough scale to absorb the planning costs but broken down into manageable units each of maybe 10,000 or 20,000 inhabitants; and (c) projects that are financed through land development--agricultural land that has been resold or rented at city prices according to projected use within the city development plan.

Owen made the following suggestions on how AID could help the urban poor:

1. Provide a manageable and utilitarian worldwide information exchange service.
2. Advise on institution financing--for example, showing how revolving funds were used to purchase land in Stockholm.
3. Select one or two cities as models and provide technical assistance for planned growth.
4. Finance urban planning teams using local experts familiar with LDC problems rather than those experts whose experience is limited to the United States.
5. Help to develop regional trade in building materials.
6. Encourage local industry to provide necessary urban infrastructure using local materials.
7. Plan a demonstration project on capital development based on the most advanced city models available and including the cost of the infrastructure.

Brian Berry's approach differed from the one taken by Will Owen. Are large cities so bad, after all, he argued? Environmental economists tend to use the classical Marshallian economic argument only in regard to costs--which leads to the conclusion that size of cities should be limited. But such economists ignore the revenue side of the argument that favors large agglomerations and the high degree of specialization possible in the large cities.

There are tradeoffs: the nature of the benefits arising from urban growth as opposed to rising costs. Berry advocates the use of land values (rather than wage rates) as the measure of size. This takes into account many variables, including human desires, needs, and responses. Settlements seem to grow and land values rise until the city accommodates about one million. After that, land values tend to decrease until, with the greater degree of specialization possible in the very large city (about 6 million strong), values begin to rise again. People want to live in large cities, says Berry, and environmental considerations are just one of the factors that will influence their decision--and hence affect land values. The advantages of agglomeration and specialization in relation to the environmental diseconomies need to be much more carefully studied.

Alternative Approaches

The final sessions of both conferences probably were the most provocative and controversial. Pierre Crosson of Resources for the Future and Edwin T. Haefele of the University of Pennsylvania participated in panel discussions at both conferences. Kirk Rodgers presented the OAS approach at the first conference. And John P. Milton of the Center for Environmental Renewal led off the panel debate at the second conference by summarizing the various methods of approach to environmental planning that led to a lively interchange among both panel and conference participants on the role AID should play.

Discussion centered on the following:

- the need for interdisciplinary inputs
- analytical approaches to environmental problems to supplement economic analysis
- use of standards and impact statements
- institutional arrangements
- the technical assistance role.

Pierre Crosson led off the discussion by emphasizing the importance of institution building. He said that there are very serious limitations to the usual benefit-cost analysis of development

projects; many real but elusive costs exist but are not normally considered. For example, what is likely to be the effect of the project upon the air, the soil, and the water? What is the "cost" of the project's impact upon the environment--now and in the future? What is the nature and extent of these impacts--what is the weight to be given to each--how can management mechanisms be devised to make sure that their weight is reflected in overall management decisions?

In essence there are differences in the costing process for the ecological and economic approaches. Environmental costs are not borne by the people who generate them. Therefore, the generator of these costs, under present accounting systems, does not have to take them into account. There is also extreme difficulty in establishing property rights when assessing environmental costs. In consequence, there is serious doubt about the efficacy or usefulness of any form of benefit-cost analysis.

The question of whether and how future generations may be shortchanged in the interest of effecting demonstrable short-term progress doesn't seem even to be confronted. Something more than the discount marketing approach is required. This "something more" is elusive because it is difficult to measure in

quantitative terms; facts are hard to come by. But somehow project analyses have to face up to social value questions, and to find some way of setting standards and of weighting and measuring their costs.

Foreign aid can provide the technical assistance but institution building--an essential prerequisite to national environmental planning--is a much more sensitive and political area.

Haefele continued to have a major impact on thinking of the group with his recommendations for positive action on the part of AID. In the wind-up session of the second conference, devoted to consideration of a strategy paper for AID on environment, there was agreement that such a strategy should include Haefele's recommendations for advocacy planning; creating awareness among foreign nationals of the ecological dimensions of economic development; and helping host countries to organize effective but simple techniques for monitoring environmental quality changes, such as the one instituted at Oak Ridge, Tennessee.

Haefele emphasized that a key problem in assessing ecological consequences of development are the manner and the methods by which we handle uncertainty. The thrust of future efforts should be as follows:

1. identifying the physical dimensions of the problem (its regional and geographic scope): how extensive will the damage be?
2. assessing the severity of the damage;
3. calculating to the degree possible, the persistence of the problem.

Haefele's proposals for positive action on the part of AID in considering the environment may be summarized as follows:

1. enunciate positive policy positions about specific and generally accepted environmental problems; for example, no project that involves the discharge of heavy metals into the environment should be encouraged or supported by AID;
2. improve analysis techniques to be as inclusive as possible in the balancing of benefits against costs;
3. establish institutional arrangements to encourage advocacy planning so that ecological considerations are included in the planning process;

4. expand training of foreign nationals in understanding and knowledge of the environment.
5. accept and support higher costs for development projects in order to protect the environment.

Haefele's interpretation of shifting values suggested the possibility of gaining constituency support for strong positions in behalf of protecting the environment. He views the current and future climate of opinion in America to be that of a definite shift in public values toward serious concern about the quality of life in balance with economic development and growth.

John Milton suggested a process that might be useful in analysis of environmental impact. The process includes:

1. the careful post audit and description of development projects and their total consequences. (The Careless Technology a description of as many as 250 cases of development projects is an illustration);
2. the development of ecological principles and guidelines from these case studies;
3. application of these guide lines in prefeasibility studies for all future development projects;

4. use of the guides when implementing new projects;
5. careful monitoring of all projects to ascertain conformance with the guides.

The process should be continuous as development projects are undertaken so that ecological doctrine and guides are constantly being changed and revised with the growth of knowledge and experience.

Milton also recounted a number of approaches and techniques now used by environmental specialists in the assessment of development projects, such as:

1. the checklist of things to be done and questions to be answered in planning and execution of projects (World Bank manual as an illustration);
2. the development of a matrix which includes a checklist along with precise steps to be taken to implement the items on the checklist;
3. the network approach which in effect is a flow chart of the costs and the benefits at each step in the project;

4. use of the guides when implementing new projects;
5. careful monitoring of all projects to ascertain conformance with the guides.

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3. the network approach which in effect is a flow chart of the costs and the benefits at each step in the project;

4. map overlays which graphically reveal the story of benefits and consequences of development plans and projects.

Milton also advocated what he calls a transfer of intermediate technology to much of the development going on in the world. By this he means an effort to redesign what we in the developed world have learned to accommodate to LDC needs and circumstances, rather than the introduction of the latest sophisticated technology. His examples included: concentration on labor-intensive activities; use of locally manufactured products; dependence on low-cost available resources and raw materials for agriculture and industry; emphasis on small-scale decentralized technologies; concern about minimum disruption to biological and other systems.

Kirk Rodgers at the first conference dealt with OAS concerns as Newton Cordeiro did in the second. In discussing alternative development approaches, he emphasized the importance of institution building but he saw a greater opportunity for AID (or OAS) to play an advisory role in this connection than Pierre Crosson.

Rodgers considered the overall aspects of initial planning to be extremely important. He urged an interdisciplinary approach to prefeasibility studies and recommended the development of a

package of projects. It is the sum of available resources that determine their value. For example, what are alternative ways of improving water supply to the building of a dam? What are the least capital-intensive ways of obtaining energy? The sequence of actions prior to a feasibility study he considered to be paramount. Such a sequence should be examined closely in relation to social and cultural goals and to see that policies did not conflict—say, those for water resources and those for local resource use.

The sequence Rodgers suggested was: 1) Survey of physical-human resources and the existing physical infrastructure. 2) Identification of development possibilities and their associated environmental hazards. 3) Formulation of preliminary projects and alternatives--and not as was customary, zeroing in on one project, generally capital-intensive. 4) Development of a composite regional plan. 5) Conduct of prefeasibility studies that would provide the frame of reference for the feasibility study itself.

Another much overlooked area was the management of completed projects. Post audit of OAS programs had indicated that it was often not just project design and concept (that related to the steps outlined above), but also operation that led to negative situations.

## Evaluation and Recommendations

### Evaluation

Upon inquiry, participants revealed that they thought the conferences were very worthwhile. For most, the principal purposes were achieved, namely: a sharpened perspective on the relationships between environment and development; greater awareness of the nature and importance of environmental factors in development programs; and, improved understanding of the environment itself and its finite limitations.

The conferences were not designed to produce specific rules for action to be applied to AID programs. This is something ordinarily wanted by senior officials who set program policies and carry them out, and some participants felt that this need should have been met. But they also recognized that an attempt to develop awareness and knowledge of as large and as undefined a problem as this, and at the same time to prepare a problem-solving action kit, would so dilute effort in the time allotted as to detract from the accomplishment of either purpose.

On balance, possible conferences in the future might find it desirable to assess each session in terms of what specific

meaning the discussion had for the roles and responsibilities of each participant. More effort can and should be given to such an approach.

The prevailing reaction of participants was that further educational programs of this sort should be held in an attempt to reach more of the management group in AID at the assistant administrator and deputy assistant administrator levels.

The design of both conferences met with approval, and the participants generally felt that the progression from treatment of concepts to analysis of sector programs to consideration of methods used in environmental planning by and large met conference objectives.

Although the methodology was generally acceptable, it was noted that more overlap in time among the guest resource experts would have permitted greater give-and-take and exchange of views among them--with more discussion of the pros and cons of contrasting approaches. This is a valid criticism. But environmental specialists are in great demand and busy people frequently cannot afford to be away from their desks for extended periods. Cost is another factor. The more time required of the expert the higher the cost.

Case studies were introduced in the first conference. The response was generally favorable to this learning device with the proviso, however, that to be really useful in the educational process the conference program must be loose enough to allow time for small group meetings to analyze and discuss the cases. Evening meetings neither allow enough time nor provide the best atmosphere for fruitful work especially after a day full of plenary sessions. As a result case studies were eliminated by consensus of the group in the second conference. The schedule was too tight.

Finally, there was not enough continuity of attendance at the first conference. There were approximately twenty-seven officially designated participants. Six, however, attended only part time. In effect, then, there were twenty-four participants calculated on a man-week basis. Spotty attendance of this nature impedes the achievement of conference objectives for those involved, and it also disrupts the general continuity of the conference for the others.

Attendance at the second conference was disappointing in terms of numbers (fourteen attended), but not in terms of educational value. The small group leads to more individual participation in discussion and this helps the conferees to learn new things and confront new ideas. But, it is also a very expensive process.

Recommendations

On the basis of experience gained in these two educational efforts and participants' evaluations, the following are recommended:

1. Continue the conference program for one and possibly two more conferences for headquarters staff in the hope of reaching key people who were unable to attend either of the first two.
2. In order to achieve a full house of participants, obtain early and firm commitments from those who are to attend.
3. Enlist, if feasible, the full support of the Administrator's office in the process of selecting people to attend.
4. Redesign the length of the program to shorten it and to reduce the concern of many key people about being away from the office for too long a period. Two alternatives are suggested:

-- a 3 - 3-1/2 day conference in residence  
with a more heavily concentrated program;

-- a series of 6 - 8 one-half day seminars  
held on a regularly scheduled basis, two  
weeks apart, in Washington

5. Choose the first alternative suggested in (4)  
above if at all feasible in order to obtain the  
benefits, albeit unmeasurable, of the in-residence,  
interpersonal exchange which that provides.
6. Eliminate case studies in a highly concentrated  
and tightly scheduled program.
7. Finally, consider the possibility of extension of  
this educational effort to key people in the field  
missions with the possible involvement by  
invitation of local national officials when feasible.

CONFERENCE  
ON  
ENVIRONMENT AND DEVELOPMENT

conducted  
for  
The Agency for International Development

Hospitality House  
Williamsburg, Virginia  
December 1 - 6, 1974

PROGRAM

Advanced Study Program  
The Brookings Institution  
1775 Massachusetts Avenue, N.W.  
Washington, D.C. 20036

SUNDAY, DECEMBER 1, 1974

WILLIAMSBURG, VIRGINIA

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5:15 p.m. - 6:00 p.m.      ORIENTATION - THE PURPOSE AND  
   PHILOSOPHY OF THE PROGRAM

Fordyce W. Luikart  
Senior Staff Member  
The Brookings Institution  
Chairman of the Conference

6:00 p.m. - 7:30 p.m.      SOCIAL HOUR AND DINER

7:45 p.m. - 9:30 p.m.      SOME BASIC CONCERNS ABOUT  
   MAN AND HIS ENVIRONMENT

John A. Busterud  
Member  
Council on Environmental Quality

The purpose of the opening session is to provide the conference with information about U. S. environmental protection policies and AID's relation thereto; to provide an overview of environmental problems; and to express concerns and identify some options available to protect quality of life in the process of economic development.

MONDAY, DECEMBER 2, 1974

WILLIAMSBURG, VIRGINIA

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9:00 a.m. - 12:00 noon    SOME DIMENSIONS AND LIMITATIONS  
IN THE ENVIRONMENT

William E. Cooper  
Professor of Zoology  
Michigan State University

This session will be devoted to providing a conceptual base for the work of the conference in which ecological parameters and limitations in relation to economic development programs are explored, and issues regarding the environmental consequences of growth are analyzed.

12:15 p.m. - 1:15 p.m.    LUNCH

1:30 p.m. - 4:30 p.m.    DIFFERENT PERSPECTIVES ON  
ENVIRONMENT AND DEVELOPMENT

Shahid Javed Burki  
Senior Economist  
World Bank (IBRD)

Special attention will be devoted to identifying and understanding the reasons why LDC's regard environmental problems differently than developed countries. Discussion will focus on such questions as: Why is the relevance of the new concern about environment questioned by LDC's? Wherein do the environmental priorities of LDC's differ from those of developed countries? Why should LDC's be concerned about the environment?

6:00 p.m. - 7:30 p.m.    SOCIAL HOUR AND DINNER

Evening                    INDIVIDUAL STUDY

9:00 a.m. - 12 noon

AGRICULTURAL DEVELOPMENT AND  
ECOLOGICAL CONSEQUENCES

Milo Cox  
Agricultural Consultant  
Formerly Deputy Director for Field Review  
and Evaluation, Office of Agriculture,  
Bureau of Technical Assistance, AID.

Discussion will focus on the total environ-  
ment in which agricultural production takes place  
and how economic, social and political factors  
prohibit or enhance the utilization of relevant  
technology and the consideration of ecological  
impact resulting from agricultural development.

12:15 p.m. - 1:15 p.m.

LUNCH

1:30 p.m. - 4:30 p.m.

LIVESTOCK DEVELOPMENT, RANGELAND  
MANAGEMENT AND ECOLOGICAL CONCERNS

Harold F. Heady  
Associate Dean  
College of Natural Resources  
University of California  
Berkeley, California

Emphasis in discussion will be given to  
the importance of rangelands and livestock in the  
totality of world food supplies; problems resulting  
from lack of understanding of the principles of  
rangeland ecology and range management on the  
part of the peoples, the development experts and  
the governments concerned; implications of inter-  
ference with the hydrologic cycle; and alternative  
approaches to rangeland management.

6:00 p.m. - 7:30 p.m.

SOCIAL HOUR AND DINNER

7:30 p.m. - 9:30 p.m.

CASE STUDY - SMALL GROUPS

The conference group will be divided into  
three small groups to study and discuss a specific  
development case with environmental implications.  
The objective is to have each group review the case  
and propose solutions. Group reports will be made  
during the morning session on Friday, December 6.

9:00 a.m. - 12 noon      WATER RESOURCES DEVELOPMENT  
AND ECOLOGICAL BOTTLENECKS

Milo Cox

Emphasis in this session will be placed on ecological issues relating to the modification of river ecosystems resulting from the building of large dams and irrigation systems, including problems of human resettlement, aggravation of waterborne diseases and the impact on human health and food supplies.

12:15 p.m. - 1:15 p.m.      LUNCH

Afternoon      SMALL GROUPS - CASE STUDY PROJECT

Visits to Historic Sites

6:00 p.m. - 7:30 p.m.      SOCIAL HOUR AND DINNER

7:45 p.m. - 9:00 p.m.      INTERNATIONAL ENVIRONMENTAL  
PROGRAMS AND THE U.S. ROLE

Donald R. King  
Science Advisor  
Office of Environmental Affairs  
U. S. Department of State

This seminar is designed to provide information about environmental protection programs and activities by international agencies. Discussion will focus on how AID efforts can and should be related to these programs.

9:00 a.m. - 12 noon

ECONOMIC DEVELOPMENT, INDUSTRIALIZATION AND THE ENVIRONMENT

Clifford S. Russell  
Professional Staff Member  
Resources for the Future

Discussion will focus on major environmental threats which accompany industrialization such as waste disposal, air pollution, threats to human health energy demands and social organization. Attention will be given to trade-offs and options available to balance the drives to promote economic development and the long-term benefits to be derived from the conservation of resources and preservation of environmental quality. Special attention will be given approaches that can be taken to assist LDC's to analyze the needs, the benefits and the costs.

12:15 p.m. - 1:15 p.m.

LUNCH

1:30 p.m. - 4:30 p.m.

HUMAN SETTLEMENTS AND ENVIRONMENTAL CONCERNS

Wilfred Owen  
Senior Fellow  
The Brookings Institution

Economic development begets growth of human settlements which in turn have impact on the environment. This seminar session will be devoted to study and discussion of the ecological consequences of growing human settlements, the impact on quality of life, the consequences for transportation facilities and some of the options available to retard environmental deterioration in human settlements as noted in urban development planning in selected places in the world.

6:30 p.m. - 8:00 p.m.

SOCIAL HOUR AND CLOSING DINNER

Room B  
Williamsburg Lodge  
Colonial Williamsburg



CONFERENCE  
ON  
ENVIRONMENT AND DEVELOPMENT

conducted  
for  
The Agency for International Development

Cascades/Motor House  
Williamsburg, Virginia  
February 2 - 7, 1975

PROGRAM

Advanced Study Program  
The Brookings Institution  
1775 Massachusetts Avenue, N.W.  
Washington, D.C. 20036

TUESDAY, JANUARY 28, 1975

WASHINGTON, D. C.

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12:15 p.m.  
Brookings Institution  
Room 106

LUNCH

AID'S POLICIES ON ENVIRONMENT AND DEVELOPMENT

John E. Murphy  
Deputy Administrator  
Agency for International Development

VIEWS ON AID'S POLICIES FROM OTHER AGENCIES

John A. Busterud  
Member  
Council on Environmental Quality

Fitzhugh Green  
Associate Administrator  
Environmental Protection Agency



MONDAY, FEBRUARY 3, 1975

WILLIAMSBURG, VIRGINIA

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9:00 a.m. - 12:00 noon    SOME DIMENSIONS AND LIMITATIONS  
IN THE ENVIRONMENT (continued)

William E. Cooper

As a follow-up to the broad ecological overview, this session will be devoted to case studies revealing issues and problems in the application of ecological principles including the Lake Superior Reserve Mining case which sets economic development against potential health hazards and other threats to the destruction of a unique resource.

12:15 p.m. - 1:15 p.m.    LUNCH

1:30 p.m. - 4:30 p.m.    DIFFERENT PERSPECTIVES ON ENVIRONMENT  
AND DEVELOPMENT

Newton C. Cordeiro  
Assistant Deputy Director, Division II  
Department of Regional Development  
Organization of American States

Special attention will be devoted to identifying and understanding why the LDC's regard environmental problems differently than developed countries.

THE UNITED NATIONS VIEW SINCE STOCKHOLM

Michael Geoghegan  
United Nations Development Programme

The evolving history of growth of concern about the environment pre-Stockholm and alteration of views on this subject since Stockholm as discerned and expressed in the United Nations will be discussed.

6:00 p.m. - 7:15 p.m.    SOCIAL HOUR AND DINNER

7:30 p.m. - 9:00 p.m.    INTRODUCTION TO COLONIAL WILLIAMSBURG

Host: Colonial Williamsburg, Inc.

MONDAY, FEBRUARY 3, 1975

WILLIAMSBURG, VIRGINIA

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9:00 a.m. - 12:00 noon    SOME DIMENSIONS AND LIMITATIONS  
IN THE ENVIRONMENT (continued)

William E. Cooper

As a follow-up to the broad ecological overview, this session will be devoted to case studies revealing issues and problems in the application of ecological principles including the Lake Superior Reserve Mining case which sets economic development against potential health hazards and other threats to the destruction of a unique resource.

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6:00 p.m. - 7:15 p.m.    SOCIAL HOUR AND DINNER

7:30 p.m. - 9:00 p.m.    INTRODUCTION TO COLONIAL WILLIAMSBURG

Host: Colonial Williamsburg, Inc.

TUESDAY, FEBRUARY 4, 1975

WILLIAMSBURG, VIRGINIA

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9:00 a.m. - 12:00 noon    SOCIAL AND CULTURAL IMPACTS OF  
WATER RESOURCES DEVELOPMENT

Thayer Scudder  
Professor of Anthropology  
Division of Humanities and Social Sciences  
California Institute of Technology

Emphasis in this session will be placed on the full range of ecological considerations involved in the modification of river ecosystems resulting from the building of large dams and irrigation systems including problems resulting from human resettlement and altered social patterns, the aggravation of water borne diseases, and the impact on human health and food supplies.

12:15 p.m. - 1:15 p.m.    LUNCH

1:30 p.m. - 4:30 p.m.    AGRICULTURAL DEVELOPMENT AND  
ECOLOGICAL CONSEQUENCES

Milo Cox  
Agricultural Consultant  
Formerly Deputy Director for Field  
Review and Evaluation, Office of Agriculture  
Bureau of Technical Assistance, AID

Discussion will focus on the total environment in which agricultural production takes place and how social, economic and political factors prohibit or enhance the utilization of relevant technology and the consideration of ecological impact resulting from agricultural development.

6:00 p.m. - 7:15 p.m.    SOCIAL HOUR AND DINNER

9:00 a.m. - 12:00 noon    LIVESTOCK DEVELOPMENT, RANGELAND  
MANAGEMENT AND ECOLOGICAL CONCERNS

Thadis Box  
Dean, School of Natural Resources  
Utah State University

Emphasis in discussion will be given to the importance of rangelands and livestock development in the totality of world food supplies; problems resulting from lack of understanding of the principles of rangeland ecology on the part of those who use the lands, the development experts and the governments concerned; implications of interference with the hydrologic cycle; and alternative approaches to rangeland management.

12:15 p.m. - 1:15 p.m.    LUNCH

1:30 p.m. - 4:30 p.m.    ECONOMIC DEVELOPMENT, INDUSTRIALIZATION  
AND THE ENVIRONMENT

Blair Bower  
Consultant  
Resources for the Future

Discussion will focus on major environmental threats which accompany industrialization with special attention given to trade-offs and options available to balance the drives to promote economic development and the long-term benefits to be derived from the conservation of resources and the preservation of environmental quality.

6:00 p.m. - 7:30 p.m.    SOCIAL HOUR AND DINNER

7:30 p.m. - 9:30 p.m.    SOME ENVIRONMENTAL AUDITS  
ON DEVELOPMENT PROJECTS

Peter H. Freeman  
Secretary  
Threshold International Center for Environmental Renewal

This will be a description, with slides, of three case studies of the results of development projects.

THURSDAY, FEBRUARY 6, 1975

WILLIAMSBURG, VIRGINIA

9:00 a.m. - 12:00 noon HUMAN SETTLEMENTS AND ENVIRONMENTAL CONCERNS

Brian J. L. Berry  
Professor of Geography  
The University of Chicago

Economic development begets growth of human settlements which in turn affect the environment. This seminar will focus on the ecological consequences of growing human settlements, the impact on quality of life, consequences for human health and social organization and some of the options available to retard environmental deterioration in human settlements.

12:15 p.m. - 1:15 p.m. LUNCH

1:30 p.m. - 2:30 p.m. REPORTS FROM SMALL GROUPS ON CASE STUDIES

Comments by:

John P. Milton  
Chairman, Threshold International  
Center for Environmental Renewal

2:45 p.m. - 4:30 p.m. ALTERNATIVE APPROACHES TO ENVIRONMENTAL PLANNING

John P. Milton

Consideration will be given to methods of approach to environmental planning including:

- the need for interdisciplinary inputs;
- benefit-cost analysis;
- analytical approaches to supplement economic analysis;
- use of standards and impact statements;
- institutional arrangements; and
- the technical assistance role.

6:30 p.m. - 9:30 p.m. SOCIAL HOUR AND CLOSING DINNER

FRIDAY, FEBRUARY 7, 1975

WILLIAMSBURG, VIRGINIA

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9:00 a.m. - 12:00 noon ALTERNATIVE APPROACHES TO  
ENVIRONMENTAL PLANNING (continued)

Pierre R. Crosson  
Director, Latin American Program  
Resources for the Future

Edwin T. Haefele  
Professor of Political Science  
University of Pennsylvania

John P. Milton

12:15 p.m. - 1:00 p.m. LUNCH

1:15 p.m. - 3:00 p.m. REVIEW AND EVALUATION

CONFERENCE ADJOURNS