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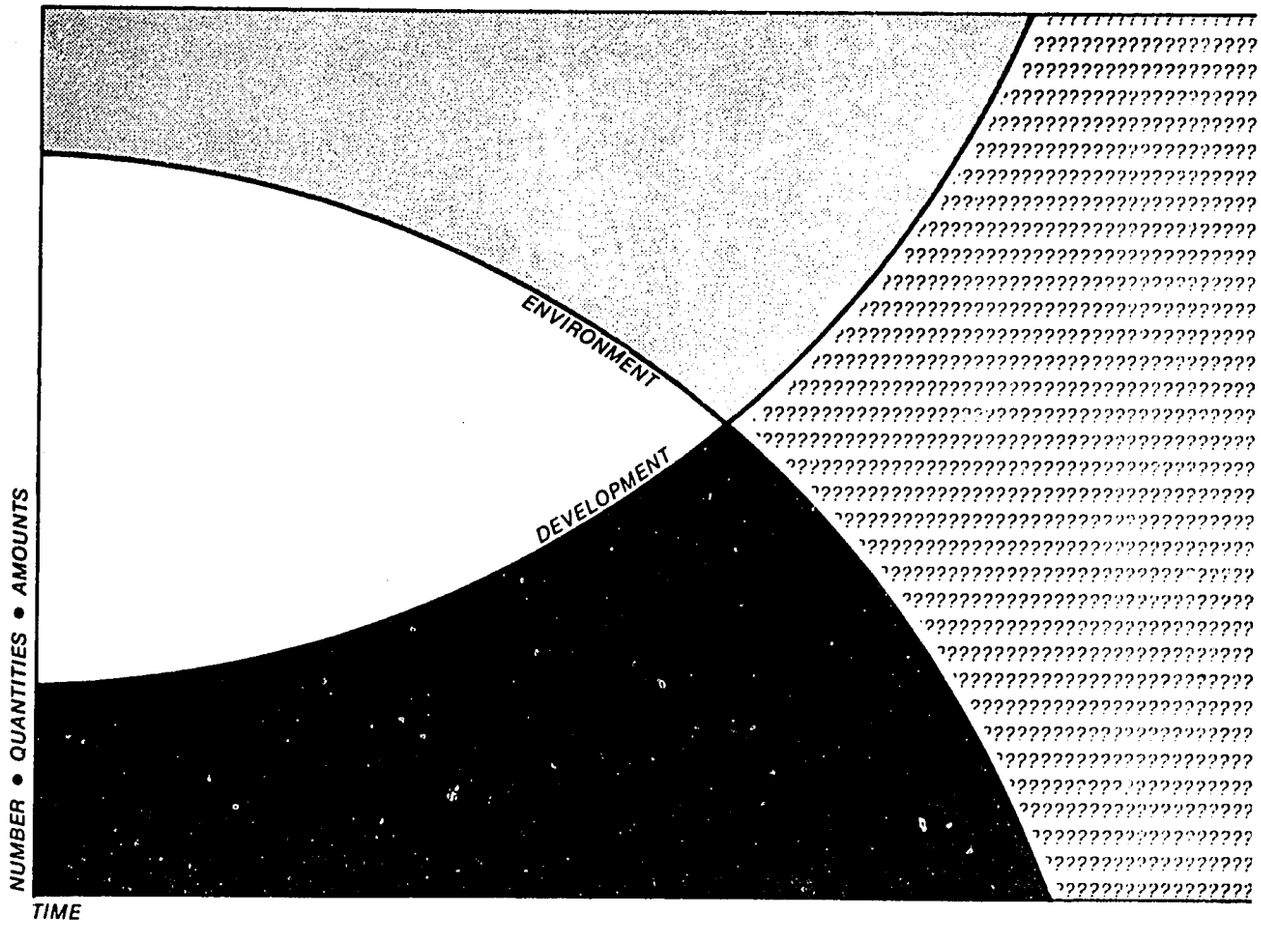
ENVIRONMENTAL SEMINAR
OFFICE OF ENGINEERING

WASHINGTON, D.C. JUNE 7 • 8 • 1973



Agency for International Development
WASHINGTON, D.C. SEPTEMBER, 1973

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F O R E W O R D

The AID Environmental Seminar was conducted as a briefing session for the first group of twenty AID engineers selected to attend a two-week course in the Environmental Aspects of Engineering Management held at the University of North Carolina in Chapel Hill, N. C. In addition to the engineer participants, a number of representatives from within AID and other organizations attended the Seminar. The seminar was intended to review and discuss the environmental problems of the developing countries and the policy and responsibilities of AID in this respect, as well as to give an insight into how other federal and international organizations are dealing with problems of environmental protection and enhancement in the international field.

The consensus of those attending was that the Seminar was an outstanding success, bringing together extremely well-qualified speakers who were able to address environmental issues facing the developing countries and development assistance agencies today and to answer questions of concern to the AID engineers and other officers attending the seminar. Because of the demand for copies of the various speeches and comments made at the Seminar, and the informal and spontaneous quality of the discussion -- as compared to more formalized papers or manual orders -- these Proceedings, transcribed from seminar recordings, have been edited and published.

In addition to the acknowledgements given by Mr. Hale in his opening remarks to the people instrumental in organizing and conducting the seminar, special thanks should go to Ms. Florence McMeekin, Office of Engineering, who spent many hours typing in order to prepare these Proceedings for publication in a timely fashion. Special acknowledgement should also go to the speakers, all of whom took time from busy schedules to quickly edit and correct their speeches, comments and answers so these Proceedings could be published and distributed without delay.

September, 1973

Edited by:
John W. Neave
Environmental Engineer
Office of Engineering, AID

A G E N D A

OPENING SESSION, JUNE 7, 1973

BRIEFING PRIOR TO ENVIRONMENTAL TRAINING PROGRAM
FOR AID ENGINEERS

East Auditorium, New State Bldg.

0900	Welcome and Introduction of Dr. Hannah	L. M. Hale, Director Office of Engineering AID
0915	Opening Remarks	Dr. John A. Hannah Administrator, AID
0930	AID Environmental Policy and AID Organization Concerned with Environment	James R. Fowler Executive Director AID Committee on Environment and Development
1000	A. Office of Engineering Function	Frank A. DiMatteo Assistant Director Office of Engineering AID
1010	B. Technical Assistance/ Office of Science and Technology Function	Bill L. Long Environmental Affairs Specialist, Office of Science and Technology AID
1020	Break	
1030	World Bank Group Focus on Environment	James A. Lee Environmental Advisor International Bank for Reconstruction and Development
1100	Report on UN Environmental Program	Dr. Donald R. King Science Advisor Office of Environmental Affairs Dept. of State

1130	Questions and Answers	
1215	Lunch	
1400	Council on Environmental Quality: Organization and Responsibilities	Wm. Alston Hayne Senior Staff Member for International Affairs, CEQ
1430	Environmental Protection Agency: Organization and Responsibilities	Fitzhugh Green Associate Administrator EPA
1500	Break	
1510	AID Environmental Analysis Requirements (M.O. 1221.2, 1214.1)(Feasibility Study Manual and IBRD Environmental Guidelines)	James R. Fowler Executive Director, AID Committee on Environment and Development
1610	Questions and Answers	

A G E N D A

SECOND SESSION, JUNE 8, 1973

BRIEFING PRIOR TO ENVIRONMENTAL TRAINING PROGRAM
FOR AID ENGINEERS

East Auditorium, New State Bldg.

0900	Opening Remarks	Maurice J. Williams Deputy Administrator, AID
0915	Multi-Disciplinary Considerations in Environmental Analysis	Ronald Ridker Research Associate and Director of the Population Program, Resources for The Future
0945	The Impact of Change on Human Health	Dr. Lee M. Howard Director, Office of Health, TAB/AID
1015	Social Effects of Environmental Change	Thomas W. Wilson Director of the Aspen Program on Environment and the Quality of Life
1045	Break	
1100	Food Production, Agriculture and the Environment	Erven J. Long Associate Assistant Administrator, TA/RUR/AID
1130	Questions and Answers	
1215	Lunch	

1400 Panel Discussion: Environmental Considerations as Related to AID Loan and Grant Assistance Programs

Moderator: L. M. Hale, Director, Office of Engineering, AID

Panel Members:

Barry Sidman, Deputy Director, Office of Development Resources, Bureau for Latin America, AID

Arthur Handly, Deputy Associate Assistant Administrator, Office of Development Program and Policy Review and Evaluation, Bureau for Program and Policy Coordination, AID

Alan Jacobs, Urban, Environmental and Aviation Affairs Officer, Capital and Commercial Development, Bureau for Supporting Assistance, AID

James E. Stephenson, Associate Director, Office of Capital Development, Bureau for Asia, AID

Arthur Z. Gardiner, General Counsel, Agency for International Development

Participant Engineers: To reconvene in Chapel Hill, N. C. on Monday, June 11, 1973.

ENVIRONMENT AND DEVELOPMENT

PROCEEDINGS OF THE ENVIRONMENTAL SEMINAR

OFFICE OF ENGINEERING

AGENCY FOR INTERNATIONAL DEVELOPMENT

June, 1973

MR. HALE: To begin this environmental seminar, we are honored indeed this morning to have the Administrator of the Agency accept our invitation to give a few opening remarks at this session. Welcome to you, Dr. Hannah. Dr. Hannah certainly needs no introduction, but it might be appropriate to acknowledge that he was enticed to this agency as Administrator from Michigan State University in 1969, after having been president of the University for more than 25 years.

Using the jargon of this seminar, he has noticeably enhanced the environmental quality and standards of the Agency's events and international programs involvements. And it's with my respect and admiration to you, Dr. Hannah, that we welcome you here this morning. This is Dr. Hannah, the Administrator of the Agency for International Development.

(Applause.)

DR. HANNAH: I'll give you five minutes back, because my comments will be very brief. I appreciate your kind words.

It is a pleasure for me to have this opportunity to welcome this seminar, which is, in effect, the opening session of a new environmental training course for AID engineers. Not only does it give us an opportunity to review our Agency's environmental policies and activities over the past several years, but it also provides a forum for considering these in relation to the policies and programs of other U. S. and international organizations. We are grateful to the representatives of the World Bank group, the Organization of American States, and the Council on Environmental Quality, the Environmental Protection Agency, and others who have agreed to join us in this program.

All countries--rich and poor, large and small--have a vital stake in insuring that the benefits sought through economic development are not eroded away by undesirable and preventable side effects. Therefore, AID must pursue its development assistance activities in an

environmentally sensible fashion. To do this, however, requires sharing knowledge and experience on how to anticipate and reduce undesirable side effects. It underlines the importance of providing training in the environmental aspects of development for those directly involved. And because our engineers are deeply involved in project planning and implementation, it is important that they should have the opportunity to update their knowledge, and to review advances in the vital and increasingly sophisticated field of environmental management.

This is particularly important in the case of overseas staff, who may not be exposed on a day-to-day basis to the rapid evolution of new environmental perspectives, policies and information in the United States and other advanced countries of the world.

With these thoughts in mind, the University of North Carolina was selected to develop and present a series of two-week courses for our engineers. The University of North Carolina, by virtue of past work in the international environmental field and their recently completed course for international participants on the subject of Environmental Aspects of Industrial Development, jointly sponsored by AID and UNIDO, is well-equipped to undertake this work on behalf of this Agency.

I heartily concur in and endorse this new training program. We hope that during the next few years all of AID's engineers will participate in the course.

It is clear that environmental actions taken by our Agency must be based on knowledge of what other international development institutions are doing in the environmental field as well as on the understanding of other programs that directly impinge on or affect AID's efforts. And it is in this regard, and in this context that we're meeting here today and tomorrow. Of course, we hope that you'll find this to be an interesting and informative two days, and I particularly would like to express our appreciation to the speakers and other invited guests who will be participating in this seminar.

And to those engineers who continue on to Chapel Hill, our best wishes for success in this new environmental course, and to all of you, our sincere wishes for a successful and informative seminar. And I want to say with complete sincerity, that this is a very high priority operation. Environment is a new word. A few years ago people talked about environment and ecology and all the rest of it, and this was thought to be something for scientists and people in far-off places to be concerned with. It's been taken to heart by the American people because they recognize that in our country, unless we are concerned with environment, with clean air and clean water, recreational space, and all the rest of it, life is not going to

be very satisfying for our grandchildren. And an agency such as this one, that's concerned with development, with trying to help the peoples of the poor countries move in the direction of emphasizing the improvement of the quality of life for all of their people, and particularly the people at the lower end of the economic and social ladder, must be concerned with the environment.

It is particularly important that we include in the content of our thinking, and our advice, and our programs, recognition that just as we're concerned about what North Carolina, or Michigan, or California, or the District of Columbia is going to be like in a decade, or two decades, or five decades from now, we need to be concerned that we help the developing countries move in the direction of preserving what they have so that we don't have to come back, or somebody else has to come back some decades from now, and try to correct that which would have been much more easily handled appropriately in the first place.

Well, gentlemen, that's what this is all about. We're delighted that you're here. Mr. Hale, and Jim Fowler, and the rest of you that have played a role in getting us this far down the road, thank you very much. It helps us to move in the right direction.

I'm sorry that I can't stay here this morning, but this is one of those full days when I need to be twins. And if it's agreeable, I'll just say that it's a great program. Let's make it work, and let's make it effective.

(Applause.)

MR. HALE: Thank you very much, Dr. Hannah. That more than adequately sets the stage for this seminar.

MR. HALE: At this point I would like to make just a few announcements.

First, the time is limited, and sometimes I think we've crowded a little too much in this program. We need to watch the clock just a little bit. However, we don't want to hamper anyone if they need time for a few remarks beyond their time because we can make it up later on.

The big question, I suppose, is how we entertain questions and answers. We've designed this to provide, in your folders, some question sheets on which you can indicate the person that you would like to respond to your question, your affiliation, and if you'll pass those sheets to one of the girls any time, we'll get them to the person that you would like to respond to your question. We designed it this way so that if we run short of time with the question and answer period, those questions can be answered in writing to you, or by some other means.

We don't want to formally structure the seminar so that you can't stand on your feet and ask a question if you'd like to, but we'd like to reserve that for any time remaining after we run out of any questions that might be written.

One other thing that needs to be said is that we are taping this seminar, and hopefully, we will be able to reproduce the proceedings and get copies of them to all attendees. For the benefit of the speakers, they will be given an opportunity to review and edit their remarks before they're put into any final proceedings.

I would like now to introduce just a few people, and have them recognized, and particularly have the rest of you know that these people are here. Some of them are not here at this particular time, because their schedules, like Dr. Hannah's, won't let them stay the full two days.

I will not take the time to recognize those people within the Agency except for Mr. Willard Meinecke, Deputy Assistant Administrator, who has joined us for this morning's session.

Dr. James Lee, if he's not here, will be joining us. Mr. Robert Prevost, from World Bank. Dr. Lee is also from the World Bank. Mr. Ragnar Overby from the World Bank. Mr. William Hayne, from the Council on Environmental Quality. Mr. Fitzhugh Greene, from the Environmental Protection Agency. Ms. Dolores Gregory, program director for that agency. Dr. Richard Nalesnick, also from the Environmental Protection Agency. Dr. Ronald Ridker, from Resources from the Future. Mr. Thomas Wilson, the International Institute for Environmental Affairs.

Mr. Arthur Hyman, Organization of American States. Mr. Robert Stein, Organization of American States. Dr. Martha Sager from the American University. Dr. Joseph Chi from George Washington University. Dr. Daniel Okun from the University of North Carolina. Dr. Donald Lauria, University of North Carolina.

Miss Charlotte Hermann, University of North Carolina, and Samuel Weisburg from Life Organization.

If any of these people are here, would you please stand and be recognized. Dr. Okun? Thank you very much.

I might add that Dr. Okun, Dr. Lauria, and Miss Hermann are here from the University of North Carolina, and have taken a major part in setting up this course at Chapel Hill. Dr. Okun, in preparation for the session that begins on Monday, would like to meet with the engineers who are attending that session--after the program this afternoon, for just a few minutes.

I would like to acknowledge at this time those people who have put in a tremendous amount of effort in putting this program together. Dan Creedon spent much time in getting this started, and Bill Mann was involved at the early stages. Miss Dolores Gregory from EPA was instrumental in giving us the guidance of EPA at the early stages. John Neave, Frank DiMatteo, and many other members of my staff at Engineering have worked hard getting this environmental training underway.

We acknowledge also the two young ladies, Florence McMeekin and Cathy Culkin who will be helping us here in distribution of papers, any questions that you might have to pass to us, and other details concerned with the seminar.

I welcome all of you to this opening session and environmental seminar. The seminar precedes, as you all know, a ten-day concentrated training course for engineers in Environmental Aspects of Engineering Management. It's meant to involve as many of the Agency's officials as is possible, with the concerns that we, as engineers, have to deal with specifically, and that all of you other officials of the Agency have to deal with in a more general way.

This two-day seminar is designed to familiarize those attending the course at Chapel Hill, and other agency officials with AID's environmental policy, its implementation, AID's relationship to other government agencies and with AID's programs and activities related to environmental protection and enhancement.

Because these topics that are to be covered in this seminar are of interest and concern to Agency officials responsible for environmental matters, and since this will be, and is, the first such environmental seminar to be held in Washington that concentrates specifically on engineering involvements, we have invited participation from a broad spectrum of AID Washington staff and from U.S. Government officials in lending institutions. We want you to know that we sincerely appreciate your participation and thank you very much for spending this time with us.

We are all involved, and we want you to know we're interested and concerned with the Agency's need for becoming even more involved in this relatively new dimension of the world's problems. We are concerned with water pollution, its disease carrying agents, synthetic organisms, chemicals, plant nutrients, sediments, heat, and radioactive pollutants. We're concerned about solid wastes, about noise pollution, and about air pollution. We're concerned about the dwindling supply of fuel, and the energy shortage.

We know that we cannot be responsive to all these engineering needs unless we know more about these needs and subjects. And we have to continue to provide a basis for working closely with the Agency's loan officers, the desk officers and program officers, and other offices of the Agency, with officials of the lending agencies and policy control agencies, as well as with educational institutions, and private industry.

We are vitally concerned that every highway, every airport, every dam, every powerplant, and every industry complex that we build adds to the need for more equipment that requires more fuel, and adds to the pollution, or that its construction can cause erosion, flooding, stagnation, or in other ways be detrimental to the environment, if we are not fully aware of the implications and design properly for their effective use.

Engineers are sometimes charged with having tunnel vision. We, in this Agency, cannot be classified in that category. We have to become involved, even in the politics, the public relations aspect, the humanitarian aspects, of these country programs. As engineers in AID, we're concerned with all of these matters, and their implications, because their implications affect us and the less developed countries with whom we work and provide assistance.

We are also concerned because we're responsible citizens, and because our professional creed demands that we help as best we can to provide needed answers. The development concepts and technology are ever changing, and engineers, with their problem solving approach, can be ever more helpful in fulfilling the needs of these necessary improvements. We agree that education for development assistance is one of the major contributions that we can make in this development assistance. The Office of Engineering began this particular exercise to improve our capabilities so that we will be more responsive to LDC's needs, and to the U.S. Government's needs.

For these reasons, we are involved in many activities that are of direct interest to our efforts, such as the American Society for Engineering Education, and its upcoming world congress whose theme will be Engineering Education for World Development. This Congress will be attended by some 30 countries representatives.

We're involved in the planning for the upcoming World Energy Conference, where world energy needs and problems will be thoroughly discussed by some 60 countries representatives. We're involved in the U.S. Committee of the World Conference on

Large Dams. We're involved in the International Road Federations, the National Academy of Sciences building research, and activities in the American Public Works Association programs and studies.

We're heavily involved in architectural engineering, and construction industries activities, and with their concerns. We're heavily involved in the International Atomic Energy Agency's study of nuclear power needs in more than 30 developed and undeveloped countries.

These are only samples of the involvements of the Office of Engineering as we strive to be more and more responsive to the needs of the Agency and the U.S. Government.

MR. HALE: First on our program this morning, we will hear from Mr. James R. Fowler, who is the Executive Director of the Committee on Environment and Development for the Agency. Mr. Fowler received his Bachelor of Arts degree from the University of Colorado, magna cum laude, his Master of Arts from the Oxford University. He's a Rhodes Scholar, and continues his association with the American Rhodes Scholars. He joined the Department of State in 1950, and A.I.D.'s predecessor agencies in 1955. He's held a number of posts in AID that are too numerous to mention. But his present assignment, again, as Executive Director of the Committee on Environment and Development, more than qualifies him for this opening presentation on our program.

Mr. Fowler.

MR. FOWLER: Thank you Luke. First off, I want to express my personal appreciation and congratulations to you and your staff, Luke, and to the office of Manpower Development in our personnel office for organizing this seminar, and the training course at North Carolina, and to our colleagues in North Carolina who collaborated in this effort, and in the previous training course for participants from the LDC's.

I think I'm listed on your agenda to talk about policy. And I don't really believe there's very much more I can say about policy than what Dr. Hannah has already said to you. It seems to me that--and this is a somewhat irreverent concept, I guess, but I've always felt that probably policy was written by historians who are able to go back and look at what people did, and when they found a common thread, or a common relationship, they then described that as being the policy. It's very hard in advance to lay down, other than in very general terms, a policy on any subject. A policy really is the accumulation or aggregation of a whole series of activities, and actions, and decisions, which, over a period of time, have some common thread.

And I feel in this environmental business that is precisely what is happening. It might be useful for your general background to trace at least the way I look at the evolution of this environmental concern, which is sweeping--increasingly--the whole world. If we look back in the United States we recognize that what's now called environment is not a very new thing. In fact, it goes way back in our history.

I suppose it had its roots and origins with the conservation movements which were--and always have been--popular with Americans. I suppose that's a reflection with our frontier origins. But in recent years,

the emphasis on conservation, on national parks, and preservation of natural resources in the form of lands and forests, and so on, is taking on a new emphasis, I think; one of which we here in the United States, perhaps, are most acutely aware. And that has to do with--in effect--what happens when you develop as much as we have.

And this goes far beyond conservation ideas, or wildlife, and beauty, and so on, and goes to the very essence of what we've always called the development process.

I think people in the United States, and in Western Europe, Japan, and Canada--the highly industrialized and rich countries--have all begun to see that some of the things which were going on in the last fifty years, or century, have been producing a lot of very beneficial results in terms of the quality of life, but at a price. I think it was Barry Commoner who said that one of the laws of environment is that there is no such thing as a free lunch.

Now when this movement in the United States began to take on this new emphasis, which largely has to do with protecting the environment, or offsetting, or minimizing, or eliminating some of the side effects of rapid industrialization, of course it wasn't very long until people began to recognize that while the rich countries have a problem, the problem, let's say--as some people say--of overdevelopment. Too much too fast, with too many problems, second generation and third generation problems; but we have to realize that after all, 75 percent of the population of the world live in a situation, or very close to a situation, in which their principal environmental problem is sheer survival. It's hunger, it's poverty, it's disease. All the things that those of us who've been involved in development programs in the poor countries through assistance programs and otherwise have always called development.

And the question immediately arises as to whether there is some conflict between the notions of development and the notions of environment. Well I think there are some conflicts. Obviously. As in everything, there are always trade-offs. There are costs and there are benefits. But I think we sometimes seem to take too narrow a perception of environmental concern, a perception which we in the rich industrialized countries tend to take almost automatically, a perception which emphasizes environmental protection; it has a kind of a negative ring to it; a sort of "don't," "stop," "quit" and "be careful" emphasis. We're really putting too narrow an interpretation on what the environmental business is all about, because that's not really the perception of environment that 75 percent of the population of this world's planet thinks of when they think about environment--if they think about it at all.

It's a lot more than clean air and clean water and anti-pollution and keep down the noise and clean up the cities. That's a piece of it--and it's a very important piece and one which has taken on increasing meaning and significance to the rich countries. But not the poor countries. At least not in those terms. They do have these same problems in certain areas, as we all know, in the developing countries. In fact, I believe the Council of Environmental Quality a few years ago made a survey of the most polluted cities of the world, and I believe 12 of the first 15 were in the developing countries. But those are pockets here and there. You know where they are. Some of the cities in the developing countries have terrible problems of environmental pollution of the type we're all too familiar with in this country and in parts of Japan, Western Europe and Canada.

But I think those are perhaps the exceptions rather than the rule. The perception of environmental quality which the developing countries still have is one which requires more development--not less development. But if you stop to think about the man who lives in the highlands of East Africa in a beautiful climate, with clear skies, unpolluted water, and clean air, that man has a life expectancy of maybe thirty years, whereas a man who lives in New York City, or other highly polluted and industrialized areas in the United States, has a life expectancy of 70 years, I think it's understandable when the man in the LDC might be willing, if he had this option, to perhaps trade ten or fifteen years of life expectancy for a little of that pollution. If that's the cost.

As we got into this business of concerning ourselves about environment and the developing countries, these two perceptions began to emerge, and there was a lot of concern a couple or three years ago that this was going to be a highly politicized confrontation between the rich countries and the poor countries. And to some extent there still is a conflict between those two groups as to what the environmental priorities really are. But I think those who have thought it through a bit more, and certainly this is beginning to happen in the developing countries, are now beginning to realize that while there are trade-offs, and in that sense, some conflicts between notions of environmental protection and the notions of development, that these are by no means necessary conflicts. They can probably--and should--be resolved.

The result has been, I think--largely because of the Stockholm Conference last year and the preparations for it which went on for two or so years before--that the sort of standoff between the rich and the poor on environmental problems, is beginning to disappear. The poor countries, the developing countries, I think are now beginning to see that the whole notion of environment is not simply a preoccupation

of the rich man, who's worried about cleaning up the mess that getting rich created; that, in a way, what the real meaning of environmental concern to them, the developing countries, is what I call an improvement in the quality of development.

They are beginning to ask whether development can't proceed in a way that is qualitatively better. And I believe they're beginning to understand that, in their own self-interest, development in economic terms, development in social terms, development even in political terms, is going to work better if it's done in a way which minimizes--if not eliminates--some of these side effects that Dr. Hannah mentioned, some of these by-products. And this doesn't necessarily mean eliminating waste, or pollutants. It means these things, but it means a lot more. Because, with the wisdom of hindsight, I think all of the people who have studied the development process now recognize that a lot of times something happens after the fact that wasn't anticipated. Whether this is an impact on public health, or second or third level effect on soils, or whatever, this is the kind of thing which I think is properly called an environmental problem, and which the developing countries themselves are now beginning to recognize as in their own self-interest to be concerned with.

Two or three years ago, this kind of thinking was just evolving, and people were troubled because nobody could define the term "environment." And that's true. When you try to define it, it's very hard, and pretty soon you're talking about everything. And my own personal view is that we're not going to get very far by trying to define what it is. We all know what it is in a practical, commonsense fashion, and that's enough. Let's get on with some more specific kinds of considerations.

And this comes back to what I said at the outset about policy being made up of a whole series of actions and decisions. AID began to worry itself about this, back in 1970, I believe, when the Office of Engineering first began to have more and more concern about it, a concern that was particularly enhanced because environmental groups in the United States became very interested in the question of whether, as a development agency, AID was exporting a lot of environmentally bad ideas. Here again you see a reflection of the conflict that's involved in this. Some environmentalists tended, and still do in some cases, to regard the developer as their natural enemy. They are the pourers of concrete, and the erectors of steel, and the despoilers of the scenery, and the destructors of natural resources.

Dr. Hannah, and Maury Williams, and others began to ask--we began to ask ourselves in the Agency--what are we doing about this concern, and what is this environmental problem in the LDC's, and what more should we do about it? And it was out of that process that we began to try

to get the Agency to be, what I call, "environmentally sensitized." There were lots of different options open to us. Later on this morning, I hope, if Jim Lee from the World Bank is over here, he'll describe to you how the World Bank, at about the same time, got the same idea and also began working on it. I think they've come up with a somewhat different approach than we have organizationally, but in concept and policy we are working very closely together and in the same direction.

Among the options that were open, of course, was to describe environment as a new functional field. You know, similar to agriculture, public health, public administration, you would have the field of environment. But as we thought about that, it didn't seem to make much sense, because as I described earlier, environment really is everybody's business, and it reaches into everything, and it's pretty hard to categorize it as a field of activity. So in lieu of setting up a system, or an approach, or a process, which created a new field of activity for assistance and analysis, we came the other way around and decided to try to get the entire agency to be aware of and involved in and conscious of some of the environmental aspects of what everybody was doing.

I described it once as trying to get everybody to put on environmental eyeglasses. Take a look at the same old problems, and the solutions that we've been studying and working with, but look at them in a way which focuses people's attention on some of these side effects, or longer terms effects, which sometimes cost more than anybody ever imagined. I think this is the approach that we've followed. I'm not sure even today, after two or three years of experience, that it's necessarily the right one. But this is the way AID has gone into it. We're constantly looking at it, and as a result of this seminar I would hope that perhaps some of you have some ideas or suggestions of a better way for the Agency to approach these problems. I hope you'll speak up, and let us have the benefit of your ideas and comments.

But for the moment, I think we are trying to get the entire agency, overseas and in Washington, to become aware of the importance of these matters. As Dr. Hannah stressed this morning, and as Maury Williams, I think, will stress again to you tomorrow morning, we really take this environmental business seriously.

A lot of people, I think, had a feeling, a year or two ago, that the environmental concern, particularly in the United States, was another passing fad. And we all know we have those. Those of us who've worked in AID remember the old Title Nine fad, and we've gone through many of these. People get very excited about them. We try to do something about them, and it doesn't work, and then it fades into the background, and another fad comes along.

I don't think that this environmental matter is another fad. I think it's here to stay. Whether we're talking about the rich countries or the poor countries, people are really upset about this. This is a groundswell movement. And if that's correct, then consideration of the environmental implications of development programs is going to be a permanent, long-term and high priority aspect of our work.

One of the things that I would like to suggest to all of you who are in from overseas posts, is that, both here and in North Carolina, you do as good a job as you can of taking notes and getting yourself equipped, so that each of you, when you go back to your posts, can try to get your Mission Director, or your other parts of your Mission, to listen to a re-play of a lot of the things that are, I hope, going to be said here during this seminar, and that you will hear down in Chapel Hill. Because the word has got to be spread, and as you know, working in AID, one of our big problems has always been communication. Because we are a far-flung organization with posts all over the world, cables are a notoriously bad way of communicating, airgrams are even worse. The best way is word of mouth. So I would urge you, and encourage you, to try to get yourselves in position when you go back to your posts in the field, to try to--if you can--get people to sit and listen to whatever you've learned and picked up in these seminars, and at your training course, and spread the word. Because that's where it has to begin.

It has to begin by people becoming aware of the problem. 95 percent of any problem is asking the right questions. Or knowing what questions to ask, and I think we're still at that stage. As this seminar goes on I think you'll be given, or will hear about, some attempts to write down some of the questions that need to be asked. But until we get the word spread among people within our own Agency, it's going to be very hard for that policy we talked about to ever emerge as a result of a whole series of actions, because these actions won't get taken.

The same kind of an educational process, obviously, has to go on in the developing countries themselves, and I think it's well started. A lot of factors that I've mentioned to you previously have started that process. But obviously, the rich countries cannot, and should not, and I hope will not, attempt to carry out what I've called sometimes a policy of environmental imperialism, in which the rich countries decide this is the right way to do something, or this is good for us, or this particular standard suits us, and therefore we're going to force it on countries, where it may be totally inappropriate.

There's restraint and understanding required on the part of the industrialized countries as they try to help the poor countries--understanding and perception that environmental concerns, to these other countries, means something quite different than it may mean to us.

I hope that what is said during this seminar generates a lot of questions, because this is not a non-contentious or issue-free problem. There are many conflicts; there are many questions, very legitimate questions, that can and ought to be asked about how you link up environmental concern with concern for development. And we--I think Luke agrees--want this seminar to be a free exchange of views and ideas. We want people who've got problems, and who don't understand, or who take different points of view, to speak up so that there is a lively exchange between those of you in the seminar and the people who talk to you.

Up on the chart to my right--your left--the engineers have put up a schematic drawing, which I think illustrates what I was trying to say a moment ago about how AID--at least up to the moment--has approached organizationally, this environmental problem. In lieu of setting up an office of environmental affairs, or centralized place in the Agency, for concern with this matter, it's become scattered throughout the Agency. I think that's the right way for it to be handled, but I'm not sure. But in any event, what you see there on the chart to the right is basically the way things are right now.

Every part of the Agency, or almost every part of the Agency, has a piece of the action. If you think of environmental matters as an octopus with a lot of tentacles, I would say we haven't even counted the tentacles, and we certainly don't know how long they are. They reach into almost everything. I remember very early in this business, when I was expounding this thesis, I was talking to some people whose job is public administration, and public administration training in the LDC's. And they said, "Well, you see, this environmental business doesn't really impact on us at all," which I found an appalling notion. And I pointed out that in the developing countries, we already know many of them are beginning to concern themselves with how they're going to manage environmental affairs in their own countries. And one of the first things they want to know about is how do you organize to do it. How do you set up governmental structures? What kinds of legislation should you enact? What sort of systems for monitoring and surveillance and enforcement can you have that are appropriate to their particular requirements? These are questions they have and decisions they have to make. How can we help them?

Well, obviously, we come back to the business of getting our public administration people to be aware themselves of how that problem has been tackled in the United States and Western Europe, Canada, Japan, and other places, and just pass the information on, not saying one's right or one's wrong, but here's the way it's been tried. Now that's public administration. But it's public administration about environmental matters.

There's hardly anything else that AID does, or that goes on in developing countries, that does not have an environmental aspect in one form or another. What we're really saying, I think, is that we want everybody to understand that in the Missions and here in Washington. So when you look up on this chart, you'll see involvement of a wide number of parts of AID.

Now since this little seminar was organized by the engineers, I think we're entitled to let them put themselves right at the top. But I want to emphasize that the concern about environmental affairs and its relation to development is everybody's business. It has already reached in to some parts of our Agency, and during this seminar you will hear representatives of, I think, almost all of these other portions that are indicated on this little schematic drawing, and a lot more too. But these are the principal ones.

Over in the Bureau of Technical Assistance, there has been the Office of Science and Technology for a long time. Bill Long will talk to you in more detail about what they do. But one of the things that they do is to concern themselves with environmental problems.

The Office of International Training has gotten into this because--as a result of the actions of the Committee on Environment and Development--a decision was taken that AID should look into the environmental training problem. And, of course, OIT is our servicing organization to help with that. And it was as a result of that decision that the first course in environmental aspects of industrial development was held down in Chapel Hill last January or February, I believe, for participants from the LDC's.

And that is also why we have this seminar here now, and the course for engineers in Chapel Hill. Because our training people, both over in Personnel, and in the Office of International Training, are seized with the problem of how you meet the need for training; What kind of training? To what people? Where?

Obviously, PPC, the Program and Policy Planning staff, are involved in this, because if AID does what it says it's going to do in its policy, which is to look at all of its activities with environmental eyeglasses on, both at the point of planning, and implementation, and so on, the one key place in the Agency where that has to be done is in PPC.

You may wonder why the General Counsel's Office is shown there on the chart. Well, there are many legal problems associated with the environmental cause. Legal problems for AID, as a domestic U. S. agency, and other kinds of legal problems which never were called environmental before, but which in many ways lie right at the heart

of the environmental problem. And our legal staff, Art Gardiner and Rick Richstein and some of the others, have taken a very great interest in this whole matter, and collaborated a great deal on working out an Agency approach. You will hear from them later.

Finally, we come to the Regional Bureaus, and more importantly, to all of the Field Missions there under the Bureaus. Because, as Dr. Hannah said yesterday, as those of you who heard his little speech yesterday afternoon know, that's where the action is. And all of us who have ever worked overseas know that we can sit here in Washington and write papers, and have meetings, and hold seminars, and talk to each other until we're blue in the face, and nothing really makes any difference until it gets way out there at the Field Mission, and somebody does something, hopefully better or different than he would have otherwise done it.

All of these Bureaus, and all of their Missions, are very much involved in this. And again, I would come back to what I asked a moment ago, that you take the story that you hear here and carry it back with you, those of you who are going back to the field, and try to spread the word.

Well, I'm sure you're going to have questions. If I can answer some of them later, please don't hesitate to pose them. I'm going to stop at this point, and let Frank DiMatteo talk a little bit more about the engineers and how they're approaching this. And following that, Bill Long will talk about the Technical Assistance Bureau and their function. Then I think, Luke, you'll finally let everybody stand up and stretch.

All right? Thank you very much.

MR. HALE: Thank you, Jim. To respond just a bit further on your statement that everybody is involved, we should recognize that probably more than anyone else. If it were only an engineering problem we could sit around the table ourselves and solve it real quick. But that isn't the case. Particularly in this Agency.

I want to thank you very much, Jim, for being here today and for your support and help in getting this program underway.

MR. HALE: Frank DiMatteo, now will set the stage for us from the standpoint of the Office of Engineering. Frank got his Bachelor of Science degree from the University of Oklahoma. He spent ten years overseas with private industry, and joined AID in 1962. He served AID in Vietnam for two years, coming then to AID/W where he served in the Asia Bureau and the Supporting Assistance Bureau. He's currently Assistance Director of Engineering, head of the Special Projects Division.

Frank?

MR. DIMATTEO: Thank you Mr. Hale. About a year ago the Administrator initiated AID's reform and reorganization plan, requiring that certain changes be made within the Agency. Those who were overseas at the time may not be aware of the changes that have taken place in AID/W. One of these changes provided for the centralization of all engineers and engineering functions. The Office of Engineering (SER/ENGR) was among the first to be centralized. We were assigned certain responsibilities in Agency programs and projects.

As the Administrator has reminded us many times in the past, and as Mr. Hale stated a while ago, AID is in the development business. As a result, our duties and responsibilities (SER/ENGR) are not only engineering, but are related to a variety of development activities in our overseas programs.

One of these important engineering responsibilities assigned SER/ENGR is in the environment. We have two major responsibilities. One concerns policy, discussed by Mr. Fowler earlier, and the other concerns operations. After policy and procedures are developed how do we implement our programs abroad?

Your attention is invited to Figure 1, Chart, ENVIRONMENT-POLICY. The center (AID) is represented by the Administrator's Executive Director, Committee on Environment and Development, Mr. James R. Fowler. SER/ENGR is a member of AID's team responsible for developing policy and procedures, and as Mr. Fowler pointed out, the inputs come from all parts of AID, the Missions as well as AID/W.

Figure 2, ENVIRONMENT-OPERATIONS will help us answer such questions as 1) what are the environmental considerations to look for in our programs? 2) how do we function in AID/W and how do we relate to the field? Looking at the Chart, the Office of Engineering is represented by the Director, an Operations Division, Special Projects Division, and Coordinators.

The coordinators are an important link in this organization. They are the liaison with the regional bureaus, identifying the engineering needs for the particular program or project.

In conjunction with the Operations and Special Projects Divisions, engineers are identified and assigned to a specific project, or program. From then on, it is the Project Engineer who carries the ball and follows each step in the development process to be certain that the necessary considerations are brought to bear from the standpoint of engineering, construction, and related activities -- and this includes environmental considerations. The project engineers therefore work with regional bureaus, as members of IRR teams, project committees, or related study groups.

The Field Missions are of course principal participants in this process, because projects usually originate there. They start at the Mission, are brought to AID/W through the Regional Bureaus, where the project committees are formed, so that we have this kind of relationship. (Tracing the dotted line in Figure 2 from Project Engineer to Regional Bureau or to Mission and from Mission to Regional Bureau and Project Engineers, with a similar line of responsibility between the Engineering Coordinator and the Regional Bureau).

The Urban Development/Environment Branch (UD/ENV) within the Office Office of Engineering, is responsible for environmental engineering for the Agency. We're fortunate to have in that Branch Mr. John Neave, the only environmental engineer in the Agency who incidentally graduated from the University of North Carolina, with a Master's in Environmental Science. John's function is to work with the Project Engineers and assist them to identify the environmental needs for our programs. Mr. Neave is the Agency's environmental engineering expert, is a source of information and is available to assist in environmental matters. He is also a project engineer on those projects and activities involving environmental inputs or projects that are entirely environmentally oriented.

At the present time, there are several such projects in process, one in Guatemala, and another being developed in Jordan. The UD/ENV Branch is responsible for environmental inputs, for all of our programs involving engineering, construction and related activities. It functions in this way. (Tracing the dotted line in Figure 2 from UD/ENV to Project Engineers, who then function through the Project Committees and provide the necessary engineering backstopping.)

You will note the joint operational role of SER/ENGR, the Missions and the Regional Bureaus. Because one engineer may not possess all of the expertise that may be required for a particular environmental problem, we have the resources of others to draw upon. These include universities, other federal agencies and the private sector. In the latter we have three environmental consulting firms on Basic Ordering Agreements.

In conclusion, I repeat that we have the mechanism and the staff to furnish the Agency the environmental services needed for our development programs abroad. We are here to serve and urge that all of you take advantage of this facility. Mr. John Neave is available, as is Mr. Juan Cabrero, the Branch Chief, who works as part time environmental engineer and part time urban planner.

With this cooperative team work, I am convinced that our development programs, and our performance will be much more efficient, technically, economically, and of course environmentally.

Thank you.

Figure 1

ENVIRONMENT - POLICY

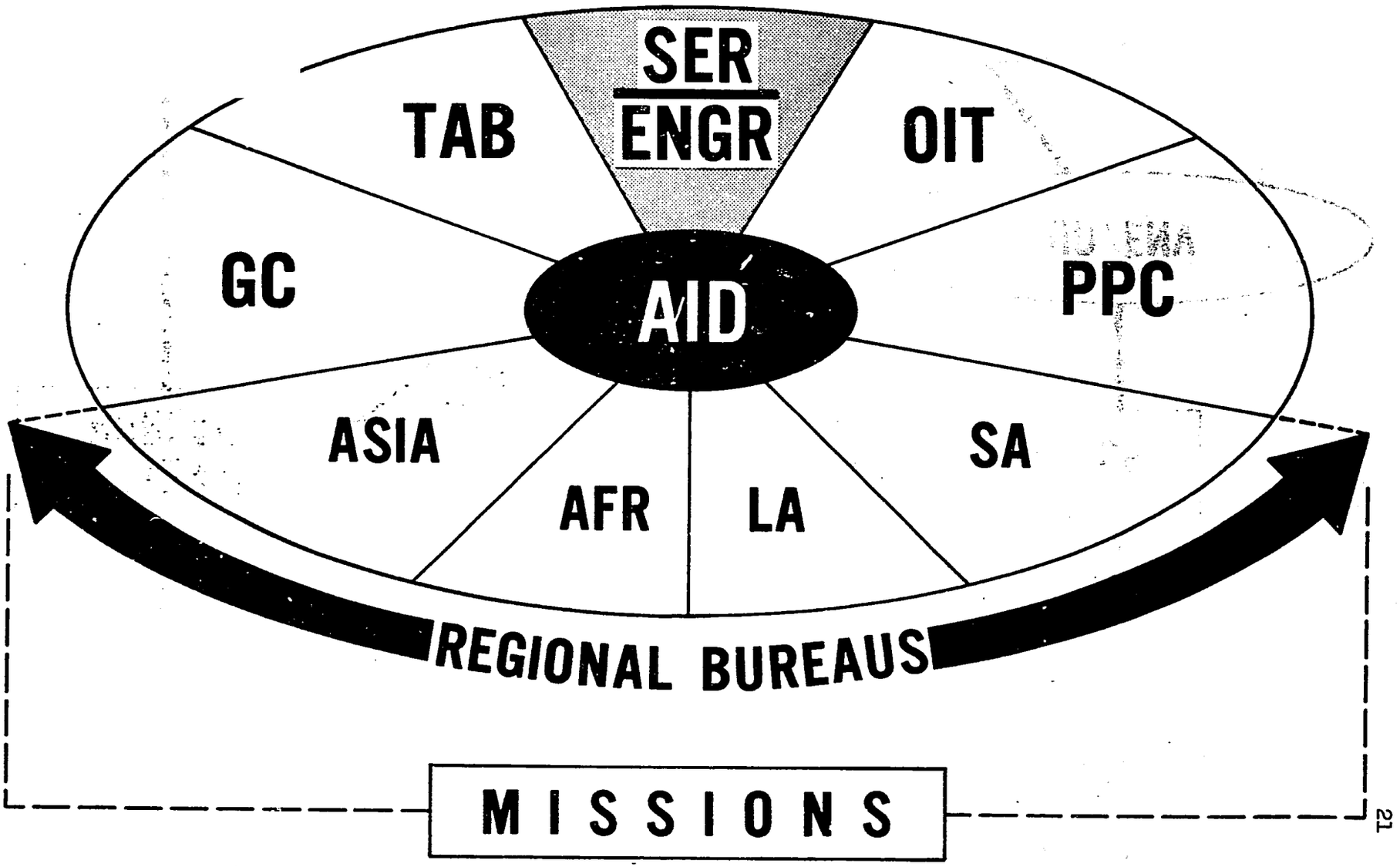
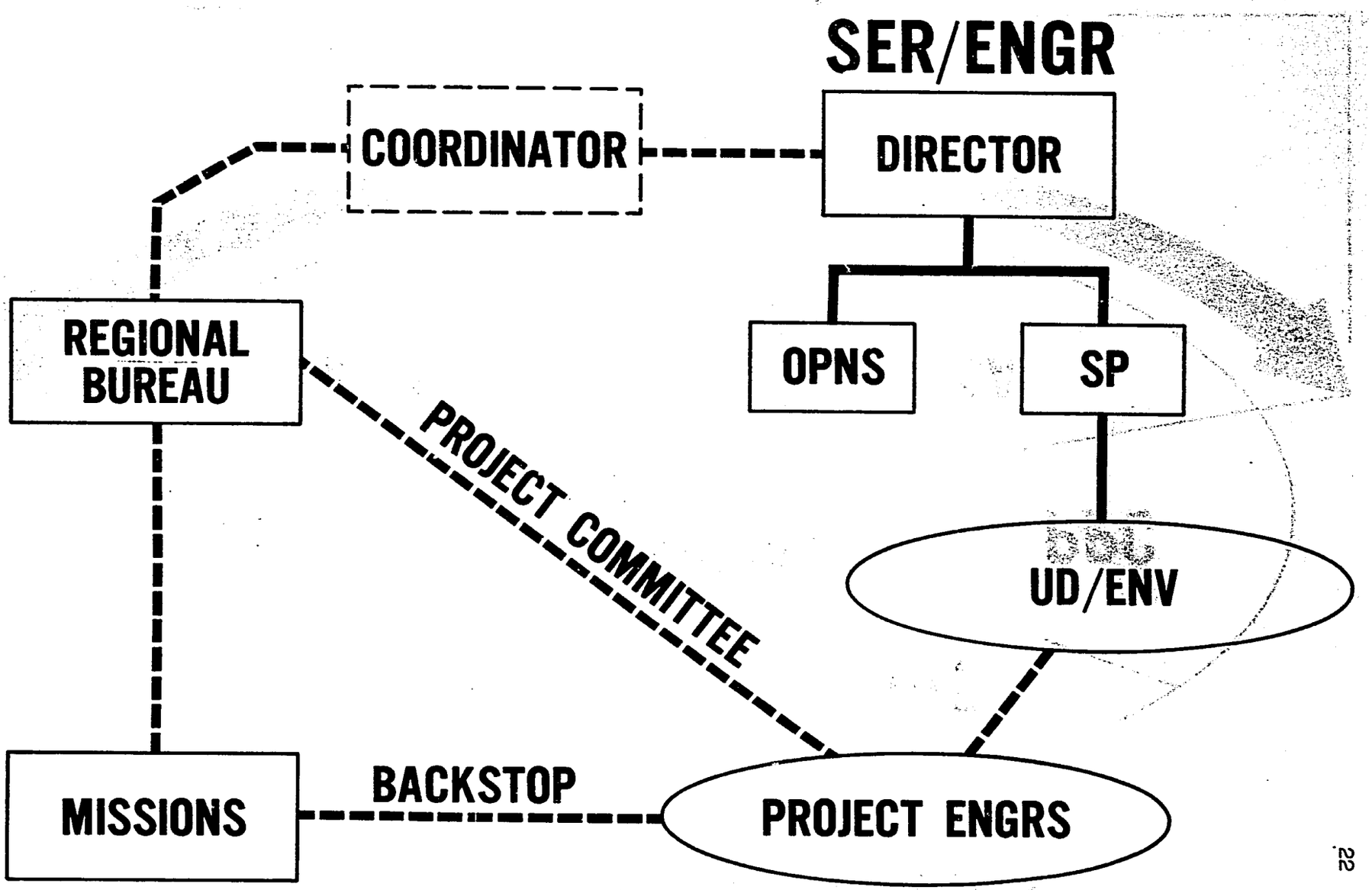


Figure 2

ENVIRONMENT - OPERATIONS



MR. HALE: We will now hear from Mr. Bill Long, speaking to us from the standpoint of the Technical Assistance Bureau's Office of Science and Technology. Bill Long received his Bachelor's degree from Dartmouth College, and attended three National Science Foundation Summer Institute sessions. He was with the Smithsonian Institution for four years, moving on to a Senior Staff Member position with the National Council on Marine Resources and Engineering Development. He was Deputy Director of the editorial staff that prepared the President's First Annual Report on Environmental Quality in 1970. He joined AID in 1970 and is presently Environmental Affairs Specialist in the Office of Science and Technology as well as AID liaison officer to the Department of State, Office of Environmental Affairs. Mr. Long.

MR. LONG: I'm pleased to have this opportunity to briefly describe the functions of the Office of Science and Technology (OST) in the environmental field because I think we are carrying on a number of diverse and unique activities which should be of broad interest to this audience.

As most of you are probably aware, OST is a small office within AID's Technical Assistance Bureau (TAB). It is comparable to other TAB offices such as the Office of Agriculture, the Office of Health, and the Office of Urban Development. The Office of Science and Technology was created in 1969 to carry out two principal functions. First of all, it is charged with the task of upgrading the scientific and technological inputs into the traditional AID program activities carried out by the geographic bureaus and overseas missions. Secondly, it is responsible for designing and implementing demonstration projects and project probes which have the potential to advance the state-of-the-art with respect to new applications of science and technology for development purposes.

OST's involvement in the environmental field can be traced back to the beginning of 1970 -- eight days after signing the National Environmental Policy Act to be exact -- when, with AID support, the National Academy of Sciences convened a special ad hoc panel chaired by Dr. Roger Revelle to investigate AID's role in the international environmental field. It is quite interesting to go back and review the report of this panel -- entitled "The International Aspects of Man's Effect of the Environment" -- because it makes a series of recommendations and identifies priority areas for AID involvement which has formed the framework within which TA/OST has conducted its environmental program. Specifically, NAS panel identified a number of areas requiring AID priority attention. These included: (1) pesticides and other biocides; (2) environmental interactions of engineering projects; (3) schistosmiasis and other infectious environmental diseases; (4) human ecological implications of major engineering works; and (5) environmental consequences of urban/rural displacement.

The panel recommended to AID that, among other things, it strengthen its in-house capabilities by creating a focal point for AID environmental activities. It further recommended creation of permanent advisory committees to AID on environmental factors, and also that the AID engineering manual be upgraded to incorporate the environmental aspects of engineering procedures. It urged support of research projects, specifically focused on environmental aspects of development; suggested that AID support regional and country workshops to increase environmental awareness within the developing countries; and recommended that the Agency carve out regional ecological studies, including the need for environmental post-audits. Lastly, it recommended a series of training programs for both AID in-house staff and LDC experts.

Looking back at this report, I think the Agency can get pretty high marks in terms of implementing most, if not all, of these recommendations. The training seminar in which you are now participating is a case in point.

Shortly after the NAS panel issued its report, OST entered into a contract with the Smithsonian Institute for a series of environmental case studies. The Smithsonian is now completing studies in Korea on urban problems of Seoul, in Ghana on the environmental impact of the Volta Dam, and in Indonesia on off-shore oil and gas development. In each case, the case studies were selected on the basis of relevance to developing country problems, and the interest of the host country in actively participating. Several other case studies had been contemplated but -- to be frank -- they were precluded by the political sensitivities of the proposed cooperating countries to U.S. scientists investigating environmental diseconomies that may be associated with their development projects.

In addition to the Smithsonian project, OST has supported a number of in-house and contract studies over the past three years designed to better define the environmental problems and to increase environmental awareness within AID, other development agencies, and LDC institutions. These activities have resulted in a variety of reports on specific topics that include the economics of aquatic weed control, the application of science and technology to controlling desert encroachment, an analysis of priority environmental problems in the LDCs, the scientific basis for establishing water quality standards, and the application of remote sensing to resource management problems in developing countries.

Some of these studies were undertaken as a result of identification by OST of what seemed to be targets of opportunity created by a match between emerging LDC problems and new U.S. capabilities. Others were carried out as a direct result of inquiries from our overseas missions for information on particular topics, such as how to control the advance of deserts.

A recent OST undertaking was the joint sponsorship with UNIDO of an environmental training course for senior LDC policy-makers. This was held at the University of North Carolina for eleven weeks beginning last January. It was a demonstration course designed to assess whether a developed country such as the U.S. could provide relevant environmental training for developing country policymakers. The course involved broad participation by U.S. government agencies, industry and other universities. The industrial sector was selected because we feel it is important to go beyond mere problem identification, and this is a sector where, on the basis of U.S. experience, we can begin to address the issue of how to deal with the problems -- both in terms of new institutions, new legal administrative frameworks, and applications of new science and technology.

The reaction to the course, both from participants and from representatives of other U.S. institutions which monitored the program, has been very encouraging. We therefore hope to run the training program at least one or two more times, possibly in revised form, and spin off workshops and seminars for presentation in developing countries.

It is our impression that on the basis of the U.N. Environmental Conference in Stockholm, the regional environmental seminars that were held both before and after that Conference, and also the many state-of-the-art surveys and problem assessments have been conducted by AID and other international institutions, there now exists a broad and deep awareness of the fact that development activities have the potential of creating undesirable secondary effects. As noted earlier, we feel that there is a critical need to now go beyond the problem identification phase to try to lay out viable options for developing countries as they attempt to address the environmental problems. Toward that end we are in the process of designing a study on the economic costs of achieving various levels of pollution control in developing countries. We are hoping to base the study on a series of case studies of different types of industrial processes that will initially set forth the spectrum of environmental problems associated with industrial operations, and then examine the state-of-the-art with respect to different technological approaches and their costs for achieving various levels of environmental protection. The premise is that different countries will seek to achieve different levels of pollution control. There appears to be broad interest in such a study on the basis of consultations we have recently had with the World Bank, PAHO, and UNIDO.

OST has also been carrying out an expanding program of information collection and dissemination. This may be of particular interest to some of you, especially those who are returning to overseas posts. It reflects a response to a growing number of requests for environmental information from other AID offices and overseas missions, including the identification of U.S. experts who might go abroad to assist developing countries with problems of air and water pollution. Our office has been working with a number of other development assistance agencies and

agencies to assemble a detailed list of U.S. expertise. During the past six months, for example, requests have come from the UNDP for a water quality expert to assist in a project in Mexico; from Thailand for a U.S. expert to spend up to six months in that country to assist in establishing new environmental legislation and institutions; and from the Philippines for a scientist to assess the environmental aspects of a new irrigation project.

We are continuing to receive requests for environmental literature, including documentation on U.S. success stories with respect to efforts to curb air and water pollution. As a result, we are building a library that covers subjects such as environmental policies, pesticides, solid wastes, land management in semi-arid lands, and air and water quality.

In addition to the -- so to speak -- programatic activities of OST in the environmental field, we are involved in a number of inter-agency activities on behalf of AID as a whole. Under an agreement with the Department of State, we maintain office space in the Office of Environmental Affairs of the Bureau of International Scientific and Technological Affairs. This enables us to draw upon the Office of Environmental Affairs for technical support for our project activities and also to participate in a number of international environmental activities in which the Department of State is involved. These include the environmental programs being carried out by NATO's Committee on Challenges for a Modern Society -- a very active group that over the past two years has been carrying out pilot projects in air and water quality and is now expanding into the field of both geothermal and solar energy developments -- and also programc of the OECD, ECE, and particularly the new UN Environmental Programme that emerged from the recent Stockholm Conference.

In the case of all these programs, there is some degree of focus on the specific problems of developing countries. Our involvement with the State Department is enabling us -- that is, AID -- to play a much more active role in influencing the direction of U.S. involvement in these international activities.

Our office also provides the AID representative to the U.S. Inter-Agency Committee on International Environmental Affairs, a policy planning and coordinating body chaired by Christian Herter, Jr., Office of Environmental Affairs, Department of State. It is comprised of representatives from some 20 U.S. federal agencies and serves as a forum to discuss common interests and U.S. policies with respect to international activities in the environmental field.

The OST role in the environmental field initially representated an attempt to probe an emerging new field within the total AID program. Over the past three years, as our program has grown, so, too, have the environmental activities of a large number of other AID offices and bureaus.

We consequently see the role of our office as one of supplementing and strengthening other AID programs (which in some cases are much larger than ours) by focusing on certain gap areas and targets of opportunity that have a significant potential for enhancing the overall AID environmental program. Our particular role has been formalized with the issuance earlier this year of an AID policy statement on science and technology within which AID resources should be concentrated. One of these is the area of natural resources management which, by definition, includes land use planning, resource conservation and pollution abatement and control.

In conclusion, let me highlight the fact that over the past three years we have managed to develop a number of institutional relationships and linkages with environmental officers and staff of U.S. federal and state agencies, universities, industry and private groups, as well as with international development organizations and, in some cases, LDC institutions. This provides a continuing source of information on program priorities and new technologies which may be of interest to many of you. Beyond that, we are in a situation now of knowing pretty well where to go to rapidly mobilize top quality U.S. experts to support problem analysis and project development in the LDC's and also how to quickly obtain documentation that might pertain to such interests.

We see our office, therefore, as providing a backstopping and servicing function for geographic bureaus and overseas missions and also as advancing the state-of-the-art with respect to AID response capabilities by carrying out demonstration projects and probes in highly selected areas in which we may find a match between the priority of the problems and U.S. capabilities to respond.

MR. HALE: Thank you, Bill.

And now let's take a few minutes to stretch our legs and have some coffee if you'd like. We'll start again in fifteen minutes.

(EDITOR'S NOTE: Through an unavoidable equipment malfunction or an understandable human error, the speech of Dr. James A. Lee, Environmental Advisor, World Bank Group, was not recorded. In lieu of Dr. Lee's speech, therefore, we are substituting a series of questions and answers, compiled by the World Bank, that addresses the most frequently asked questions regarding the World Bank's policy and actions in the field of environmental protection.)

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ENVIRONMENTAL ASPECTS

OF

WORLD BANK GROUP PROJECTS

SOME QUESTIONS AND ANSWERS

This list of questions and answers has been developed in response to numerous enquiries regarding the policies of the World Bank Group and action it is taking in the field of the environment. The questions cover policy and practices; aspects of health and social well-being; project costs and international trade, and related information. It is not intended to be a comprehensive listing but reflects the types of questions frequently asked.

I. Bank Policy and Practice

1. Q. Does the World Bank now regularly examine the possible environmental and health effects of projects for which it makes loans?

   A. Yes, the Bank is mindful that some development projects can have serious adverse environmental and health consequences. It seeks to identify these likely problems early on in the formulation of a project in order to provide for their prevention or mitigation.

2. Q. How does the Bank conduct its evaluation of the environmental aspects of a proposed project?

   A. The Bank's Projects Departments' personnel have been instructed to be constantly watchful for possible environmental, health, and socio-cultural problems that might accompany a project. They have been supplied with a checklist of environmental considerations to aid them in this regard. Also, all projects are reviewed in the Bank's Environmental Office through: (a) an in-house study with Bank technical staff of possible effects; or (b) an on-site "ecological reconnaissance" with one or more multi-disciplined consultants; (and, if needed), (c) an in-depth, on-site study of some particular, serious problem(s).

3. Q. How are these environmental studies financed?

   A. In most cases, the borrower finances the studies in much the same manner as are other aspects of a project, i.e., engineering, geology, marketing, etc. In some instances the Bank will finance the study.

4. Q. May the borrower itself make the necessary environmental and related studies prerequisite to a project proposal?

   A. Yes--this is encouraged. The Bank reserves the right to approve the terms of reference for the studies and the qualifications of the consultants employed. The Bank is also pleased to assist in drafting the terms of reference and referring qualified consultants. Also, should the borrower desire, the Bank will conduct the necessary studies being financed by the borrower and make the report of findings and recommendations immediately available to the borrower. In any event, reports of the environmental studies are shared jointly with the borrower, member government, and the Bank in order that all parties to a project loan are fully aware of the problems, opportunities, etc.

5. Q. Does the Bank require a formal "impact statement" on the environmental consequences of a development project?

   A. There is no doctrinaire policy followed by the Bank. The Bank simply requires that major adverse environmental consequences of a project be mitigated or avoided. Where there is a possibility of important environmental effects, the Bank and the borrower and/or the government are asked to address these issues in the same fashion used to address other social, economic or financial issues of a project.

6. Q. Does the Bank now impose strict environmental standards when providing for environmental safeguards when making loans to member countries?

A. No - the Bank does not impose such standards and does not look with favor on their imposition. Each development project is unique as regards its environmental setting, including the social and cultural milieu, which surrounds it. Hence, the Bank attempts to carefully tailor the environmental protection measures to these requirements.

7. Q. To date, has the Bank refused to make a loan for a project based solely on environmental grounds?

A. No - to date, all projects requiring environmental protection measures have been successfully negotiated with the borrowers and member governments.

8. Q. Would the Bank ever refuse to grant a loan for a project purely on environmental grounds?

A. It is possible that the Bank could refuse a loan on environmental grounds where the problems are of such severity that adequate safeguards cannot be instituted, or where the borrower is unable or unwilling to provide for such measures. Such instances can be expected to be unique and very infrequent. Experience suggests that except in the most unusual of circumstances, environmental considerations can be successfully negotiated and implemented.

9. Q. Does the Bank now (or will it in the future) conduct post-audits of the environmental consequences of development projects it has financed?

A. The Bank has not yet conducted post-audits specifically focused on the environmental aspects of development projects. However, in the conduct of its regular supervision studies, increasing attention will be paid to the environment and related aspects of a project's presence and operation. It can also be expected that other institutions and organizations will be initiating ecological post-audits and that the Bank will consider co-operating on studies of Bank-financed projects.

II. Social Welfare

10. Q. Does the Bank policy on environmental quality take into account any distinction between industrial and social development projects?

    A. The Bank recognizes that some problems of social welfare and environmental quality are, in terms of development, virtually identical. Indeed, it is the purpose of the Bank's policy on environmental quality to ensure that development projects involving infrastructural or industrial facilities do not themselves defeat long-term economic and social goals.

11. Q. In the case of development projects involving the relocation of people and/or impacting on their social and cultural values and patterns, what does the Bank require?

    A. The Bank is concerned that a development project does not affect adversely the life styles, living patterns, social values, and culture of peoples affected by its presence or operation. Plans for the relocation and resettlement of peoples must not have adverse consequences to the physical and mental health and social welfare of the people concerned. The quality of life for peoples affected by a project must be considered and provided for in the formulation and implementation of a project.

12. Q. Where a development project is shown to have public health problems that will require environmental control measures and possibly improvements in the health care delivery system, will the Bank assist in financing such measures?

    A. Yes - if a development project can be shown to be the cause of new disease problems or bring about a further distribution or intensification of existing diseases, the Bank will, as a part of the loan, provide for the financing of needed environmental control and health care measures.

III. Project Costs, Additionality and Trade

13. Q. Does the Bank provide "softer terms" for the financing of the environmental protection aspects of a project?

    A. No - the Bank's policy is to consider the protection of ecological systems and human health and well-being as an integral, necessary part of a project, and therefore provides for the financing of such measures on the same terms as the other aspects of a project.

14. Q. Would the Bank consider financing an "environmental project" as determined by a member country; e.g., urban water supply and sewage, erosion control, water resources management?

A. Yes - the Bank has made loans for such types of environmental projects and will give sympathetic consideration to them in the future.

15. Q. Will the Bank finance the additional costs of production so that a firm's products can meet environmental import standards of developed countries?

A. If the environmental quality controls are viewed as wholly or substantially representative of an integrated program to improve environmental quality, then the Bank will consider assistance in this regard. For example, quality controls over effluents from one plant cannot be considered for assistance separate from quality controls for all plants in that industry and/or quality controls over the receiving air or water sheds of the project(s) in question.

16. Q. What is the Bank's experience to date as regards the cost of including adequate environmental safeguards in projects which it finances?

A. The Bank's experience is limited to one year and hence, cannot be viewed as definitive in any sense of the word. So far, costs of environmental protection range between 0-3% of the total cost of the project. Not infrequently, positive economies have been realized as a result of environmental measures. This is in line with the equally limited experience of other bi- and multilateral agencies. Future experience may alter this figure and certain projects could present unusual circumstances requiring more costly protection measures.

17. Q. Has the Bank studied the effects on international trade of increased environmental protection measures in the developed countries?

A. Not as a direct undertaking but the Bank is in close touch with studies being conducted by the GATT, UNCTAD, and others. As the need arises the Bank can be expected to make studies of the trade implications of changing environmental actions in developed countries, as well as among regional trading partners around the world, where they relate to the Bank's activities.

18. Q. Will the Bank provide technical advice and assistance from time to time on environmental, health, and related matters if requested by the government of a member country?

A. Yes - in keeping with the resources it has at its disposal and the time demands on its staff, the Bank is pleased to offer help and assistance in this regard.

19. Q. If a U.N. Special Fund for the Environment is established, as has been suggested in preparations for the Conference on the Human Environment (Stockholm, June 1972), will the Bank contribute to it?

A. The establishment of such a fund is still in the proposal stage. As it is presently envisioned, however, a Special Fund would be intended to support global environmental activities such as atmospheric and oceanic monitoring, information referral and exchange, program planning coordination and guidance, as well as education and training. These are necessary and important functions, which require new resources. If such a fund is established and the Bank's support is officially sought, this will be a subject for the Bank's management and Board of Directors to decide upon.

IV. Related Information

20. Q. Does the Bank have a guide or checklist of environmental considerations which can be made available to borrowers, member governments, consulting firms, etc.?

A. Yes - the Bank has a checklist of environmental considerations that contains much useful information which can be made available as an aid to interested individuals and organizations.

21. Q. Does the Bank have other publications of interest dealing with environment and development?

A. Yes - the Bank from time to time puts out such publications (some in both French and Spanish, as well as English) and these are available without charge. Of special interest might be its handbook of environmental considerations for use by development planners, engineering and consultant firms, etc., as mentioned in Question 20 above.

22. Q. Where can information about the Bank's environmental programs and activities be obtained?

A. Information can be obtained by contacting:

Office of the Environmental Adviser
The World Bank
1818 H Street, N.W.
Washington, D.C. 20433

23. Q. Where can other publications and literature on environmental subjects produced by the Bank be obtained?

A. Requests for Bank publications should be addressed to:

PUBLICATIONS
Room A-110
International Bank for Reconstruction
and Development
1818 H Street, N.W.
Washington, D.C. 20433

MR. HALE: Our final speaker for this morning's session will be Dr. Donald R. King, who will bring us up to date on the results of the 1972 Stockholm Conference on the Human Environment and the more recent United Nations Environmental Program. Dr. King received his Ph.D. in Entomology from Ohio State University in 1952. His career includes research and teaching at Texas A & M University, and service with the Department of Agriculture as a Research Management Specialist and with the Office of Science and Technology where he was principally concerned with the development of national and international programs in the biological sciences, demography and environmental quality. Dr. King is presently Science Advisor in the Office of Environmental Affairs in the U.S. State Department. His principal responsibility is the coordination of U.S. participation in environmental programs of the United Nations.

Dr. King.

DR. KING: The title of this will be: U.S. Involvement in International Environmental Affairs.

In recent years the word environment has taken on a new meaning for a large segment of the American public. We have become increasingly aware of the fact that the U.S. has reached a point where it must take immediate action to arrest the destruction of our natural resources and the contamination of our air, water and soil. In addition, deteriorating environments in our urban centers have given a good deal of emphasis to the movement for an improved quality of life. In recognition of these problems, a great deal of domestic activity has taken place and the new emphasis has been accorded to environmental concerns.

With the tremendous expense of improving our domestic environment, the question arises as to why we should address issues on international scale. One obvious answer is that many of the problems we face today recognize no international boundaries and cannot be dealt with in isolation. The two closest examples of this kind of problem include concern which has been developing for the Great Lakes. The U.S. and Canada are currently embarked on a major effort to clean up these lakes in the interest of both parties concerned. Similarly, we face problems with our other immediate neighbor--Mexico. Diversion of water from the Colorado River for irrigation results in increased salinity of the river by the time it reaches Mexico. This is an extremely important aspect of our relations with that country and efforts are going ahead to deal with the problem.

On a broader scale, it is apparent that some environmental problems transcend even regional groups of nations and call for worldwide recognition and attention. Classic examples of this kind of problem include the potential for serious contamination of the atmosphere

and oceans, resources which all countries share. Although it is unlikely that degradation of these media will occur on a massive scale, it is quite apparent that substantial areas can be seriously degraded. Examples of the latter, so far as oceans are concerned, include the effects of numerous oil spills throughout the world and the contamination of fish and shellfish by mercury in the waters of Japan.

So far as conservation of resources is concerned, there is an increasing interdependence among the nations of the world in maintaining their supplies of basic materials. As the standard of living is raised in many developing countries, their consumption of resources must, of course, increase. These substances which are either irreplaceable or take a long time to regenerate, obviously must be conserved and utilized intelligently under these circumstances.

It is these kinds of concerns which has prompted the United States to move into international environmental affairs. There are a number of both bilateral and multilateral activities in which we play a major role. An example of the former is the recent agreement with the Soviet Union for a broad range of cooperative activities to solve mutual environmental problems. On the multilateral side, the most publicized activity was the United Conference on the Human Environment which took place in Stockholm, Sweden in June of 1972. At this conference, 113 nations, in a spirit of general amity, agreed upon 107 recommendations for international action, developed a Declaration on the Human Environment, and set up a UN organization to carry out the recommendations. At the subsequent meeting of the UN General Assembly in the fall of 1972, the new organization was formally established and was given the title: The United Nations Environment Program (UNEP). The new organization has responsibility for coordinating environmental activities throughout the United Nations system. It may also draw upon competence in various other inter-governmental and non-governmental organizations to accomplish its task of improving the global environment.

To facilitate this coordination and to develop new initiatives, support was provided to UNEP in the form of a voluntary Environment Fund, first proposed by the United States, of $100 million over a 5-year period. The U.S. agreed to contribute, subject to Congressional action, 40 percent of this fund on a matching basis. To date, if the U.S. contribution is included, $97 million have been pledged. Several potential contributors have not yet made their pledges. UNEP is comprised of four major organizational entities. The first is a 58-nation Governing Council which will provide policy guidance and direction to the program. The second is a Secretariat headed by an Executive Director, Maurice Strong, who was the Secretary

General of the UN Conference in Stockholm, which will be responsible for developing and carrying out programs. The third entity is the Environment Coordination Board consisting of representatives of the various concerned UN specialized agencies, whose function will be to develop coordinated programs for submission to the Governing Council. The fourth element is the Environment Fund mentioned earlier which will be used to support new and expanded programs directed toward improving the global environment.

The new organization will be headquartered in Nairobi, Kenya. The Governing Council held its first meeting in June, 1973. At that time agreement was reached to develop programs in two particular areas, a global pollution monitoring program and an information referral system. The latter program will be designed to provide a switchboard mechanism by which countries desiring practical information may be put in touch with sources which can provide such information. In addition, the Governing Council developed 46 further priorities for action based on the Stockholm recommendations from which additional programs may be developed in preparation for the Council's next meeting in March 1974 at Nairobi.

The U.S. also participates in other multilateral organizations concerned with environmental problems. These efforts are particularly useful in view of the fact that industrialized countries are involved which have similar types of problems. In the Organization for Economic Cooperation and Development, consisting of the countries of Europe, Canada, the United States, Australia and Japan, a number of efforts are underway aimed particularly at the trade and economic problems associated with environmental concerns, although there are also a number of sectoral activities.

Efforts are currently underway to assess the cost of pollution control, to provide early warning to other countries when a particular country takes environmental action which may have widespread effects, and the establishment of the principle that the polluter and not governments should pay to clean up contamination. The latter action is designed to assure that manufacturers in particular countries will not have a competitive trade-edge because they do not have to pay pollution control costs.

Another organization with which the U.S. participates is the NATO Committee on the Challenges of Modern Society. Activities under this program are carried out largely on the basis of pilot countries which take on particular assignments and develop information which is then distributed to the other member nations. A major recent action which has widespread implication is an agreement that member nations will cease deliberate disposal of oil at sea by 1975 or 1980 at the latest. This agreement is expected to be extended to a wider range of countries in an upcoming IMCO conference in London.

In another forum, the Economic Commission for Europe, a series of programs is expected to be launched on problems of mutual concern to industrialized countries of the East and the West. This effort was previously hampered by lack of agreement on political issues between the two Germanys, but this impediment is removed and progress is expected to accelerate.

It is quite apparent from this discussion that the U.S. is deeply involved in international environmental activities. This is an area of concern for all nations. Developing countries are becoming increasingly concerned from the standpoints particularly of water contamination and national utilization of resources. Although economic development is, of course, their major emphasis, they recognize that environmental considerations must be a factor in sound development programs. The initial resistance to "environment" is disappearing rapidly and a constructive approach to problems is emerging.

MR. HALE: Our first speaker this afternoon, Mr. William Alston Hayne, received his Bachelor of Arts degree from the University of California at Berkeley and his Master of Art's degree from Stanford in the School of Business. He's been a staff member in the International Office of the Council on Environmental Quality since July of 1971. In this position he is primarily responsible on the council staff for the United States international environmental activities and has been directly involved with bilateral discussions with Mexico, Japan and a number of other countries including the Common Market. He also works with environment activities of the Organization of Economic Cooperation and Development. I don't think there is anyone better prepared and better qualified to tell us about the organization and responsibilities of the Council on Environmental Quality than Mr. Hayne.

Mr. Hayne.

MR. HAYNE: Luke, thank you. It's a pleasure to be here. I regard this meeting as one further step in our efforts to have environmental awareness increase and grow throughout the Federal government. As you will hear from my colleagues later on, we have for a number of months been attempting to have AID prepare the same kind of environmental impact statements as do domestic agencies. Obviously, there are certain differences to which you have to pay attention abroad.

I thought I would spend most of my half hour here, though, telling you about the Council on Environmental Quality. I'll try to talk for 10 or 15 minutes and then respond to any questions which you may have.

The Council on Environmental Quality is, of course, primarily a domestic outfit. It was created by the National Environmental Policy Act on January 1, 1970. Chairman Russel E. Train -- the Council is a three-man organization -- has been Chairman since the beginning. There are also two Council Members -- one is John A. Busterud, who is a San Francisco lawyer previously with the Department of Defense. Another is Dr. Beatrice Willard, an ecologist from Colorado. The two Council members that started with us, Dr. Gordon MacDonald and Mr. Robert C. Cahn, left last year to return to private life.

Our total staffing is supposed to be 50. We're supposed to be down to 50 by the end of June, which causes some problems for us. There are a few extras like myself--a Foreign Service officer. We also have an officer from the Corps of Engineers, and one from the Smithsonian. We have a senior staff--five or six people. I am the senior staff member for international affairs. We also have lawyers, a senior scientist, a program director and one or two others, and a professional staff. So secretaries, chauffeur, messengers, professional staff, and Council Members comprise between 50 and 60 people at this time.

People ask us frequently, what's the difference between CEQ and EPA? Well, one difference is our 50 people against, what is it? 9,000?. I forget the exact number at the moment. We're in no sense competitive, and overlap is almost nonexistent. The Council has certain specific responsibilities. It covers the full range of the environment, not just pollution control, and so our environmental work involves subjects like land use, which is chiefly the responsibility of the Dept. of Interior; certain things to do with radiation and safety that would be AEC and EPA; a great deal to do with whales and conservation of fish, which is NOAA; air, water, noise and other pollution which is EPA; a great deal of international environmental affairs, the foreign policy aspects of which are certainly the responsibility of the Department of State; the environmental aspects of the work that you do in AID, and similar work in HUD and HEW. Almost all of the agencies have certain environmental aspects which interest us.

One of our main operating functions are the environmental impact statements that I mentioned earlier. The National Environmental Policy Act requires any federal agency which takes any action that has a significant effect on the environment to prepare an environmental impact statement. We have evolved very detailed guidelines for this procedure -- guidelines which change all the time. We're trying to keep this whole process from being a paper exercise. In other words, we don't want people to make the basic design to go ahead with a particular project and then tailor an impact statement so that it supports this decision. Our job and our purpose and our objective is to have people consider the environment as any other cost or factor and take it into account right at the beginning of one's calculations, not something to be minimized after the rest of the planning of the expenditures has been done.

In any case, a number of our staff serve as impact statement examiners for different agencies. Actually one man has AEC, NASA, and the Department of Defense; we're spread pretty thin as you can see. We can't read all the environmental impact statements. I think last year we got several thousand, most of which came from the Department of Transportation on roads and bridges. We do read all the controversial ones. But these environmental impact statements are also distributed to the agencies of government who have an interest in them. They're also made available to the public, which is kind of a revolution in governmental processes. Our environmental impact staff will prepare a short summary of an impact statement which we've received, and will publish it in a document we call the 102 Monitor. (This is named after the section of the law which mandates these impact statements). Anybody can subscribe to the 102 Monitor. It describes the proposed project, gives the cost of a copy of the impact statement, which will run anywhere from a couple of dollars up to, I suppose, $50 if it's big enough, and the public can then obtain any of these impact statements.

An impact statement is first circulated in draft form for comment, and commenting agencies reply directly to the originating agency which is responsible for this work. Some examples of where Federal actions require impact statements would include: where you will have to issue a Federal permit to cross a navigable body of water; where you cross the frontier with, say, a power line or pipeline; or in almost any case where the Federal Government is directly involved in a major decision. For example, in the case of the Alaskan pipeline, a permit has to be issued to cross the federal lands and that's what caught up the Alaskan pipeline in the impact statement system. The first Alaska pipeline impact statement was not considered adequate; I believe it was only some 18 pages long. Environmentalists took it to court. The impact statement was then massively redone for a couple of years until now it is a seven-volume document two feet high. It is a very honest and complete statement which says that, of course, there will be environmental damage and lists it and describes it and how to minimize it. And if an impact statement is a true and honest reflection of what needs to be done, then it becomes a policy decision as to whether or not you should go forward. Secretary Morton and the President ruled that we needed the Alaska oil, so we will try and go forward, minimizing the damage to the environment.

The action which takes place in the courts really means various things, but essentially it means that if an impact statement has not been prepared at all, or has not been adequately prepared, the judge says, "stop the project until the impact statement is done correctly." There was a group of -- it wasn't little old ladies in tennis shoes, but it was almost that -- who stopped the nuclear power plant construction in the United States in the Calverts Cliffs case when they showed that the decision makers had not taken into account the possible effects of thermal pollution in Chesapeake Bay.

Then the AEC decided it wouldn't appeal this decision but would go ahead and study these effects. This is a very important aspect of CEQ work. I won't dwell on this any longer because of the time.

Another aspect is new legislation. Every year we prepare, for the President to send to Congress, areas where we think that the country needs new environmental legislation. I think we have some 18 or 20 bills still up before Congress, which we hope will be acted upon sooner or later. For example, we need new legislation on toxic substances. We have what we think are adequate air and water bills at the present time, but we found that some people, for example, have been digging holes and pumping their poisons into the ground, thereby threatening the purity of the ground water. We need new legislation on such things as the means of controlling sulfur dioxides. CEQ has developed a proposal for special financial charges to be imposed by the Federal Government on people producing sulfur oxide emissions; this is now before the Congress. This would also help ensure that low-sulfur fuels are allocated to the areas where they are most badly needed to protect public health.

We also need new legislation on recycling. We find that as freight rates go up, for example, the prices between virgin materials and recycled materials always grows greater in favor of the virgin materials, and this is wasteful. We have put forward regulations and new proposals for conservation. The most complete ones are proposals for land use, which we consider the greatest uncompleted section in our environmental efforts in the United States today.

So new legislation is another one of our tasks. We also produce an annual report which comes out each summer. This is always a great trauma in the Council because everything else tends to grind to a halt while you're trying to produce the report. There is an international chapter and other chapters on economics. There are chapters on state and federal developments. There are chapters on conservation. We try and touch on all the major subjects. You can't cover everything every year, but you try and develop fully one or two subjects each year. This report is very useful and we distribute it around the world, as well as to our own government and public. And it's often quoted and used.

In addition to these primary functions which I've told you about, we also act as an interagency catalyst on working groups, on special studies, on special reports, anything that needs to be done in the environment that somebody's not doing -- it's our job to try and get it going. Once it gets going, we try to transfer it to an agency which is capable and who's responsibility it should be.

In the international side, the law and federal Executive Orders have given the Council very substantial responsibilities for the substance of international environmental affairs. This means that Chairman Train, for example, headed the U.S. delegation to the UN Stockholm Conference. He is coming back tonight from a trip to London where he made a proposal to IMCO, the Intergovernmental Maritime Consultative Organization, which calls for the establishment of a new committee and new ways to stop oil pollution at sea. Chairman Train also headed the delegation to the International Whaling Commission last June in London. He also headed our delegation at the ocean dumping meeting and again in London last fall where we had a world-wide ocean dumping convention. He was the head of the delegation which we assembled last February in Washington to deal with trade in endangered species. The resulting endangered species convention provides that plants or animals which are certified as being in danger, cannot be traded without permits. If they're on a "blacklist" of endangered species, you can't get the permits at all, except for some limited scientific purposes.

We also participate in the OECD and the ECE and FAO and IMCO and many other international organizations dealing with environmental considerations.

There is much to be done in international fields. Most of you, I understand, will work or have worked in less developed countries. We found that two years ago, before the 1972 Stockholm conference, the general feeling in the less developed countries was that: "The environment is not for us. This pollution is from factories and if that's the case, don't bother us. We need the factories. Pollution doesn't matter. Rapid economic growth is much more important." But with the Stockholm conference, the understanding of the LDC's has vastly broadened and we find that their interest in the environment has increased enormously. They are somewhat concerned that they may be hit economically by the need for pollution controls. I think their concerns are rather overstated, but you have to understand them. They think these controls may be an excuse either to take money away that would otherwise go for aid, or that somehow their exports will be blocked, or something else will happen where they'll be done in. One interesting thing is that we find that some foreign offices, and some diplomats in the United Nations, tend to lag behind the greater understanding of environmental issues showed by their own governments. In their capitals, in other words, officials are more aware of the real problems and are aware of what we're trying to do, so you don't run into so many problems if you can get directly to the Ministry of Interior or Ministry of Agriculture rather than only talking to the diplomats abroad.

I think I'll stop now and see if you have any questions. -- Yes, please.

MR. SNELL: You mentioned CEQ examined only the controversial projects. I am curious if you know who established them or how controversial projects are identified.

MR. HAYNE: Well, you soon hear about them, almost when they come up. For example, the Alaska pipeline was controversial. Obviously when you shut down construction of every nuclear power plant in the United States, that becomes controversial. If you decide to halt the cross-Florida barge canal and the Tennessee-Tombigbee project -- I think that's where a great many people and lots of money are involved. You find out pretty quickly what's controversial.

MR. SNELL: Well I was curious as to who identified them.

MR. HAYNE: How do you mean? Who identifies them -- whether they're controversial?

MR. SNELL: Who identifies the controversial projects?

MR. HAYNE: They're usually known even before the environmental impact statement comes in. In other words, there are so many Congressmen

or Senators or industrialists or -- above all environmentalists, the environmental groups will be the ones who having gotten hold of the impact statement, will signal to us and to everybody else what they think is a threat to some objective which they may have. We find the Sierra Club, for one, is very active throughout the United States and now abroad on these things, as are various legal groups in Washington. Sir.

UNIDENTIFIED: How would you divide your responsibility from that of the State Department?

MR. HAYNE: There is no hard and fast line to do this. On the whole, the State Department is supposed to have the foreign policy aspects. Well how do you divide that? Well, what you've got here is Chairman Train and other Council members who know something substantively about the subject matter so they can go into a conference or delegation and discuss it personally and in depth, whereas the State Department, unless you get into very specific regions like fisheries, where they do have some expertise, or in some other things, the State Department doesn't have this kind of expertise. You find that in many meetings, they must call on a technician who can come in and discuss the chemicals or the toxic substance or what is it. And certain other things. For example, Mr. Herter, who is the Secretary's Advisor on Environmental Affairs, chaired the Conference on Endangered Species. He has chaired and is the head of our delegation to the OECD and does a splendid job. But those things are often mainly international political matters and not necessarily technical and environmental matters, and it kind of breaks down in that way. Sir.

MR. WATSON: How much of a problem do you foresee in the tremendous mineral crunch now facing the United States and certainly other highly developed countries? Will the environment be put on the back burner?

MR. HAYNE: This is certainly a problem, whether it's minerals or whether it's oil, and anything you do has an environmental consequence. Whether it's an Alaska pipeline or whether it's an offshore tanker depot or whether it's a smaller or larger tanker, what one must try and do is try to minimize the environmental damages. Often with a small amount of care you can cut the environmental damage way down just by being aware of it. In other cases you have to make trade-offs. The Japanese are very aware of this problem. One of the things I didn't mention is that we have a very interesting exchange with the Japanese in the environment, but an even more detailed one with the Russians. With the Russians we have some 30 bilateral projects, and they are concerned with the type of thing you mentioned as well. Other questions?

UNIDENTIFIED: Exactly how much does CEQ have responsibility for?

MR. HAYNE: Our main power, if you can call it that, is through the President. In other words, except for the requirements of the National Environmental Policy Act, we generally act in the President's name. We have no regulatory authority of our own, taking anybody to court or anything like that.

UNIDENTIFIED: The impact statements are required for physical projects. Often there is a very significant environmental impact from regulations adopted by Federal agencies or state agencies. Is there beginning to be any examination of such matters? In other words, a regulation that may require, through a zoning ordinance or some other kind of regulation -- even a regulation to prohibit pollution has other environmental impacts. Is there any -- is there beginning to be any examination of that kind?

MR. HAYNE: Yes. I think, for example, that one environmental group sued when freight rates were raised. I think that the court ruled against them, but they argued that just raising the freight rates increased the cost differential between virgin materials and recycled materials, and they've said you needed an environmental impact statement for that because of the indirect effect it has. This gets into secondary effects and the courts and we are also going into secondary effects more and more. You know, you go all the way back on a project. What happens to the timber that you need and what happens to the stuff when you're trying to dispose of it? AEC is particularly sophisticated in this kind of thing, you know. Perhaps an underlying key question is: What are the real environmental costs?

MR. KINGERY: The government of India has an Atomic Energy Commission and under that Commission they have an interest in atomic plants. A U.S. government loan helped them build an atomic power plant, in commission for about four years now, and there is a situation there that may become a controversial one -- but I can see no direct linkage between our Atomic Energy Commission and theirs. The terms of the loan agreement don't get very specific except to say that the plant will be operated in accordance with sound practices and all that. So is there an international Atomic Energy Commission that could bridge the gap between the two governments -- the two governmental commissions?

MR. HAYNE: Well, there certainly is an International Atomic Energy Agency in Vienna, but I don't quite see the point of what you're saying.

MR. KINGERY: It's too technical to go into, but there could be a controversial point that someone might want to make an issue of.

MR. HAYNE: If you're talking about our particular aspects of it. It's a very spongy area still. For example, should the EXIM bank prepare environmental impact statements on what they do? What about the Overseas Private Investment Corporation? It really depends to a certain extent, as with AID, as to what kind of leverage the American agency has. Are you just putting up 10% and your yes or no doesn't really carry weight or are you in a dominant position so that without your permission the project doesn't fly? And I think projects abroad, which do after all involve the sovereignty of other nations, have got to be looked at quite differently than projects which are purely within the United States. But I don't know whether this answers your question or not.

MR. FROEMMING: Well I haven't seen that particular loan paper, but the AEC on occasion has made grants of fuel. In connection with the grant you have to abide by all their regulations, so they get to control in exchange for the fuel supplies. The entire project then is subject to their refusal or approval.

MR. HAYNE: Yes.

MR. FROEMMING: This would take care of the environmental aspects.

MR. HAYNE: That would be an interesting thing to keep in mind.

MR. FROEMMING: I know. I've been in charge of another reactor and we had that arrangement.

MR. HAYNE: Good. Any other questions? Sir.

MR. SNELL: Has CEQ taken or do they contemplate taking legal action against any project as a means of delaying it until the desired environmental considerations have been achieved?

MR. HAYNE: I don't think we have the authority to do that. It's up to outside citizen organizations. We can, of course, make sure that the environmental impact statement is processed and then get comments. For example, if five different governmental agencies said, "your environmental impact statement isn't complete", and we were to write a letter to the lead agency and say that we and five others think you've got a lousy environmental impact statement, then release that letter to the press, it would be a very sad bunch of environmentalists that didn't take that letter to court. Now I don't think that is a good way to do business and I don't know that we've ever done it, but I assume it would be effective.

MR. SNELL: How do the environmental groups get access to these environmental statements?

MR. HAYNE: They're public documents. They're required to be made public. As I said, they are produced in a certain number of copies, and are spread around the government to the agencies that have an interest in them; these agencies are asked to comment directly back to the originating agency under which the project is taking place.

We then publish a summary of the impact statement in the 102 Monitor, which is available to the public and to which anybody can subscribe. There is then an outfit in Virginia, run by the Department of Commerce, which prints all these things and anybody in the world can write in and with two dollars can get a copy of it. And there is very little in the environmental field which is classified. Everything is public and this is how they get it and how they do have it.

Well, unless there is anything else I'll turn the microphone over to Mr. Hale.

MR. HALE: Thank you very much for your comments. It's very helpful to us to know more about the operation and the organization of CEQ.

MR. HALE: Our next speaker has just arrived. Mr. Fitzhugh Green, Associate Administrator of the U.S. Environmental Protection Agency, attended Princeton, the Naval War College and got his Masters of Arts degree from Boston University. He joined government service in 1953 with the U.S. Information Agency and has since served with other departments and agencies of the government. He is now an Associate Administrator with EPA and will tell us of the organization and responsibilities of the Environmental Protection Agency. Mr. Green.

MR. GREEN: Thank you for introducing me. It's a much nicer introduction than I got the other day when I was talking up country somewhere, where the man who had that chore got up and told all the people in the audience 'I know you're all as glad as I am that we're about the hear the dope from Washington.'

(Laughter.)

MR. GREEN: And it is good to be able to communicate with fellow workers in the overseas vineyards where language is no problem between us. The other day I heard a good example of how it can foul up relationships. I was down on the Mexican border as a member of Herbert Brownell's Presidential Task Force which was set up to deliver a promise President Nixon made to President Echeverria a year ago. The promise was to try to deliver a less saline Colorado River to Mexico.

The riparian states are very interested in what we may do to cut back the U.S. use of this water. So some governors were at our meeting and during toasts at lunch one of them said that he had visited Mexico recently and in order to appear warm and friendly told an audience in Spanish about how when he was younger he had been on a number of journeys in Mexico. The trouble was that the word for "journey" is the same as the word for "old ladies" and he got them switched.

(Laughter.)

MR. GREEN: So if I don't communicate with you in the next few minutes, I don't have that excuse anyway.

I thought I'd give you a triple burst as short as I can make it about the USEPA. But I see my colleague Otty Hayne is still here. It makes me very uneasy because we work together a good deal and there is no way that I can bamboozle you with him sitting right there. He's probably learned the environment racket quicker than anybody coming over from the State Department where everybody knows there is nothing precise going on. But he's enormously precise in the way he talks about what's going on in the environment, at least when I hear him. It's a pleasure working with you Otty and please be kind in your questions.

The three things I'd like to tell you about EPA are one - how and why we got started and how we work. Two - where we think we are in terms of doing the job of cleaning up the environment and then three - a little bit about what we're doing overseas.

It's very hard to know anymore what level of knowledge anybody has about the environment and about EPA. There has been so much written about it that if any one of you here read what's available on a daily basis in the newspapers, magazines, the broadcast media, you'd know more than I do about it, even after having worked there for two and a half years. But I'll assume you haven't read everything and I'll try to be useful to you. First I'll summarize how we got into business and how we're organized.

There were things wrong with the environment for a long time before EPA was born. Even Dickens wrote about it - the great smogs of London and so forth. This country began to react to it probably sooner and more effectively than most. The City of Pittsburg was cleaned up long before London was. Environmental agencies of one sort or another began to spring up in some of the big cities, notably Los Angeles, long before there was anything approaching a national program.

But finally we began to get national programs, particularly in air and water quality control, pesticides control, radiation control and some solid waste management, at least research on it.

Pretty soon we had 15 national programs going on, attached to various agencies. But in spite of this fact, levels of pollution were rising, our environmental system was worsening and local controls weren't enough.

The best way to summarize why local control was not enough is the example of a "company" town. For example, it might have a big paper mill polluting the air and the stream where they are located, very badly. One day the mayor comes over and talks to the President of the company and says: "How about correcting this? You know about ordinances X, Y, Z, and you've done absolutely nothing to control what's going on".

The President replies: "Mr. Mayor, I'm aware of these ordinances and I'm also aware of two other things: One, that to comply with these ordinances will cost our company $510,000 and two, this means we'll have to lay off at least 200 workers. Remember Mr. Mayor - it's a small town and you didn't get elected by a very big margin. If I have to go ahead and make these improvements and lay off these people, I'm going to tell them why and you may not get elected again."

And so, of course, the situation would simply go on as it was.

Finally, the present administration drew these 15 programs together, for two reasons. The first was to avoid conflict of interests at a

local level which would prevent action, and second, because the environment is an orchestrated, integrated system and you can't talk about cleaning up one element without considering the total effect. For instance, if you precipitate filth out of an industrial stack and then dump it in the water you simply move your problem from one place to another. So the idea of getting these 15 agencies together and treating the environment as an integrated whole seemed to make good sense.

What does this mean in bureaucratic terms? Legal terms, administrative terms? We had some 6,000 people, all of whom came out of their own little fiefdoms with mandates that were sometimes duplicative.

Incidentally, most of them had overseas programs and the first thing we had to do, in the international area, was find out just what they were doing overseas because even when we drew them together, they went on with their private contacts and their private activities all over the world. So it was a very interesting kind of detective job to find out what we were already doing before we decided what we wanted to do in the future.

But to get back to the domestic picture, about the time we came into being, Congress began to stiffen the national laws on environmental control and thus gave us an increasingly strong mandate to manage problems of air, water, solid waste, radiation, pesticides, and as of last year, noise.

We had to reorganize the people who were brought into this agency because of this thoroughly divided situation that I mentioned before. We had to add several thousand - we're now up to about a total of 9,000 - in the first two and a half years. And we had to implement immediately the tough new legislation. Doing all this at once, Bill Ruckelshaus said, was like a fellow trying to run a hundred yard dash while undergoing an appendectomy. But we are now in a position where our teeth are showing and the public and particularly the business and city authorities levels are really beginning to respond.

We're organized as follows: We have a headquarters in Washington, about three thousand people. We have ten regional administrators scattered around the country because, after all, pollution arises always from some specific place and it's much simpler to deal with it as close to the source as possible. This of course is part of this Administration's decentralization. We've got a massive research program amounting to a total of some $130 million this year, with 31 laboratories under four specific theme heads and they're scattered around all over the country. The themes are ecological pollution, control technology, monitoring, and health effects. Those are the four main areas of research that we're engaging in.

The purpose of our research is not to come up with all the answers ourselves, for business pursues a lavish amount of research and development efforts and there's quite a bit of private research in colleges and independent institutes.

Any self respecting researcher will tell you $130 million, although it may seem a lot to us taxpayers, is really not much when you consider the vast tasks that have got to be accomplished in the field of environmental knowledge and control. So our task is to catalyze more activity rather than to try to do the whole job ourselves.

Our approach to getting the country to control our environment problems is not to go around and see how many people we can cite for violations of the legislation, but rather to find partners and work with them towards achieving environmental quality that we all know is desirable.

I'll give you one example as to whether we're effective or not, and I think you'll all sleep better to hear about it. Let me explain: we've got 9,000 people at the federal level and there are many more thousands at the State and local levels with whom we work to protect against environmental degradation. But what happens if you have a real problem that's going to cost a whole lot of money to solve? We had such a case just about a year and a half ago in Birmingham, Alabama.

The city is ringed with 23 large steel mills and other plants. We have a contingency plan for all our major cities to go into action when our continuing monitoring shows pollution levels rising to become an immediate hazard to human health. The levels got to that magnitude in Birmingham late in 1971. So our regional administrator's team from Atlanta, in charge of that area, told the mayor of the city, "now is the moment to execute the emergency contingency plan -- tell the factories to shut down until this high level of pollution drops." The mayor did say this and they refused.

Then we told the governor, "this is a serious situation. People are going to get ill and maybe even die. Do something about it."

Well, the governor tried and the plants refused to obey him either, so the whole concept of going federal was then under a dramatic test. People about to die, local failures to get anything done to correct the situation. Whereupon our enforcement people from the Atlanta office drew up injunctions. They woke up a federal judge at one o'clock in the morning. And he signed the 23 injunctions. They were served at six o'clock in the morning. By eight o'clock all the plants had shut down. This whole sequence took place in just a few hours.

As it happened, about two hours later it rained and cleaned up the area anyway so nobody was hurt economically. But the point was made and it was a very exciting demonstration that this new approach is work-

able. We really don't have time for me to tell you what the strategies are for cleaning up the air and water and to carry out our mandates in the other areas mentioned. Suffice it to say that I will just mention briefly what we're doing in air and water.

On air, under the Clean Air Act, as amended in 1970, we've done two basic things. One is to tell the automobile manufacturers to cut down by 90% the three worst pollutants by 1975 and 1976 over the 1970 and 1971 models. The three pollutants are hydrocarbons, carbon monoxide and nitrogen oxides. The last of these, we have just learned from our ongoing research, may well not be quite as bad to human health as we thought and therefore it may not be as necessary to get it reduced as much as we had called for We haven't changed the requirement on automobiles yet, but the fact that we came out and said this shows you that we certainly don't have all the answers in the field of pollution control yet. It also shows you that we are operating reasonably and as soon as we have facts that show that we've taken a wrong turn, we are willing to re-examine our position.

The major part of the air control plan was to declare national ambient air quality criteria for the six major pollutants that are hurtful. These are hydrocarbons, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter and photochemical oxidants.

We set these two years ago; then, under the law, we called for each state to come up with an Implementation Plan to meet these criteria. The plans have now been developed by the states, and submitted to us for approval.

Our job is to either approve them or to make them workable if we don't approve. You have a different plan for each state obviously because you have different mobile and stationary sources of air pollution throughout the country. Again, it makes more sense if you deal with it at the local level, because it does vary from state to state.

The plans are often quite expensive and some not quite workable. We had to go in under a court order the other day to tell the Californians that their plan did not call for the action that's going to be required to achieve air quality criteria in the Los Angeles area and therefore they had to take more drastic steps.

There is no easy answer about what you do in Los Angeles. There are ten million people and six million automobiles and Mr. Ruckelshaus simply told them - 80% of your pollution is coming from automobiles, not from industry. You've got to cut your levels of automobile activity by 80%.

Of course that move would put the town out of business so we don't have the immediate answer - certainly not without a lot of mass transit to

fill in. Nevertheless, this is the way we're going, on a state-by-state basis, with national criteria to be met individually by each state.

On the water bill we have a plan which will give us swimmable, fishable, lookable waters by 1983. This is largely based on providing money to the municipalities to build "secondary" sewage treatment plants. About a third of our inland waters are polluted, and by this system, and with the expenditures of billions of Federal and State monies we hope to be able to have that kind of water by 1983.

The goal for 1985 is that no polluted effluent at all will go into the waters from plants thereafter. Some people say this is an impossible goal. But it's there, on the books, not as a requirement, but as a goal.

The President, Mr. Ruckelshaus and Mr. Fri, who is his acting successor, are all in agreement that if we carry out these laws and our present procedures, within five years there will be a visible turn-back toward purity of our air and water in this country and after ten years we'll be wondering what the problem was. Of course, this does not solve the larger questions which I'm sure Mr. Hayne and others have mentioned, namely the energy requirements, the population explosion, the whole question of development, economic growth, diminishing amounts of non-replenishable natural resources. These issues will have to be resolved if we're going to help the quality of the environment in the long run.

But as to EPA's task, if the money is made available and people obey the laws and we continue to develop answers we don't yet have, we feel that pollution control is going to be achieved within ten years.

One final word on what we're doing overseas. Let's think of the world as this room and say that we intend, in EPA, to clear up the air on the state here. It wouldn't make very much sense if we forgot about the air in the rest of the room. It's the same bag of air - we have one air envelope, one water envelope around the world - so we're working very busily with State and CEQ to collaborate with the other nations of the world.

We're working multilaterally in the UN, and in OECD where we're trying to sort out all the questions of trade that come with having environment controls in one country and not having them in another. On that particular point we're meeting next week with multi-national corporations of this country to discuss so-called "pollution havens" where there may be unfair competition from other countries. We realize that an American multi-national corporation can build its plants in pollution havens just as well as foreign owned companies, so nobody's kidding anybody about this possibility.

We in this government believe and many business leaders also feel that the environmental controls that we've got in this country are really going to spread to other countries pretty soon and that the day of the pollution haven, if it's at all significant now, will be fairly short lived.

In any case we're going to spend a morning examining this question with American business, get their feelings, and knowledge, give them what research we've got as to the economic impact on their business of having controls here versus no-controls elsewhere.

We're working with NATO on some extensive projects on which we think the main value is that it leads to bilateral cooperation. We found, at least from EPA's standpoint, that two nations work together on an agency-to-agency basis more practically by getting beyond the ceremonial get-togethers. The multilateral route is great to get the right sort of atmosphere for working together, but when you want to get right down and develop research, EPA working with sister agencies which are beginning to spring up in other countries is the best route.

We're very busy in EPA, with some 500 man trips a year. We have a good many people coming from other countries to see what our experts are up to. We're working with USIA to get public opinion excited and behind the environmental movement in other countries.

But, to date, and Otty and I think you would agree with this, with the possible exception of Japan, there is no other country in the world that puts teeth in their governmental control mechanisms that comes anywhere near to what we have in this country.

MR. HALE: We have scheduled some question time a little later on the program, if you can stay. Otherwise, we'll entertain questions right now. So if you have any questions for Mr. Green, let's have them now.

UNIDENTIFIED: Would you say something about how you picked your standards for pollution?

MR. GREEN: Yes. In the first place you've got to decide how to measure the amount of pollution. In the second place, you've got to measure the effects on human life and on plant and animal life. Primary standards we set are based on health effects to humans. The secondary standards are set in terms of how pollutants affect other things - the biota as well as things like paint on buildings, like the quality of stone and so forth.

UNIDENTIFIED: Are these standards available?

MR. GREEN: They certainly are. We've never set criteria or standards without first promulgating them in the Federal Register and then holding hearings, to which public input is invited from individuals and organizations. As you probably know, the real heroes of the environment movement in this country are the ordinary American citizens who get together in private groups like the Sierra Club, Save the Bay Organizations, outfits with funny little names like GASP, Group Against Smog and Pollution and many others. They're the ones that keep the heat on us government regulators. The new legislation provides them with a legal leverage to sue EPA if it doesn't administer the laws as strongly as they feel they should be, or the polluter himself. Class actions, individual actions, really were not only important in getting us organized as an agency and the rest of the government and the hill geared up to do something about the problem, but they're keeping the pressure on and it's a very exciting demonstration that the system we're in works.

UNIDENTIFIED: This 9,000, is that still an expanding figure? Soon we may be converting from engineers to job hunters if Congress has its way.

(Laughter).

MR. GREEN: Well, we hope that when we get the job done our employees will find other kinds of activity. At the moment it is not projected that we get much bigger. In fact, it's as hard to get a job at EPA as anywhere else in the government these days, unless you're an engineer or a scientist. We have a few openings, but they're mainly for technical types.

UNIDENTIFIED: In what fields?

MR. GREEN: Well, for engineers, chemists, physicists, lawyers and economists.

UNIDENTIFIED: Highly specialized?

MR. GREEN: It's highly specialized. When we set up our international office for example, our thought was, well, we'll have a shadow representative of each of the disciplines so that we can respond overseas for each project that comes along but we found that that would take hundreds of people in the international office alone. So what we do is keep ourselves small and when Otty Hayne or Russ Train or Chris Herter gets us involved in something that's got to be done abroad, we go around and find the right man in Corvallis or Las Vegas or one of our labs or one of our headquarters or regional administrative offices. He completes a project and then returns to his regular duties. That way we keep the people you use fresh in terms of what they're doing abroad.

UNIDENTIFIED: In March of this year we had a notification of a hearing regarding a company which is a direct stepchild of General Motors, Inc. and yet just a few weeks later, General Motors was crying that they couldn't meet the standards while their foreign competition can easily meet California standards. Would you care to comment to that?

MR. GREEN: Do I need to?

(Laughter.)

UNIDENTIFIED: No, I guess not.

(laughter.)

MR. GREEN: I'm glad you've brought it up because it does show that things are not as impossible as some of the people who are going to have to pay for this -- and that includes all of us ultimately are crying out.

But, you know, General Motors has spent billions of dollars on trying to develop pollution control so I don't go along with this idea of sneering at the U.S. corporation. It's clear that the U.S. big corporation has helped make this country as strong as it is and it's not just some cigar chewing rich man off in the corner. It's all of us. We're stockholders or workers or consumers and we've got to keep them honest and we've got to keep then nonpolluting.

I don't want to get on that subject. But we do find that a great many of them are very, very cooperative with us in working overseas as well as working at home. We're going to seek some of their thinking next Wednesday when we meet. As a matter of fact, if any of you want to go to this meeting, you're -- since we're going to be talking about overseas activities and the environment, and not only in the developed countries, but certainly there will be some talk on LDCs if you're interested, Ms. Dolores Gregory back there will give you all the dope -- you're going to be here all afternoon aren't you Ms. Gregory?

MS. GREGORY: I had planned to leave with you.

MR. GREEN: You're going to leave with me?

MS. GREGORY: I had planned to leave this material.

MR. GREEN: Well, I'm just trying to think of the simplest way to let us know. Ask Mr. Hale and we'll give him the information. It's an open meeting. There are 500 seats over there and I don't think they'll be all filled. If you'd be interested in catching it, any one of you, I'd be delighted to have you.

UNIDENTIFIED: You touched on this very slightly, but I'm a little bit unclear as to the relationship between EPA and the state regulatory agencies.

MR. GREEN: We supercede them. When it comes to the crunch, our operating strategy is to help encourage, work with, watch over the situation at the state and local level. And where things are reported to be going wrong by our monitoring system for air and water, then we'll talk to them in a cooperative way, in a helpful way, you know, provide them with technical assistance. We're in a sense their AID down here in Washington before we're Mr. Big Stick who makes them comply with the law.

We always try to get the thing solved locally first because that's the efficient way. That's the inexpensive way. There is less hassle that way and that is the way it will eventually operate. We set the standards on a national basis, monitor them on a national basis and try to help them get complied with by the local authorities. They're the ones that really should, once we set the standards and criteria and implementing procedures -- they are in the best position to bring compliance. But if they fail, as in the Birmingham case, we step in ultimately and crack the whip.

MR. HALE. Thank you very much, Mr. Green.

Let's take about a fifteen minute break now -- and then come back to hear about AID's requirements in making environmental analyses.

MR. HALE: Next on the Agenda this afternoon is Mr. Fowler Since he was introduced and spoke this morning, and is well known to all of you, we'll go right into his talk on AID Environmental Analysis Requirements.

Mr. Fowler.

MR. FOWLER: Before I get started on my own subject this afternoon, I'd like to add a few comments to the talks given by Fitz Green and Otey Hayne just before the break.

In the case of EPA, we have a PASA agreement with them under which we can obtain their help and their expertise as needed in our work. When we request it, and when we pay for it, the facilities, personnel, information and technology that EPA has that might be useful to us in our work in the developing countries can be requested. If that fact escaped any of you, I'd like to call it to your attention. Similarly, we maintain contact with the Council on Environmental Quality in the Executive Office of the President, where Mr. Hayne is a senior staff member, on a variety of international environmental issues which are related to AID's work. They have been very helpful to us in making suggestions and working out AID/s policies and procedures on environmental matters

On two or three occasions we have asked EPA for a specific help, but unfortunately in each of those occasions they were unable to respond partly because, as you know, EPA is still a very new organization and they're going through growing pains, but I'm sure the will and the desire to help us in our overseas work is there. And the fact that they haven't been able to respond positively to the couple of requests that we've made to them doesn't--should not be a disincentive to continue asking. And to the extent they have information and people and experience that we can usefully apply to the problems of developing countries, I think we ought to use them to the fullest. And they're eager to do that, when and if and as they can.

I think one of the first places where we can use EPA is through their information. They have a tremendous amount of data over there. And through tying into their information service we may be able to service particularly those of you who are in the field, with some pretty up-to-date stuff on what's going on technically in a whole series of different fields, with respect to environmental protection and technology.

So far as the Council on Environmental Quality is concerned, Otey Hayne made a passing reference to the fact that they have been pushing AID or leaning on AID for a long time as to why we didn't file environmental impact statements, as all the other domestic agencies are required to do under the provisions of the National Environmental Policy Act. Now this gets into a rather complex and complicated legal question which I don't think we could profitably discuss this afternoon, but if you are interested in pursuing that question further you'll notice on the agenda for tomorrow we have a panel. And on that panel will be Art Gardiner, our General Counsel, who is very familiar with this matter and problem from the legal point of view.

Leaving aside the legalities of whether the National Environmental Policy Act applies or doesn't apply to projects overseas where AID's function is to provide assistance--leaving the legalities of that aside--as a matter of policy, as Dr. Hannah made clear this morning and I think it's been made clear in a variety of other ways, AID and Dr. Hannah personally has publicly stated to Mr. Russel Train, the Chairman of the Council on Environmental Quality, that AID is committed to carry out the intent, the objectives and the spirit of that Act, recognizing that the relationship which we, as a foreign assistance agency have, to the projects in the field is a different relationship from that of a federal agency working within the domestic jurisdiction of the United States. It is different in many ways than, say, the relationship of the Corps of Engineers to a project somewhere within the United States. And I think you may recall that Otey Hayne, in his comments, recognized that there is this difference. The kinds of things we do, even though we are a federal agency, and we are using public funds, are really not identical with the activities of the Department of Transportation or HUD or Corps of Engineers or AEC, when what they're doing is taking public funds and applying them to activities or projects or programs within the domestic United States. I think you can see a whole series of questions and issues and answers or lack of answers involved in that aspect of it.

Our relationship with CEQ I think, in the last couple of years, has become much closer. They understand AID's business a lot more. They are being invited to attend any of our development loan staff committee meetings that they want to come to. They are getting advanced notice of what we are doing, and where we are doing it, and what we are doing about our environmental analysis work.

What I wanted to talk about for a while this afternoon, against the background you've been given this morning, were some of the steps that AID has taken in the last couple of years to try to come down from the broadest generalities about environment to some of the very practical problems of how you do it. And this has turned out to be, as it always is, very difficult.

I assume that all of you have read the two Manual Circulars on this subject which are now part of AID's official procedures and policy. If not, I recommend that you do so and if you don't have copies we can get them for you. Those two Manual Circulars were issued, one in August of 1970, and one in September 1971, Manual Circulars 1221.2 and 1214.1, respectively.

The first one sets out, as a requirement, that all feasibility studies that AID assists or helps in financing must include in the Scope of Work provision for environmental analysis. We do want all of our feasibility studies for overseas projects to include an examination of the environmental impact of the project. An analysis of what it will be or is expected to be and what the options and alternatives are and what the trade-offs and cost benefit ratios of those trade-offs are. We are now trying to take a reading to see the degree to which that particular Manual Circular has in fact been put into practice.

The second one which I would call your attention to is Manual Circular 1214.1 which was issued in September of 1971, which similarly requires in respect to all capital projects that first a determination be made as to whether or not there is any a priori conceivable environmental impact of the project that can be foreseen. If it can, then it's required that part of the project analysis documentation, and all the rest of it, include a section analyzing the environmental impact and describing alternatives, costing them out, etc., and that this information not only be made available to AID/Washington, as part of its project review process, but most importantly, that it be made available to the borrower/grantee. So that whomever we are helping is aware of the environmental implications, and knows what the trade-offs and the problems may be and whatever action is suggested to mitigate or eliminate any adverse environmental effects.

Now those are the two implementing actions that have been taken so far in an attempt to put flesh and blood on the general policy thrust of this Agency, which is to carry out the intent of the National Environmental Policy Act. Those of you who have not read this Act, I suggest you do so. It's not very long and it's found most easily if you look in the back of one of the annual reports of the Council on Environmental Quality, which is the President's report to the Congress on the environment. Each year this Report reprinted the NEPA as an appendix; that's the quickest and easiest place to find that statute. It's very well worth reading because it's an interesting piece of law in itself, and you can tell from listening to what EPA has said to and what the Council on Environmental Quality has said to you, that it is really having a tremendous effect on this country. As Fitz Green and others admitted, it's got a long way to go, but the impact of that in the United States has been not inconsiderable even in the short

time since it was enacted. It has some interesting legal aspects to it which perhaps Art Gardiner or Rick Richstein from the General Counsel's Office may want to comment on tomorrow.

One of these, which I think Otey Hayne adverted to, was that NEPA makes provision for public participation in the decision-making process. By the publication of these Impact Statements, by making them available to interested affected parties in the United States and, if necessary, holding public hearings, you're allowing the public as a whole, and particularly the affected parties,to participate in the decision-making process of the federal government on something which might affect people's environment. And I think that's a new facet of our whole legal and administrative structure. And it has been used, and used, I think, very effectively, particularly by the environmental organizations.

Those two Manual Circulars that I referred to are the two things that AID has done in an attempt to set up some kind of a procedure or system to carry out our policy of looking at and being aware of and concerned about environmental impacts of overseas programs and projects where we are involved. You will find when you read them, if you haven't already, that they are still very general. And they were deliberately drafted that way. And I think you only have to stop and think for a moment to realize why. There were those who felt we should write much more detailed instructions, how-to-do-it manuals, or that we should somehow attempt to begin to establish standards or criteria by which projects could be appraised as to whether they were environmentally sound or environmentally unsound and so forth.

We decided, and I think wisely, not to try to do that. The reason being the obvious one. It's impossible to know in advance all of the other variables that exist in any given activity, particularly in a less-developed country, that equally affect whether an environmental factor should be weighed very heavily or very lightly. You just can't legislate that kind of thing or describe it in any sensible way and expect to have it applicable across the board, in all situations and at all times.

So it was left to the individual Mission and the individual Regional Bureau, or the individual organizational unit that is sponsoring a particular activity, or assistance to a particular activity, to make that judgment themselves. And hopefully in as intelligent, informed, and sensible a fashion as is possible.

But, as experience always teaches, we soon found that people said, fine--great--we buy the idea. We accept the policy. We see what the system is, but we don't know how to do it. And therefore we have now started another step in the process which we hope will be completed

fairly soon and which I hope will have some practical usefulness, particularly to those of you who work in the field and your colleagues in your Missions and in the Regional Bureaus and other offices here in Washington.

Jim Lee from the World Bank mentioned this morning that the Bank had taken the idea, which really started in AID, which was to list down the kinds of factors that are involved--environmental factors that are involved--in construction projects. And I believe it was the Office of Science and Technology and the Office of Engineering of AID who collaborated in this and put it out as just working paper. The World Bank was very taken by this idea.

They took it, and adopted it themselves, and then decided that this was such a good idea that they would expand the idea and have it apply more broadly. And the result of that was a publication by the World Bank, which we have enough copies of so that I have sent one to each field mission and to every office in Washington where I thought they had an interest or a need to look at it. This is a manual that lists by categories of projects or activities--or programs a whole series of check marks or questions--it's a check list of things to ask yourself when you're looking at an industrial project or an irrigation project or an agricultural project. Does it or does it not apply in the particular case at hand.

Now this approach has been agreed by most of the development assistance agencies, in these meetings that Jim Lee was talking about where AID and the other bilateral assistance agencies and the World Bank, the Inter-American Bank, etc.--when we all sat down and talked about this problem of environmental analysis of development projects. We agreed that we would rather approach this as development assistance agencies by the checklist route, rather than by trying to get common standards or common criteria. We all felt, and I think correctly so, that we couldn't really set any such standards that would always be applicable in every case and still be sensible. There were too many other variables.

So in lieu of approaching it in terms of sort of legislating standards or establishing criteria for evaluating the environmental soundness of projects or programs, we decided our first step would be the issuance of manuals of the sort the World Bank has now published which simply serve, for the man at the end of the line who is working on the project--and these are designed as much for the LDC's as they are for the assistance agencies--as a guide in which he can look up this kind of project, and there he will find a list of the kinds of questions and issues and factors that sometimes or frequently are found to be present in projects of that type. It's sort of a memory-jogger. We hope that this will help stimulate the thought-process. People will ask the right questions and, as I said this

morning, I think 95 percent of problem-solving is asking the right question. And then if you don't know the answer, then we can try to help find the kind of expertise to get you an answer.

And in that connection I would mention something which I don't think Luke Hale or the others have mentioned yet. That is that, in addition to our Participating Agency Agency Service Agreement with EPA which makes their talents available to the agency, Luke and his staff have negotiated three basic ordering agreements with private consulting firms. Isn't that correct, Luke?

MR. HALE: We're revising those now and there will be four of them before the end of this year.

MR. FOWLER: After circularizing the American business community, asking for anyone who is interested, who feels they have competence in this field, to let us know, Luke and others in the Agency selected three or four and negotiated basic ordering agreements under which anybody with a problem can then, by a task order, get these companies to send their experts in to help with a solution of a particular problem. So there is access again to another source of information and help.

This World Bank manual is now in the hands of all of the Missions and I hope, if you haven't seen it, when you get to the field you will look it up there. We have a few extra copies here that you can take with you. It's, I think, a useful book.

We are also doing the same thing in AID. We haven't quite got it finished yet. It's been sent to the field for comment. Some of you may have already seen it in the field. It is a proposal to take our manual on feasibility studies and capital project analysis, which is also divided by categories of projects if you remember, and insert in each one of those various categories a new section which would again list in checklist fashion, as the World Bank book does, questions and issues and factors that people ought to ask themselves about as they consider a particular type of project. We hope that that will serve along with the World Bank manual as a useful help to the project planner in the field--both the LDC project planner, as well as the AID person who is assisting them.

It's extremely important that this be done because both the World Bank and AID requiring as we now do that the projects have environmental analysis as they come through the decision-making process, it's important to start the process with these checklists, otherwise when it gets all the way into the process and somebody hasn't asked the question and therefore nobody has provided an answer, it's going to get kicked back. The World Bank is already doing this, and we're going to be

doing it in AID, and have been doing it to some extent in the past year. If you don't know the answer, we're trying to set up systems so that the right kind of expertise and technology can be available to you to get the answers to the extent that's possible.

Now those are the two areas in which we've been trying to convert this general policy into some operationally useful helps and guides and how-to-do-it manuals. Tomorrow afternoon at this panel, we're asking a bunch of people who've been in the operating end of things to sit down with you in a panel arrangement to talk about what some of the specific problems are that have arisen and we would suggest and invite you to bring up any questions or make any comments or suggestions as to how we can make this system that we've set up in the abstract really work.

I think we've probably come to the time this afternoon where it's best to stop and take questions now so that those of you going to Chapel Hill can have a meeting with Dr. Okun, and I want to leave time for that. As a result of everything you've heard today, if you have questions or are troubled or concerned about anything or don't understand it, I think we might take 15 minutes, Luke, or longer on almost any aspect of this that is interesting to you.

UNIDENTIFIED: I'm still confused--I didn't want to pursue the thing any further when the CEQ man was here, but I'm still confused on their international role. He talked a great deal about what they were doing in the continental United States, but --

MR. FOWLER: Well, there was one thing I meant to say earlier in my presentation this afternoon. One of the things Otey Hayne didn't point out, which I think he just assumed you knew--the Council on Environmental Quality is a part of the Executive Office of the President. The closest analogy I can give you to its function, which is a staff function basically, is the Council on Economic Advisers. It is part of the President's Executive Office and is staff and advisory to him and derives its powers from the NEPA.

The three members of the Council, the Chairman and two others, are appointed by the President. They have a very small staff, about 50 people, I think. The National Environmental Policy Act set up the Council in this advisory staff function, but charged it with overseeing, or seeing to it that the provisions of the National Environmental Policy Act were carried out. They really don't have operational responsibility. They're not a line operation. They're a staff operation to the President, but they're sort of like a program office is--watching everybody to see that they do what they're supposed to do. And they spend a lot of time encouraging agencies and helping them get the job done.

They do not enter into the decision-making process. If Corps of Engineers is going to build a dam or build a canal, they file an Impact Statement that goes through this procedure and process. It's CEQ's job to see that they do that and CEQ is free to comment on it, but after that process has gone through, it is still up to the Corps of Engineers to go ahead and make the decision to build the dam or not. And if they decide to go ahead and build the dam and somebody wants to stop them, their route then is to the Courts, through some injunctive procedure.

Now they've gotten into the international field in the sense that the President, for example, in the Soviet-American relationships environmentally, acting in effect as a staff arm of the President, Russel Train, as Chairman, had a great deal to do with working out and setting up these bilateral exchanges and common working groups on all these problems between the Soviet Union and ourselves on environmental problems.

But he derives that posture and status from the fact that he is appointed by and responsible to the President as part of his own Executive Office. They are charged by the statute with seeing to it that the system, the 102 system as it's called, section 102C of the National Environmental Policy Act, is in fact carried out. And that's the section that requires federal agencies--federal agencies taking actions which have a "significant effect on the environment" to go through this Impact Statement procedure. And this is something we can talk about tomorrow or another time if you're interested in it.

The question that arose a couple of years ago was why isn't AID doing that as a federal agency? What we've tried to work out with CEQ's help and cooperation is not strictly an Impact Statement system of the type that AEC or Corps of Engineers would follow for a domestic U.S. project, but something which comes fairly close to that, taking into account the fact it's not really a U.S. project; it's somebody else's project in somebody else's country.

Nonetheless because we do believe that the intent of this legislation was sound, our effort has been to try to achieve the same objective--assure that the borrower or grantee country looks at the environmental implications of what it's doing, that this is subjected to an analysis, that alternative ways of attacking the problem are identified and costed out and that this becomes a part of the decision-making process. And that's what our system, as we've set it out today in these two manual circulars, attempts to do. It's an attempt--taking into account the different role or relationship that we are in, to still pursue the same objective. That is, to look at what the environmental implications of various kinds of development activities are.

Now the procedures that we have to date only deal with capital projects and feasibility studies. And this, as we all know, is really a small part of AID's business, because as a matter of policy for many years, AID has been spinning off the projects, particularly the big infrastructure type projects to the banks, the World Bank, the Inter-American Bank, the Asian Bank, etc., who want to do that kind of project, and we think they can do it and have the resources to do it and we've been trying to do other kinds of things.

However, the great mass of American people don't know that. They still think AID is a project-oriented organization. There are questions that have been raised as to why we're not doing environmental analysis on, say, technical assistance projects or commodity import programs. And we've looked into that problem and frankly find it a very difficult one to deal with, as you can imagine.

I don't know how one does a sensible environmental analysis -- implications environmentally of sending five agricultural technicians to Brazil. I suppose what you try to do is see that you pick people who know what the environmental aspects of that particular kind of agricultural activity are.

On the commodity import programs, or the non-project activities, there is one area where it's quite clear that commodity import programs can have serious environmental effects and that we are working on. And that's pesticides. Toxic chemicals. Fertilizers to some degree, but principally toxic chemicals, pesticides, herbicides, rodenticides, fungicides and so forth. We think we've got a pretty good story to tell on that and we're putting together a comprehensive report which will go to the Council on Environmental Quality and will be eventually published which they would like to call an Impact Statement and which we will call comprehensive analysis of AID's activities in the pesticide business. And we hope it will satisfy them, that the Agency is behaving in an environmentally sensible fashion with respect to toxic substances.

If you go beyond that, looking at our eligible commodity list for program loans and this sort of thing, you then find it very difficult in advance to know whether any of those things are environmentally significant or not. Now, a bulldozer obviously can be environmentally disastrous if it's in the hands of the wrong guy, at the wrong time, and he does the wrong thing with it, but there is no way of controlling what the guy does with the bulldozer or with a dump truck or earth mover, so it sort of comes apart in your fingers when you ask how can AID be environmentally sensible about non-project assistance or commodity import programs.

Now I think pretty much the same thing is true about technical assistance, but the question still gets asked all the time. Why aren't you doing the thing that you purport to do on capital projects, why aren't you doing them for all the other kinds of activities that AID's involved in? And part of this is an educational process to get people to understand what these other activities are and why it's difficult to do it, but not in a way that tries to denigrate the importance of this. Because we do think it's important. And if you all think of ideas or have suggestions as to how this might be done better by the Agency in pursuit of our general policy objective, we'd be delighted to have them.

Now I'm going to stop and take another question. I get started here, I can't stop talking.

UNIDENTIFIED: I didn't understand the legal basis for EPA's interest in international matters.

MR. FOWLER: Well, EPA is fundamentally a regulatory agency. Now it wants to broaden its scope and responsibilities but it started out, if you remember, by gathering in a function out of the Dept. of Agriculture and a function out of the Dept. of Interior, etc. All of these functions were transferred to a new agency called the Environmental Protection Agency. They've had to absorb all of these regulatory functions that were established by prior statutes, plus a new body of statutory regulations which they are charged with the responsibility of implementing.

So they've had some problems. They would like to begin to move in the direction of standard setting and greater policy orientation. They have found, because as Fitz Green said, we are foremost and further along in this sense than any other country in this world, that other countries who are interested in or concerned about these problems come to them all the time. And it's pretty hard to tell them, you know, you can't go and answer that question from the Swedes or go to a meeting with the Australians and deal with this because that's not your business.

The result is that that part of EPA which Fitz Green is in charge of is their international affairs area, but they operate principally at the technical level.

And, for instance, out in Turkey--I don't know if any of you are from the Turkish Mission but a couple of EPA guys have been going in and out of there at a technical level, working with the Turks on some of the terrific air pollution problems around Ankara. And similarly they get invited to meetings of technical people who are interested in how a problem is dealt with in the United States.

I think it's a perfectly legitimate function for them and through our PASA, if we ever wanted to and had the need for them, we could hire EPA people just as we hire Agriculture, or Interior, or Commerce people to work for us in the field. So far we haven't had any proposition like that, but our PASA arrangement with EPA permits th if we want to.

UNIDENTIFIED: Who would send for those technicians to go to Turkey?

MR. FOWLER: They did, the Turks. But they were, you know, over there for a short time and looked over certain problems and gave some advice. They did not -- that was not charged to foreign aid; that was something that came out of EPA's budget.

UNIDENTIFIED: I might mention that in one connection they have access to local currencies that they may take for aid uses --

MR. FOWLER: Right. The EPA does have access to U.S.-owned local currencies. Particularly in those countries we've denominated as excess currency countries, and there aren't too many of them left, but to the extent they do exist and you can get an agreement with a country to spend those currencies that are U.S.-owned on environmental matters, EPA has the responsibility and can work up a project and go out and carry it out. Are there other questions?

UNIDENTIFIED: One of the speakers talked for about five minutes on an eastern European country and wouldn't mention the name. Is it so politically sensitive?

MR. FOWLER: That's the World Bank. They don't like to talk about their clients in public and among third parties. Which country it is I don't think really makes a lot of difference. It's a good example of the kind of thing they're getting into. But their staff are very conscious of this Bank/client relationship.

This has had an interesting spin off for AID because, as you know, many times we're involved in joint financing with the Bank of a given project. We've had two of these so far where we are participating as one of the financing sources. And in both these cases the environmental and analytical work on the project was done by the World Bank. And we looked at it and thought it was excellent. And in fact far better than anything we've ever done in AID, but then came the question, can we take that and incorporate that into our documentation for our portion of the financing and make it public? And we put

the question to the Bank and they haven't answerd us yet. Because they feel that they don't want to get into a position where they are violating the relationship between the Bank and the receiving government on matters which the receiving government says is nobody else's business.

On the other hand, we as a co-financing agency relying on their analysis and going along with their judgments, feel that we should be entitled to use that technical work as part of our documentation and make it available to any American citizen that asks to see it. Well, this is the interesting kind of thing that comes up in this business as you get into it. Any other questions? Luke, we've come exactly to four o'clock, the witching hour.

MR. HALE: Very good.

One quick reminder to those fellows who are going to Chapel Hill on Monday. Dr. Okun would like to talk to you for just a minute after the session.

Well, let's adjourn this session then and I thank you very much again, all of those who have been helpful in setting this up and you people for coming. We'll see you tomorrow morning right here.

Thank you very much.

MR. HALE: Well Good Morning fellows and lady. I'm glad to see this many here. I'm surprised that we didn't get more attendance from the Bureau people, but maybe they'll be here this afternoon.

Yesterday morning we were honored with the attendance of Doctor Hannah. This morning we are equally honored with the acceptance of our invitation by Mr. Williams, Deputy Administrator for the Agency. I doubt if he needs any introduction, but let me go through just a couple of lines. It could be too lengthy to go through all of the background.

He attended the University of Manchester in England, received his Master of Arts degree from the University of Chicago, and was then a candidate for the Ph.D. He became Deputy Administrator of AID in 1970. Before becoming Deputy Administrator he served as Assistant Administrator for the Near East/South Asia Bureau, and both as Deputy Director and Director of the Pakistan Mission.

He has received the Agency's Career Service Award of the National Civil Service League, and recently has been the President's special representative for Agency Relief to Nicarauga, Peru, and the Philipines. He is the U.S. delegate to the U.S./North Vietnam Joint Economic Commission.

Presently he is the Agency's Deputy Administrator.

Mr. Williams.

MR. WILLIAMS: Good morning; it's a pleasure to see you. Thank you, Luke for the introduction. I must say that I don't feel that I have any great message, other that to say what everyone else must be saying, that the environment is an important area, and it's one that we need to focus more on.

In a very real sense, we've been engaged in working with the environment, as a process of development. Economic development, means changing the environment, enhancement of the environment; it means building a better environment from the standpoint of man's needs; in terms of agricultural development, in terms of Health, in terms of roads or construction, urban dwellings, cities. The environmental field in this sense, is not new. Building a better environment for people has been the objective of development, as we have engaged in it, as practitioners of development, since the beginning.

I think what is new, and has been focused on increasingly in the last few years, is the damaging side-effects to some of the development that man has engaged in, and so the objective of environmental

protection, as distinct from environmental enhancement, for man's needs has come more to the fore.

In the industrial countries, this concern has been particularly great. Those of us who have lived in cities have seen what's happened to the air, and, of course, we have seen pollution of the world's rivers and to some extent certain areas of the seas.

This has led to some alarmist propositions, as you know. You have advocates of zero growth, and you have those that say that technology has led us into this mess, and consequently the thing to do is throw technology away, or at least stop it, while we can. If we can, I guess, is the way I read some of the advocates of zero growth.

But this is not really possible, because the needs of man and the needs to enhance the environment for the needs of man are very much still there. And unless you're prepared, --- as I guess one group in England is, --- prepared to depopulate the world in some dramatic or drastic fashion, the question of enhancement of the environment through development has to go forward.

Here, of course, the focus on the poor countries, the less-developed countries, and their priorities and needs is very much to the fore, because they don't feel they have a pollution problem; they feel they don't have enough of a pollution problem. In one sense, they need more development, not less; or as they somethimes put it rather dramatically, we need more pollution, more jobs created through industry, rather than less.

So the task is that of engaging technology in growth, in development with a greater protection of the world environment. This is truly a challenging task; it has to be faced; there is no other alternative; there is no simple way out.

I have a feeling that ten years from now, we'll look back on this period as a period in which the study and the practice of economic development was in it's infancy, and we will have evolved much more sophisticated concepts, much more sophisticated tools, for the enhancement of man's environment, for man's needs, through development.

There's an increasing focus on and a lot of talk about costs, the costs of doing one thing or another, but the cost of not applying technology to the protection of the environment would be very high indeed. One kind of cost, the cost of attempting anything like zero economic growth would be an intolerable cost, particularly in political terms between the "have" and "have not" countries. The less-developed countries have certainly focused on environmental costs as a result of the Stockholm Conference, the United Nations work in environment and the concerns that have been advanced in the industrial countries, but they've seen not so much the cost in terms of the quality of life, as the cost in terms of resource depletion.

While I haven't really thought about this in detail, the increased cost of oil probably has something to do with this awareness that resources are depletable, and that consequently they are a resource to be guarded and priced appropriately. And you'll have similar effects in other countries as they look at non-replenishable resources. But again, technology creates new possibilities, and it's in this whole area of a much more sophisticated, interdisciplinary approach to the problem of development, to the problems of man's relationship to his environment, that we find the challenge.

We tend to think of these problems pretty much in an industrialized and urbanized society, but degradation of the environment, and development that took place without adequate planning for it's protection, has also been a feature of some of the less-developed countries. We've all seen the recent focus on questions raised by man-made lakes, by dams and their effect on health. I've had some experience in dealing with disasters as was mentioned by Luke Hale. Here one does have a feeling, as we've dealt with disasters in various parts of the world, that the world is more disaster-prone, that the great floods in the Philipines have a lot to do with the depletion of the forests and pressure of population. We never have really understood how to use appropriately the tropical areas of the world, where so many of the world's people live. The questions of tropical agriculture are very much on the frontier of research, and understanding in development.

So the task ahead for what I call sophisticated, broadened, well-informed process of development is a great one, and we're just on the verge of this pioneering effort. Consequently, a seminar and training course like this one is exceedingly important indeed. I congratulate you all, the sponsors of the course, the engineering office of AID, the personnel of the University of North Carloina, and you as the people who are participating in it. All of you are seeking to develop, to understand and to assist a process of development which protects our biosphere. This is the task ahead; it's everybody's business. Thank you.

(Applause).

MR. HALE: Thank you very much Mr. Williams. We appreciate those words, and we'll take them into account as we try to go through this remaining part of the session, and we will in the future.

MR. HALE: The first speaker this morning, looking ahead in the multi-disciplinary area, is Dr. Ronald Ridker. He is the Research Associate and Director of the Population Program for Resources For the Future. We don't have very much background on you, Dr. Ridker, except that we note you have a Bachelor of Arts degree from the University of California at Berkeley in economics and sociology, a Master of Arts from Fletcher School of Law and International Relations, and a Ph.D. from the University of Wisconsin in economics and political science, and a Fulbright scholar. He was with A.I.D. for four years starting in 1966, two years of which were spent as the Economic Advisor for the AID Mission to India.

He'll review for us the multi-disciplinary considerations in environmental analysis.

Dr. Ridker:

DR. RIDKER: This morning at breakfast, my son asked me what I was up to today. I told him that I was coming over here to give a talk with these multi-syllabic words in the title. He said, oh just tell them to put all the garbage in jail.

It's frequently assumed that developmental objectives and environmental objectives are in conflict, and that the latter must be risked--especially in less-developed countries--in order to obtain the former. Often this is true in the short run. Rapid urbanization and industrialization, intensification of agriculture, timber and mining exploitation, often are very essential for immediate gains in human welfare; and these may be so important that we should ignore the long-run future costs that we are piling up for ourselves because of this.

But in the long-run, development and environmental objectives are not in conflict, for the following two kinds of reasons:

First, the resource and environmental base of a country are themselves inputs into the productive process, just like capital and labor are inputs into the productive process. If in the process of development, for short-run gains, the environmental base is destroyed, the long-run base for development is also destroyed.

The second is a corollary of the first point. If we properly use, conserve, and husband the environment, we can improve and enhance the development process. That is, if we can find a way to make the environment work for us, rather than against us, we will be much further ahead of the game, obviously in the long-run but hopefully also, in the short-run.

But to make the environment work for rather than against us, requires an enormous amount of information, much of which we do not now have. This information must come from a variety of disciplines, and it must be utilized in the planning and execution of projects. To put the point more strongly, a strictly engineering or agronomic or even economic approach to development problems is likely to fail in the long-run, and that's the principal message I wanted to get across in these few comments. Perhaps the best way I can do that is by talking, about the underlying factors that cause environmental problems, and then provide a few illustrations.

The pressures on the resource and environmental base of a country come from six sets of factors, many of which are not included in typical engineering analysis. The first one, and perhaps the most important, is a country's population size and rate of growth. The larger the population, the larger the flow of resources that is necessary to sustain a given level of living. And of course, the larger the population, the more congeston one must tolerate. The speed of growth of the population is also important. The more rapid the rate of growth of the population, the more difficult it is to resolve the problems associated with population size.

Mr. Williams said that the world is more disaster prone today. To the extent that that's true, it is undoubtedly due to the fact that we must contend with much larger population sizes, and hence larger flows of materials, than we have ever had to do in the past.

The second broad underlying factor behind environmental problems is per capita income. It is generally assumed that the higher the per capita income, the greater the through-put of resources to run the economy and ultimately to be disposed of as waste. It is because of this association that one sometimes hears that resource and environmental problems are essentially problems of rich countries.

But poverty also creates environmental problems. These arise because of an inability to afford adequate health, and sanitation facilities, flood and pest control, safety devices in factories, and so on. As a country becomes richer, investments in resolving these problems make those kinds of problems recede into the background; but in the process, other kinds of problems come to the fore.

So per capita income is important not because environmental problems are simply corollated with per capita income, but rather because, as per capita income changes, the character and the nature of the environmental problem changes.

The third factor is the composition of material goods and services. A copper producing country will have environmental problems of a type that a copper importing country will not have. The environmental problems of an agricultural country will differ quite significantly

from those of an industrial country. A country like ours, with a taste for throw-away bottles and high-speed automobiles, have problems of a sort that a country with a taste for education and art do not have.

The resulting differences in the composition of production and consumption operate independently of the size of the country and the size of the economy to influence the character and severity of different country's resource and environmental problems.

Another independant factor, the fourth factor on this list, is the spatial distribution of population and economic activities. This also plays an important independent role. Even in countries with low incomes, and low population densities, there may well be serious urban environmental problems if it so happens that most people and economic activities are located in a few urban centers.

The fifth factor is, of course, technology, or technology in use. Now this is obviously important, and with a group of engineers hardly needs stressing. Chemical fertilizers are potentially more damaging to the environment than are organic fertilizers. Slash and burn agriculture is more damaging than permanent, regulated, multi-cropping regimes. High compression internal combustion engines produce more air pollutants than do other types of engines. And some mining processes use much more water than do others.

Perhaps the most important point to be made about technology, though, as a causal factor, is to emphasize just how flexible technology is, with respect to its demands on the environment. The technological choices open to a country tend to be underestimated, especially in less-developed countries, which receive technological transfers from recipients typically offering only one option; often they don't know about the existence of others. Let me give one example of that.

The pulp and paper industry was recently studied by Resources for the Future. They compared the effluents arising from the sulphate or kraft process with that arising from the sulphite process. They found that the sulfate process produced some 30 percent less effluents that are important water pollutants, in particular suspended solids, disolved solids, and B.O.D., than did the sulfite process. Such examples can be replicated many times over.

The sixth and last factor is something that really underlies all the others. This has to do with institutions and policies. An example will illustrate what I have in mind here.

One of the institutions which we have to work with is the price mechanism. Typically, price mechanism does not charge for the common property resources like air and water with the consequence that there is no incentive to conserve on these kinds of environmental inputs,

through control of consumption or the use of technologies that are environmentally less damaging. If it is really true that a country has an excess supply of air and water, so that a zero price on such resources is appropriate, nothing is lost. But in many local areas, over certain cities and in certain watersheds, it is clear that the water or the air is a limited resource which can easily be overtaxed if too many waste products are thrown into them. In those circumstances, the fact that we do not charge a price for waste disposal encourages the use of technologies that make maximal use of this cheap, free item.

Now you might say that as engineers concerned with development and with evaluation of specific investment projects, most of these factors on this list, except of course for technology, have little to do with you. I would like to suggest that this is not quite the case, that most projects of any size both affect and are affected by all these factors, and that the long-run success or failure of most large projects will have much to do with how these factors behave. Because of this, a proper and completely adequate benefit-cost analysis should consider all of these factors and their interaction with the project. This is a point best made by use of examples.

Suppose that we're concerned with urban projects such as environmental sanitation, urban housing, or transportation. What's the likely result of improvements in urban environmental sanitation, housing, or urban transportation? Quite likely, the result in many countries will be an even faster rate of growth of the urban population. Certainly the rate of migration into the area will increase. Possibly also, a fall in the death rate will occur.

Now I don't mean to suggest by this example that urban environmental improvements are futile or ill-considered, but the planner who wishes to improve the urban environment must consider more than the urban environment itself. He must also consider the reasons why people move, and the possibility that improvements in the rural environment might slow down migration and thereby do more to improve the urban environment in the long-run, at least, than an equivalent investment in the urban infrastructure. This example is not academic. It occurs over and over again in different countries, and yet tends to be ignored in the hurly burly of trying to improve urban sanitation or housing.

Another example from the industrial sector might be taken from fertilizer plant projects, or as I mentioned before, pulp and paper plants. Typically, there are three kinds of options for taking care of pollution problems that are associated with such plants. One is treatment of the effluent after it has left the plant. A second one is process change, that is, change in the method by which the product is produced, so that less effluents or different kinds of effluents leave the plant. And the third is plant location, that is, location in a place where the emission of the pollutants in untreated form will cause less damage.

Now the choice between these alternatives must take into account much more than simply the economic cost of these alternatives to the project itself. And I think that one would find in surveying countries, that the solution for one country is entirely different than the solution for another country. In the U. S., for example, the E.P.A. has emphasized primarily treatment. This tends to be fairly costly. A number of studies undertaken by Resources for the Future suggest that, in general, process change is cheaper than treatment, as a means of reducing effluents by some acceptable limit.

But in the less developed country, the use of cleaner technologies may still be too expensive. In such countries the best solution may turn out to be location in a place where we can permit the environment itself to recycle the waste products and turn them into less harmful substances.

Another example, pertaining to irrigation works in Java, may be useful. Population pressure is enormous on Java; this is forcing farmers to clear wooded land farther and farther up the hillsides. That, of course, is causing soil erosion, silting of canals, and dams downstream, fouling of hydroelectric plants, and of course as a consequence is dramatically decreasing the life span of irrigation works. In a situation of that kind, it is far from adequate for the Minister of Irrigation to concentrate solely on building more irrigation works and removing the silt from existing works (as the World Bank is attempting to help them do just now). He cannot solve his problem this way. What he has to do is reverse the trend towards clearing the upland woods; if he cannot do that, he's going to be in trouble no matter what he does in the valleys. It may be that the highest rate of return in irrigation in the long-run can be obtained by transmigration projects that try to relocate the population off the island of Java, in order to relieve the population pressure.

One final example, this one pertaining to the introduction of new crops in Java. Rice in Java is being harvested by a knife that is held between the fingers, each stalk being cut individually. The result of this is that at harvest time, the fields are filled with hundreds of people per hectare, attempting to make use of this method of harvesting. Now the obvious advantage of this method is that it is a way of distributing the results of the harvest to a wide variety of people who would otherwise have no income. It's a social mechanism, rather than an economic mechanism, for redistribution of income. Even though the sickle is known and available, few farmers dare use it for fear of the social consequences to them and their village, if they were to do so. But there's -- that same kind of constraint is not present if they shift to a new crop. It is unlikely that any new crop you can think of is going to be as labor intensive as this method of harvesting rice.

If, therefore, a new crop is introduced, it is likely to displace large numbers of workers who will flood into the city, causing massive urban problems which, so far, Java has more or less avoided.

It is in these ways that a simple, straight-forward problem in agriculture or in irrigation or in industry becomes a social problem that has to be faced in some other field. And it is because of this that the benefit cost analysis that is undertaken should really be much broader, and longer-term than is typically the case.

Of course we all know that benefit cost analysis should consider all of the effects, both positive and negative, long-run and short-run, outside the sector as well as inside the sector, and non-market as well as market. And we all know that such analyses should not evaluate a single project, but should consider alternatives to accomplishing the same goal: different processes, different treatment regimes, different organizational arrangements, and different locations.

But we also know that such broad and comprehensive analysis typically is not done. If economic analysis, or analysis of development problems is in its infancy, as Maury Williams suggested in his opening remarks, I would say is in its infancy largely because we have not extended benefit cost analysis into these other areas that in the long-run may determine the real success or failure of a project. As I see it, the course that you are to engage in is a step in this direction. Hopefully, as a result of it, future benefit cost analyses will be a bit broader in scope, and will take into account some of the multidisciplinary considerations and spill-over effects of the specific project that you have on our drawing boards. Good luck with it. Anything you can do in this direction will be well worth the effort.

(Applause)

MR. HALE: Thank ycu very much, Dr. Ridker. You have added greatly to the considerations we must think about in this vast area of environmental problems.

MR. HALE: Dr. Howard has consented to give us a few words on the impact of environmental change on human health. Dr. Howard is well-qualified to do this, having been with the Agency for a long time, since 1960. He has a Bachelor of Science degree from Baylor University in Texas, and then I guess he liked Johns Hopkins University; he stayed there for his Master of Public Health and Doctor of Public Health degrees. He served with A.I.D. for four years in the Philippines and now serves as the Director of the Office of Health in the Technical Assistance Bureau. Dr. Howard, thank you very much for coming.

DR. HOWARD: Thank you. I have brought along here twenty-five or so copies of an analysis done about two years ago in which we tried to get the major international health issues defined in relationship to the process of development as a whole.

In terms of the title this morning, what I want to talk about is the impact of development on human health. And not just developmental changes per se, or health per se. The general area of human well-being is something that really doesn't take too much explaining to engineers, because professionally, engineers, physicians, many other workers in the health and health-related fields have been working together for a century.

There have been special areas of engineering, as you know, such as sanitary engineering that have been inherent parts of the health process for a long, long time.

If we listen to what the emerging agency strategy appears to be, in terms of the emphasis upon the quality of human life, if we listen to the type of things that Mr. McNamara was saying before the World Bank in his Presidential address last October, we find no less interest in emphasis upon economic development and growth as such, but there is a stronger realization that, at the end of the development process, the ultimate outcome that we are driving for is measurable impact upon the quality of human life.

During the sixties, there was an enormous emphasis on development economics -- upon capital investment as a means towards economic growth. I don't think that this objective per se was incorrect. However, in retrospect, it is evident that the measurable per capita effects of this effort were relatively modest. As a consequence of economic growth, how is one to assess the effect on the quality of human life so that "at the end of the line" one can determine, by certain indicators, whether in health or in other fields, that the quality of life for an individual improved, in contrast to improvements in the quality of the soil, water, forests, or animal life? Although improvement in the physical and biological environment is indeed the ultimate development objective is improvement in the life of man himself.

Dr. Hannah has frequently said that the well-being of mankind, the well-being of humans, what happens to people, is ultimately what A.I.D. is all about. This is an ultra-simple way to put it. But it's the ultimate objective. In an ecological sense, we understand that there are going to be both positive and negative effects associated with most development activities, quite aside from specific assistance in medical or health care.

Ultimately, what effect does development have upon the quality of human life itself? Biologically, mentally, psychologically. Without some process for evaluating and observing the quality of human life, how do we know what real impact development is having?

Professionally speaking, the determination of development effects on the quality of human life is perhaps impeded to some extent by our respective concepts of our work. The agricultural specialist, for example, is certainly interested in the well-being of farmers. It would be wrong to say he's not, but he doesn't feel it's his job to know whether the farmer is losing weight, whether the farmer is suffering from malaria, or whether he's getting discouraged or upset. The agricultural advisors job is to know whether the crop yield is increasing, whether the inputs are adequate. He must understand agricultural economics. That's his bag. And that's what his concern is.

He builds an irrigation canal, but he doesn't feel it's his job to determine whether the irrigation water plus infected labor are components which create a disease problem such as the spread of snail fever.

The engineer may take great pride in building a road. He builds it well. He builds it according to specifications. However, as for example, in India and Pakistan, when borrow pits are dug to obtain earth to raise the level of the road, and when rain water accumulates in these pits, the malaria carrying mosquitoes begin to breed in there. In this way both in the United States as well as in India and Pakistan, man himself created the malaria problem. Malaria isn't always confined to limited circumscribed geographical areas. It goes where humans go. It follows the roads to wherever aggregations of labor accumulate to find work.

The question then is, who's responsible to take a look at what happens to human life? As a doctor I would claim that human health is not entirely within the control of the doctor either. So human health has a good chance of falling between the cracks. By definition, health means wholeness. It's not just the absence of disease. Health is not only death control. What health really means is the level of adaptation of man to his physical, biological, and psychological environment.

It's the state of equilibrium between man and his environment about which we're talking here. Obviously then, there are many factors in the environment which create the problem of poor adaptation. As a consequence, we're dealing with a social phenomona, and by a social phenomona, I mean that the presence or absence of disease agents is not basically causative. Poor health is created by man himself, whether by his habits, the pattern of his life, the irrigation system where he works, the roads he builds, his economic practices, his politics, and by a whole variety of effects which emerge from his daily life.

If you evaluate the total outcomes of a national sector such as agriculture, obviously one outcome will be improved nutrition. The sector effort will create satisfaction from employment, it will create jobs, it will relieve indebtedness, increases trade and G.N.P. These outcomes can be measured. Sector results may also include crops without high nutrition value. It may substitute cash crops for food products. It may increase water borne diseases from irrigation. For example, in Pakistan, which I understand has done very well because of it's extensive irrigation system, there is a great problem in the irrigation system not only because of the silting and the salinity of soil, but because of leakage in the channels. Along these leaking channels insect vectors breed. In the effort to repair the leakage, the human labor bring in the parasites, and as a result there occurs the natural combination of factors to development of insect-borne diseases such as malaria.

In Central America, the forests along the western Pacific coast were cut down some fifty or sixty years ago in order to make the land available for cotton cultivation. The ecological alteration permitted the breeding of disease carrying mosquitoes which did not exist in the forests. Initially, it was relatively easy to control the mosquitoes until the farmers decided that they had to spray their cotton fields every two weeks during the growing seasons with so-called insecticide "cocktails".

As a consequence, there has now developed, in Central America, serious resistance to insecticides of all kinds. The insecticide-resistant mosquitoes transmit malaria among the migratory labor. Labor can't avoid becoming ill. And since labor tends to migrate all through Central America, it's very common for a man who gets sick to go home to his village. He continues to harbor the malaria parasite throughout the year. He returns to the cotton fields again during the next season and serves as a reservoir of parasites for continuing infection to the community.

One can't separate the problem of cutting the forests, or agricultural irrigation, of agricultural pesticides, from the malaria problem. There wouldn't be a malaria problem were it not for the insecticide practice taking place for agricultural purposes in Central America.

Again, just simply to show the relationship between the social factors, the agricultural factors, on the prevelance of a particular diseased area, the same illustration could be made for road building and development transportation. The positive benefits from road and transportation would be increased access to goods, services. This would contribute to improved physical resistance. There would be improved national cohesion because cities could be connected with towns and rural areas. On the other hand, each time a road is opened, human contract is increased. The availability of diseased labor is increased.

Urban development is essential with the increased migration toward cities. Yet the attraction of urban migration may lead to disease, pollution from industrial waste, and the inequitable distribution of goods and services.

Even the availability of industry doesn't necessarily permit the equality of services. Industry, by itself, can create inequalities and shortages which in turn have major adverse effects upon the quality of human life.

Capital investment, obviously, increases capital products, water supplies, dam construction, but there may be inequity in product distribution.

Health hazards may result simply from inadequate maintenance, lack of trained sanitary engineering personnel, lack of safe water supplies, and failure to maintain capital investments.

These are just some very quick examples to illustrate that, quite aside from any health project per se, there is no such thing as a development process which doesn't have positive and negative impacts upon the quality of human life.

Again, what I am trying to stress is that man's health is controlled to a large degree by his environment. The environmental factors are not created by the physician and they can't be solved by the physician alone.

I have often pointed out that perhaps the most important element in a maternal and child health program is whether the father has employment. And employment for the father is something which the traditional health person can only marginally resolve. The well-being of man is so integrally related to all the aspects of a development program, (education, engineering, agriculture, and so forth) that we must learn to see that disease or health as a social and environmentally influenced phenomona, it's not basically a problem of biological disease agents such as parasites.

Can environmental factors be excluded in the process? In the United States, T.V.A. provides one example. T.V.A. created probably the most magnificent vector-borne disease threat in the United States, when the program began. However, engineers designed a system for the fluctuation of water levels in the reservoirs so that mosquito breeding would in fact, be greatly reduced.

About two weeks ago, no, it was a little longer than that, in Pakistan I saw the Tarbella dam, which is very proudly presented as the largest land-fill dam in the world. It's a pretty impressive structure. Being built as it is for providing hydro-electric power it is undoubtedly going to have a remarkable effect on the availability of electricity and power for a power-short country. At another dam in the same part of the world, the Mangla Dam, it's very difficult for people to live in the vicinity of the dam-reservoir because of vector-borne disease created by the impounded water. Has anybody stopped to think that perhaps the Tarbella Dam may create the largest single malaria problem in Asia? Shouldn't the engineer address these kinds of questions?

Unfortunately, there are very few people in the field who feel it is their function to ask this kind of question. Within A.I.D., there are very few missions where there are trained health personnel to ask this kind of question. In other words, even though overseas missions may have specialized technicians in some areas, such as nutrition and population, they're not asking this type of question. Those who understand the ecological framework are very few. Perhaps we should develop a better alliance with the World Health Organization, at least to pose the questions, but at this moment in time, it's a reality that A.I.D. does not have health personnel in the field to address this type of question.

Even where the few physicians exist overseas, they can pose the environmental questions, they can identify the problem and they can measure the results, but they can't change the environment. A physician can mend a broken leg, but he can't stop traffic accidents. He can identify the presence of a communicable disease, but he can't alter environmental factors which precipitate it's transmission.

In developing countries the death rates, if viewed over a ten years period, are falling, but falling at a very slow rate. If we take actually a whole series of indices on health per se, and a whole series of indices on other development indicators such as per capita agricultural production, and per capita income, none of these indicators are increasing very rapidly in favor of the average man.

This is what Mr. McNamara of the World Bank is pointing out when he says that per capita income is expected to increase no more than one point seven per cent per year, on the average over the next ten years. Due to the inequality of income distribution, there is a minority, five to ten per cent of a country, that are always doing rather well. The lower fifty per cent are literally not improving at all.

In other words, within most developing countries, the imbalance of income distribution is so great that there is very little impact upon the fifty per cent or so in each country which are beyond access to the major benefits of development itself. So what are we dealing with?

We're dealing with problems of poor sanitation, fecal pollution of water, malnutrition. If we take these measures of the quality of human life, improvement for the average man is moving much too slowly.

Five years ago, malaria was down to a very low point, but it is now increasing again. For one hundred million population living in sub-Sahara Africa, there are no major continuing programs for infectious diseases such as Schistosomiasis, oncocerciasis, malnutrition, malaria, or cholera.

In a period of great resource scarcity on the part of donor nations as well as developing countries, the answers are going to depend a great deal on careful planning at the national planning level and the development process as a whole. The problem is not going to be solved exclusively by a group of trained health personnel alone, but by all those disciplines involved in the development process.

The job of problems identification is not really technically difficult. The risk of adverse health effects within a development program can be reduced by adequate program design. We believe we understand the issues. A.I.D.-Washington can be of help in providing counsel, and consultation in terms of how one prevents adverse health results through adequate engineering design which can reduce the risk of disease.

The real issue that I bring to you then is not that special raw knowledge is necessary to improve the environmental impact on health, but simply to stress rather forcefully that the well-being or the health of man is not the exclusive domain of the doctor, but it is much the responsibility of the engineer, the agricultural expert, the educator and the development economist.

MR. HALE: Thank you, Dr. Howard. We'll entertain questions from the floor for Dr. Howard now, if there are any.

Yes --.

MR. KINGERY: Just what does the World Health Organization, what does their interest consist of in environmental protection and so forth. You mentioned several things happening in Pakistan. Where I'm stationed we've got a very sensitive program, an irrigation canal and a large dam project. And it was very interesting, your comments about the malaria vectors and all that. When we start spreading water over acres of land in a desert, it will change the climate for one thing. And probably a lot of other things as well. Would the World Health Organization have anyone among their large staff -- that could be a source of assistance.

DR. HOWARD: The question is very timely indeed. I think that there is the potential for cooperation, but I will be perfectly straight forward in saying that at the present time the WHO focused on the fact that one of the key health problems, you go back 15 years, was fecal pollution of water, the standard pollution of water itself. Therefore quite correctly, the WHO has developed engineering competence in provision of potable water supply. That competence is a major one now, headed by Dr. Bernard Deitrich, the Chief of the WHO Environmental Health Division in Geneva. The engineering staff in each of the six regions of the WHO have major programs in what are called environmental health.

But what they mean by environmental health at this point is largely the protection of the supply of drinking water. Furthermore the emphasis is understandably on the protection of urban water, because World Bank investments, and even AID's investments in water supply, have dominantly gone to urban areas.

Rather good progress has been achieved in terms of this line of effort for urban areas. For the rural areas, Dale Swisher has advised us that the availability of potable water supply for rural areas is still around 20 percent. In other words, something like 80 percent rural areas simply do not have protected water of any sort.

As a matter of fact, if you take the aggregate, and maybe Professor Okun can correct me on this, I think that in Latin America, protected water supply is still only available to about 50 percent of the population.

Now urban water supply, however important, still is a relatively limited part of the whole environmental problem. The WHO is aware of their current focused activities. I don't believe that WHO is currently organized to examine the adverse effects of engineering programs other than water supply and sewage disposal.

Yesterday, I met very briefly with the new director general of WHO, Dr. Haften Mahler, who was appointed only last month. He is very keen about collaboration with bilateral agencies, and I would like to be able to go to him and suggest that their engineers, who are widely distributed throughout the world, develop a monitoring or surveillance capability well beyond water supply.

MR. HALE: WHO is having a meeting here sometime in July, as I understand it.

DR. HOWARD: That's correct.

MR. HALE: I know that date has been set. Is this something that could be discussed with them at that time?

DR. HOWARD: Precisely, this would be an excellent opportunity.

MR. HALE: Perhaps we could get your question reduced to writing, if you aren't going to be here, and we'll try to get an answer. I'll be here to the meeting, and I'm sure that Dr. Howard will also.

DR. HOWARD: The authority on this area is Professor Okun right back here, Mr. Hale.

MR. HALE: Well, we'll get to him down in Chapel Hill, where we'll be chewing on him all next week. But I thought we'd get this other question out of the way at this time. However, do you have any comment at this time, Dr. Okun?

DR. OKUN: I'd just like to make one comment about this to put it in some historical perspective, -- and go back to the early days of the bilateral program, in the MSA, and beginning with the Institute of Inter-American Affairs, which was the beginning, really, of the AID program during World War II. In Latin American regions, a number of engineers, professional engineers, sanitary engineers, were concerned with environment primarily, as Dr. Howard says, in water. The number was very great, almost every mission had one, two, sometimes even a whole staff of people to go into this particular interest.

And then with the growth of the Point Four Program, MSA, ICA, -- almost every mission abroad had a pretty large staff of professional people in this area. At that time World Health Organization was at a very minimal level -- had a very minimal staff. Now the tables have turned and our AID missions abroad very seldom have men professionally competent in the environmental field, whereas WHO does have professional people in almost every country in which AID has a mission. They have their own people, as well, in many other countries. And so that while the individual WHO engineer may not be as well qualified as Dr. Howard would like in the overall environmental concerns, and his interests may be primarily in water supply and waste disposal, still he's the resource and can communicate with people -- and I think this kind of dialogue between AID engineers and WHO men working together, which they very often do is good. Very frequently when it comes to sending engineers -- local engineers -- to the states for education, they participate -- one will identify, the other will sponsor, that sort of thing. This kind of continuing dialogue will certainly add to the resources of the AID people.

MR. HALE: Right. We don't want to let go of it. You had a question.

MR. SNELL: I had one question for Dr. Howard. You mentioned there was a dramatic increase in the incidence of malaria worldwide, and I wanted to inquire if this could or had been in any way related with the reduction in production and distribution of DDT as the tremendous increase in malaria in Ceylon was.

DR. HOWARD: Well as I understand, what in fact is happening is not the shortage of DDT. This is available. What actually is taking place is that governments are taking their own responsibility for malaria programs, and have often not managed adequately to import DDT in time. For example, one may be able to build a road during the better part of the year, but in malaria programs, it is necessary to time resources to a limited pre-transmission season. And if the pre-transmission season is missed, you might as well not have applied insecticides at all. Timing is a critical factor. The failure to do things on time with the appropriate mobilization of resources on the part of government often makes the program fail.

In essence, there has often been very poor management on the part of government in providing the requisite factors on a timely basis. Of course, there are some technical problems. In some areas there's resistence of mosquitos to insecticides, some parasites are resistant to the drugs, like chloroquin. But these technical problems affect something like less than five percent of the areas where malaria is currently distributed.

The standard techniques in terms of house spraying with insecticides such as DDT, and the use of antimalaria drugs, is still highly effective if correctly applied.

UNIDENTIFIED: But aren't we still avoiding identifying problems in relationship to the population distribution? In other words my point is, rural water supplies are not a great factor of disease spreading, and malaria is primarily confined to rural areas. While these are important, we'd like to handle them, don't we have to put our priorities where they should be, getting the most good for the most people?

DR. HOWARD: Yes, I agree, I think there's a lot of merit in that approach. It is not always economically feasible to go out and build a water supply for 90 percent of rural populations in poor countries. It's not that one should not move ahead with water supply where resources are available, as they are for urban areas. My key concern was on a different issue which is that when one is building a road, or an irrigation canal or a dam or housing, one needs to make sure that one doesn't create a malaria problem or disease problem at that time.

MR. HALE: Dr. Howard, thank you very much for joining us, we'll see you next week.

MR. HALE: We thank you very much, Mr. Wilson, for giving up a few minutes of your time, and we'll go ahead with your presentation now. Mr. Wilson has accepted our invitation to talk with us about the Social Effects of Environmental Change. This is an area that engineers realize they should be getting into more, or at least be more conscious of the implications. Mr. Wilson was recommended to us, and looking at his bio-data he comes well qualified to make this presentation. He was educated at Princeton; and moved up through the ranks to become Vice President for Programs and Director of the Washington Office of the International Institute for Environmental Affairs. He is presently Director of the Aspen Program on Environment and the Quality of Life of the Aspen Institute for Humanistic Studies. He recently served as the Director of the First International Environmental Workshop on Institutional Implications of Environmental Cooperation. Mr. Thomas Wilson.

MR. WILSON: Mr. Chairman, I think I should perhaps take a few steps backwards, before trying to sneak up to this somewhat slippery topic that I've been assigned this morning.

As Barbara Ward pointed out in the first pages of her book, Only One Earth, which was written for the Stockholm Conference, we humans inhabit two worlds at the same time: The natural world, the biosphere, which was here some billions of years before we arrived, but of which we've become a rather flamboyant part; at the same time we inhabit the technosphere, the man-made system which we have created with our hands and our minds, our science, our technology, our artifacts.

Now, the ecologists have taught us that in the biosphere -- in the natural system, everything is tied together in a set of complex, interrelating, interracting systems. We may not understand the mechanisms very well -- indeed we don't -- but at least we know now, and we accept the point, that everything indeed is tied together.

In the technosphere, at least in the technological societies, we now understand everything's pretty well tied together, too, as a result of a division of labor, specialization, urbanization, et cetera -- to the point where hardly anyone could survive outside of the manmade system.

In the society of units that we call countries, and nation states, we're catching onto the fact that things are increasingly tied together through trade, communications, transportation, and so forth. So that we've begun to talk of the age of interdependence -- we've begun to talk of the first global technological society.

Now we're becoming conscious that the biosphere and the technosphere are intricately interrelated, and have an impact upon each other. And I suppose this is why the Stockholm Conference was called the UN Conference on the Human Environment, to embrace both the biosphere and the technosphere. And that's why people are talking as Dr. Ridker was this morning, about the need for interdisciplinary studies, why we are adjured to take a wholistic view of things, and I suppose why I'm asked to try to address the topic, Environment and Society and Social Effects.

We don't understand much about this. Just about three years ago I was asked by a foundation to do a kind of quick and dirty survey of reactions in and out of government to the sudden excitement about the crisis of the environment -- as the term was. This was just about the time the subject hit the boob-tube here and just before Earth Day swept the campuses of this country.

Now two things in the course of this survey -- two things stood out like sore thumbs. The first was that almost everybody and his brother was taking as parochial a view of the environmental problem as he could. They were concerned about the air in the city or the gook in River Y, the dump sites out of town, the smoke stack at the end of the street. Now this raised -- seemed to me to raise -- an immensely fascinating and complicated and sophisticated political question.

That is, whether the sudden perception of Spaceship Earth -- this finit, vulnerable, little bit of island in space, which off hand one might think would be the most unifying perception ever to strike the human mind -- whether in fact in real life and international affairs, the environment -- the unitary environment -- would turn out to be a unifying or in fact a divisive factor. That question incidentally is far from answered.

The second thing that stood out was that almost everyone and his brother was equating the environmental crisis with air and water pollution. There was a sort of secondary concern about solid waste accumulation and disposal. Now this of course is obviously a gross and potentially dangerous over simplification. It misses the inherent character of the predicament represented by terms like the environmental crisis which of course is the compounded effect of human activities -- notably population growth, urbanization, resource depletion, uses of energy, and environmental degradation -- which have reached such a scale, and such a scope, and such an intensity, and at such increasing rates in the very recent past, that obviously they cannot be pursued independently without restraint for very long, without bringing the biosphere and the technosphere onto a collision course.

Now, I'm not going to go into the MIT study for the Club of Rome and the limits of growth -- that's beyond my purpose and beyond my competence too. Or any of the other versions of doomsday. But I would like to point out that one thing that all prophets of doom have in common, in addition to pessimism, is the assumption, explicit or implicit -- it was explicit in the Meadows case -- that our social institutions cannot adapt in time or radically enough, to avoid a disaster.

Conceivably they're right, and if they are, of course we indeed have had it at some point down the road. But I am at least persuaded that governments will adapt -- the question is when and how full-heartedly. Because even if the doomsayers are partly right in this assumption, we can still be in for a very great deal of trouble.

One doesn't have to be a prophet of doom. One doesn't have to foresee some sudden physical collapse of the biosphere leading to some kind of new equilibrium in nature for which there's no room for the human race as we've known it. One doesn't have to believe that we're all going to starve to death or otherwise commit race suicide. One doesn't have to believe that we're going to drown in our own garbage, or come to some sudden paralyzing halt in one massive suffocating traffic jam.

One doesn't have to believe in these things to foresee quite a number and quite a variety of local catastrophes -- limited catastrophes. An atmospheric inversion of a Tokyo or a Mexico City, could well leave a couple hundred thousand people dead. Serious further loss of irreplaceable top soil through erosion or desert encroachment could be disastrous. The epidemics, including the return of some ancient plagues, most likely springing up in the slums around the major cities of the world.

If we don't adapt, adequately, one can almost surely foresee a world that at least is dirtier, uglier, less healthy, and more crowded, more shortage ridden, and more quarrelsome than things are today.

And this is up to the social system, this is up to the political system, as to whether we can learn how to identify these problems, to analyze them -- which we don't really know how to do -- to reform our institutions, and to adapt our decision making processes before institutions either become paralyzed or break down, simply from the sheer weight and the sheer complexity of problems increasingly becoming unmanageable -- as problems turn into crises, and crises become unmanageable by present institutions.

The outcome of that isn't physical disaster, but it's either increasing social anarchy, or increasing tyranny, as governments take desperate and totalitarian efforts to cope with situations that seem to be getting out of hand.

So I think the task, which in the end is really nothing less than looking at the alternatives available, is recognizing that these are qualitatively new kinds of problems for decision makers. And learning how to come to grips with them, and making decisions which are complex and exceedingly hard, but having to do with nothing less than the kind of societies we want to build, and for what social purpose, to serve what goals.

And this I believe is the inherent, ultimate, unescapable, social effect of the environmental issue.

Thank you very much, Mr. Chairman, I think that's all I need to say

UNIDENTIFIED: How accurate, would you say, are the forecasts of the Club of Rome study?

MR. WILSON: I heard a new word the other day. Somebody -- some speaker said, "I personally am not a catastrophist." Well, I'm personally not a catastrophist. I think the Club of Rome study probably served a very valuable purpose in the sense that it has stirred up a lot of activities. I think the Smithsonian Institute has identified about 50 or 60 projects, mostly on campus, that have spun off this Club of Rome exercise -- the MIT exercise, really. It's forced people to look at this finite spaceship of ours.

I can tell you that Maurice Strong, Director of the UN Environmental Program, is assembling a group this summer to have a look at these related questions of -- are there really outer limits? -- in what areas, such as the capacity of the environment to absorb heat from energy production? and so forth.

Are there thresholds? -- I think the balance of arguments among scientists is that there are indeed certain thresholds, where an incremental impact will trigger a highly disproportionate degree of damage.

Are there points of irreversibility in damage? -- and in what sense. I suppose that either in the physical sense or in the sense that damage such as eutrophication of water is going to reach a point where it simply wouldn't pay either in financial terms, or in terms of social gains, to undo the damage. I hope he (Maurice Strong) will in this process establish an area for international research because really all the predictions of disaster do tend to turn on the validity of the concepts of finiteness, irreversibility of damage, threshold areas, triggers, and so on.

I think we're going to see some work started in that field. But the basic difficulty in answering your question -- I'm sure there are people here who know much more about this than I do -- is just fundamentally we don't know the answers. We hardly know the subject, for that matter. Take a question called energy. Thers isn't a single professor of energy in the United States -- energy isn't taught anywhere. There's no professional society, no learned journal, there isn't a primer in any language, on the subject called energy.

One thing we know about it is that we're stuck for fossil fuels for a hell of a long time to come. We're not close to knowing what the world's resources are for fossil fuels. In this country, the U. S. Government doesn't know, although there's a strong presumption that an overwhelming part of the remaining fossil fuels in this country is under government land. And the government doesn't even know what's under its own property.

We're in the dark on such fundamental things as hard data on total reserves -- and you know, I'm not talking about the last ton. I'm talking about knowing within an order of magnitude of two or three, what the reserves are. If you can know that -- it would help you in policy terms. But -- and it doesn't sound dramatic, but I find it to be a very dramatic fact -- that men, good men, intelligent men, are sitting, staring at problems that they don't know what to do about, because they don't understand them.

The combined court decisions upholding the litigants which are trying to stop a nuclear power plant on the Chesapeake Bay at Calvert Cliffs, and the decision which at least postponed the leasing of oil drilling in the Mexican Gulf, required the government to examine every alternative way of achieving the objective of the proposed project.

And specifically in the Fulf case, they were sent back to the drawing boards because they had not taken into account the effect of changing oil import policies. The Department of Interior was sent back to the drawing boards on this. They did a much more extensive analysis, they came to the same conclusion, that Interior should proceed with leasing drilling sites on the coast.

The people who took this case to court in the first place, I'm not sure, I think it was the Sierra Club, anyhow a couple of conservationist groups -- thought they could take the case back to court and win again. But they decided not to, ostensibly on the grounds that the Interior Department had done the best it could with available knowledge, and with available analytical methodology, to find an answer. You know, it's sort of don't shoot the piano player, he's doing the best he can.

But we still don't know how to do these things. I don't know what the answer is. I do know a lot of people think that we are on the verge of new methodologies, usually related to computers, that may make enormous contribution to our ability to analyze and understand some of these problems.

I am told that we don't know how much heat the atmosphere can absorb, or what the impact would be on the weather, much less whether it would be good or bad. The meteorologists that I listen to say that we now know how to get at the answers, but that it would take a very large research project about ten years. And they think that in about ten years they'd have the numbers. But meanwhile, everything races on. That's not much of an answer, I'm afraid, but a lot of people are -- there are a lot more people looking for answers now than there were a few years ago.

MR. HALE: Any more questions for Mr. Wilson? If not, we thank you very much, sir, for your contribution and for taking time to participate in this seminar. You've given us some provocative thoughts to ponder.

MR. HALE: We turn now to Dr. Long. I think most of you here in Washington know him, and since he's travelled extensively, probably most of you from the Missions know him also. Dr. Long received his Bachelor of Science degree from the University of Wisconsin in agricultural economics and his Ph.D. from the University of Wisconsin, also in economics. He joined AID's predecessor agency, ICA, in 1960, and is presently Director of AID's Office of Research and University Relations in the Technical Assistance Bureau.

He'll talk to us on food production and agriculture as they affect or are affected by the environment. Dr. Long.

DR. LONG: Thank you.

When people are confronted and concerned about the problems of food and agricultural production, and the environment, or ecology, I think they generally tend to think of two or three general types of issues. The first and now popular view of the relationship between agricultural production and environment, turns very largely on environmental damage caused by pesticides. The use of insecticides, herbicides, weedicides, raticides, baticides, fungicides, and so forth. These pesticides are the instruments of modern agriculture. As we try to modernize agriculture, we involve ourselves in the use of these essential instruments: and they create some problems! These are the problems of the pelicans and the bald eagles, etc.; and these are important to the environmentalists and ecologists.

There are really two basic types of problems with pesticides: one is that they kill things we really don't want to kill, but are killed incidentally to those we do want to kill.

The other aspect of the pesticide problem is that they tend to linger -- especially the modern types, the chlorinated hydrocarbons such as DDT. These are very good on safety factors and very good in being low cost. But unfortunately they don't know when to quit and give up. They work their way through the food chain and kill non-target species of animals into the indefinite future. One reads about this frequently. It is an important problem.

In Lake Michigan, for example, the concentration of DDT in the water is about one-millionth of one part per million; in the fish 1/10,000th of one part per million; and in the herring gulls which eat the fish, 500 parts per million. So DDT doesn't break down but lingers and concentrates through the food chain.

There is also another set of concepts within which we tend to think about the relationship between agricultural development and the environment and the ecology. That is the set of changed relationships created when projects move into areas and totally change the configuration of the ecology and the environment. When a country builds a dam, things change. It develops agriculture where it used to be dry. It floods out areas where people used to dwell. These are ecology-disturbing events.

Something that massive creates advantages and it creates disadvantages. The trade offs and the problems created require attention. This used to be the context within which we tended to think about the relationships between agricultural development and environment. In recent years, with the discovery and over popularization of the problems of DDT, we tend to think in terms of the first-listed set of concerns.

And then a third category obtains: the form in which I, in fact, was first introduced to this relationship between agricultural development and the environment. It has to do with the conservation of national resources: soil conservation, water conservation, forestry conservation, by derivation wildlike conservation, etc.

Now it's rather interesting that in the history of this country we got interested in conversation on its own terms back in President Theodore Roosevelt's time. He is usually attributed as the one who really got the country sensitized to the problem of conservation, forests and wildlife, parks and so forth. But except for rather anecdotal things -- parks created here, reforestation there -- conservation didn't get built into the country in a way that had gross impact on our own environment or natural ecology, until it became incorporated into the production economy of agriculture in such a way that it proved profitable.

In about the middle thirties, when the modern approach to soil and water conversation began to evolve, methods of conservation were developed <u>which were essential to successful, financially successful farming!</u> It was learned that the farmer couldn't afford to mine resources; it's a losing business. It was with that recognition that we began to have real improvement in our own environmental development. I think this is something worth thinking about, but I won't elaborate here.

At the present time, as I said before, discussion on the relationship between food production and ecology/environment is cast largely in the area of pesticides. The real relationship is largely overlooked.

If one isolates a single thing, like the use of a toxin to kill a rat or an insect, you can always find some negative implication somewhere. What usually fails to get asked is: What would be the effect on the environment if we didn't use it? Or, more importantly, if we didn't have the kind of agriculture developing that required the use of the insecticide.

Now let's take a bit of a look at the world, in this kind of a framework: We all know that population growth is with us. One can agrue whether it's 2.7 percent or three percent or whatever, per year. Actually we don't know: the vital statistics won't support any solid estimate on the point. But we know it is very rapid. The fundamental underlying inexorable propositions flowing from this fact are these!

Population is growing rapidly, and people will feed themselves. As the philosopher Protagorous says, "man is the measure of all things." It doesn't matter whether that is a sound social philosophy; it certainly is the point of view of the individual man. He will judge things according to what he must do for himself. He will feed himself and his family if he can.

As these populations grow and try to feed themselves, what are their alternatives? The less developed countries in the world have about 71 or 72 percent of the people, and about 50 percent of the cultivatable land. And while the populations are growing, the land supply isn't growing.

So what are their alternatives? What had happened in the past, and still today is happening, is that the primary source of new food is from cultivation of more land. In crowded India, as late as 1963, 60 percent of the additional food came from converting new land to food production.

Even under conditions as crowded as that, the additional food came from cultivating more land, reaching out for that last little side hill to grow something new on. Why? Because there wasn't an alternative at what economists would call the intensive margin. They didn't have the alternatives available to them to produce enough more per acre, so there was nothing to do but to use more land.

Even today on a world basis, by all odds the largest source of increased food production comes from the cultivation of more land. So that's how people feed themselves. Now what happens when they follow this practice? Well in general, of course, as more and more people cultivate more and more land, under old technologies, they simply grow the crops they know how to grow, often on poorer land; and they grow them over and over and over. Gradually the land loses its capability to produce food crops and the next thing they do is to start grazing it with livestock, usually first with cattle.

The cattle are equipped with teeth that won't bite down to the ground like sheep and goats. After a few years there's nothing left for the cattle, so then the sheep and then the goats harvest the grass. Literally they can eat the grass down to where you can't see it any more. People still keep trying to feed themselves until there's nothing left. Then the wind takes over. This is the way deserts are created.

We need some real research on this. If you can trust various archeological evidence, many areas of the Near East and elsewhere supported many, many times as many people a couple thousand years ago, as they do now. Many larger parts of the world weren't settled at all, but those that were settled were rather intensively farmed. And these are now barren hill sides.

The part of India that I lived in used to be the bread basket of South India, the reason that that particular state was never conquered by any outside invader, including the British, was that they had their own food supplies (and that they had draft cattle which could walk twice as fast as the other side possessed).

Now you see in that part of South India empty, barren hills, created exactly this way. And the deserts of Rajasthan in Northwest India, the creeping, spreading edges of the Sahara, are essentially results of the destruction of fragile land. So what is the alternative?

Of course, the first thing is to reduce the pressure of population, and you know we're doing a great deal of that. But this is slow. We're going to have at the very minimum a tremendous additional population, because the children who are going to have the children are already born.

The other principal weapon is to intensify agricultural production, bring it back off the fragile lands, and off those unproductive hill sides. Hopefully bring it back; at least don't press it any further. We must produce more per acre. That's what the agricultural game is all about, and that's what the environmental, ecological game is all about. That's what AID's program is all about.

Our new guidelines, within the Agency, concentrate first on food and nutrition, and secondly on health and family planning. Education supports these two main activities.

The answer is to produce more per acre. I want to take you through a couple of figures on this, to indicate what it means, by looking at our own experience.

What is not adequately realized, I'm sure, among people who are concerned about ecology, is that the last 40 or 50 years, about which Rachel Carson and others write, has in the aggregate not been a time of ecological destruction. It has been a period of ecological reconstruction in the United States.

We have since 1932, in the United States, increased our production 300 percent. And we do it on 20 percent less land in crops. What

has happened to that land that has been pulled out of production has been all kinds of ecological restoration. The farm where I grew up is all grown back into trees, there are fish in the streams there now where there did not used to be fish.

What has happened is we put the agricultural production on the lands that will support agricultural production, and increased yields 300 percent, 400 percent, 600 percent, crop by crop. We increased the efficiency of chickens to where they now produce about a pound of chicken meat with about two pounds of grain. Down in Auburn they've got what seems almost like a perpetual motion machine with fish because they get a pound of fish for every pound of grain. These illustrate the enormous improvement in the efficiency of food production.

Just think what would have happened to our environment if we had not been intensifying agricultural production. Suppose we had to get 300 percent more food on the land we already had. We would have had to go up every hill side another few yards; to try even harder to make food grains grow on the prairies where there isn't enough water. And it would have been a losing game.

Instead we have been engaged in ecological restoration. I have some figures which I think will be interesting. Ecological restoration takes a lot of forms. One of these forms is in the resurgence of wild life as nature began to re-establish herself. Best estimates are that white tailed deer, for example -- which were virtually exterminated in the eastern United States by this kind of process -- have increased as follows: 500,000 in 1908, to 1,000,000 in 1920. By 1963 there were seven million, by 1966, eight million, and by 1970 nine million. That's 20 times as many as in 1910.

Take the prong horned antelope, which live on the western prairies and which had been nearly exterminated by the plow which had destroyed their natural habitat. In 1908 it was estimated there were 17,000 prong horned antelope; by 1924, 26,000; by 1968, 174,000; and by 1970, 250,000. You can tell the same stories for wild turkeys, or for chickadees; you can tell it for robins or for fox, for bear or for bison.

Now, this is what the game of agricultural development is all about. In doing this job of achieving the overall answer to the ecological destruction through concentrating production on the lands that are suitable to agricultural production rather than pushing it back on the poorer and poorer lands, we do run into situations which require pesticides. The very process of increasing agricultural production creates an ideal habitat for pests. What will make wheat grow will make weeds grow. Or if you grow a lot of sorghums, you'll have the rapid expansion in the noxious bird population; if you grow a lot of wheat you'll have rapid expansion in the insects that eat on the wheat, and the diseases that they spread.

So it is impossible to achieve the broader ecological goal through increased agricultural production, without dealing with specific pest problems. This is the relationship that needs to be understood. To get more food, we have to use herbicides, we have to build some irrigation projects.

The fact that the greater good of ecological improvement justifies everything we must do to achieve it is not a sufficient answer. DDT has been outlawed in this country, for the reasons I mentioned, for use in agriculture. It is not outlawed overseas for the use against malaria because we don't have a reasonable alternative, and people are in the end more important than pelicans.

But that isn't an adequate answer either. If the pesticide is a bad one, it may be the best we have, but we have to start working on improving it. Therefore AID is working, through its research program and otherwise, to try to find alternatives to DDT. We think we have it at the University of Illinois, a DDT which has been modified so that it has all the advantages of DDT without the disadvantages. It will be cheap, it will be safe to handle, and at the same time not have the attribute of accumulating through time and in the food chain.

We have a weed control project which is designed to control weeds primarily by techniques other than herbicides, using herbicides only as necessary within an approach that uses other techniques which are especially useful for very small farmers.

We are trying to develop a vaccine, so that malaria might be controlled, or perhaps even eliminated, by the approach that's been used for diptheria, or polio. Because the use of DDT on a broad scale is an environmental problem, and furthermore a lot of mosquitoes are developing resistance to it, a vaccine that immunizes people is a better approach for the people, and for the environment.

Thus there is always the job of constant effort to improve the techniques of increasing agricultural production, in such a way as to minimize the adverse ecological/environmental side effects. But in concentrating on that problem, and in talking to people who are worried about ecology, it is very important that we see it in the broader context.

By concentrating on the major twin goals of AID, damping down the rates of population growth, and concentrating heavily on increasing productivity per acre of the better lands, in order to allow the ecology to restore itself, we are working specifically on environmental improvement. That's the principal message I wanted to leave behind, as to what the basic relationship between food production, people and ecology really is.

MR. HALE: Thank you, Dr. Long. It was a pleasure having you with us.

(Break for Lunch)

June 8, 1973: P.M.

MR. HALE: Good Afternoon. Well, we're just a little behind time this afternoon. This last session should prove very, very interesting as the first three sessions have. What we're going to do this afternoon is ask each one of these panelists to come up here and give you the benefit of their experiences in the operations area in the Agency, and where their operations area fits with engineers and their concerns with the problem that we've been talking about here the last two days.

I'm going to go through these one at a time and even though the presentations will be short, the identification of their areas of responsibilities and concerns and interests need to be separated out. We'll have questions put to them after all five of them have made their presentations.

First, we'll ask Jim Stephenson to be the goat, or the guinea pig. He got his Bachelor of Science degree in Civil Engineering from Georgia Institute of Technology, joined AID predecessor agency in 1957, so he's had a long stint here with AID. He's been Chief Engineer in New Delhi and Ankara, Assistant Director for Capital Development in Ankara, Associate Director for Engineering and Deputy Director, Office of Capital Development and Engineering in the NESA Bureau. He's presently Associate Director for Operations of the Office of Capital Development in the Bureau for Asia. Jim.

MR. STEPHENSON: Well it's good to see a few old friends here and to talk about a subject that--as most of you, I believe, are engineers--was certainly not a subject unknown to us long before engironment, environmental protection, pollution and so forth, got to be such common words in the vocabulary, both technically and for laymen.

As Luke said, for the last few years I have been Associate Director in the NESA and Asia Capital Development offices. In that job I suppose I have been riding two horses. After many, many years in that side of the business I am, of course, still much concerned with engineering; however, in the jobs that I've had for say the last five years or so, I've been involved in all facets of the development loan program. So I would like to speak to you from that angle. Don't get frightened when I say speak, I'm talking about no more than four or five minutes.

I am particularly concerned with operation of the loan program. I'm sure that you have heard many learned people this week on the general subject of environment but I thought it would be useful to try to bring it down to the every day thing of how it affects us in what we do in moving projects ahead. I'm talking about loan projects of all kinds; the business of going from an idea for development through

project formulation, the loan paper, loan authorization, and finally what pays off: Do you build something, do you establish an institution, do you get something going.

In terms of what that means in the Asia Bureau, about two weeks ago I counted up the number of formal environmental protection "events" we dealt with over the past year. It came to eighteen--plus one that fell between the cracks--so it's something that we live with every day. These "events" that I speak of are environmental matters that we have to consider, and decide to either do or not, or make sure that they are done. They relate to the environmental aspects of feasibility studies, at the IRR stage, and at the capital assistance paper stage. On on-going projects it's a day to day thing.

As far as the latest manual order on environment is concerned, we have found that it gives us no problem. I think it a very good guideline, in my view it doesn't put us in a strait-jacket, and it makes us look at a few check points which I think are good.

The two projects that we have had in the Asia Bureau that, for me, have been the most interesting from an environmental standpoint actually got underway before we had the formal strictures put upon us; that is, the formal requirement to carefully consider environmental aspects of projects. We did--and as I said earlier, I think engineers keep such things in mind all the time--when we had a large copper mining and smelting in Turkey which, by the very nature of the beast, can pollute a number of things--atmosphere, water, plant damage. We discussed this at some length with the borrower, and fortunately we came to agreement as to how prospective pollution would be handled, and they spent quite a bit of money that perhaps they would not have spent had we not gotten into the act.

About the same time we were involved in the financing of an iron ore sintering plant. In this one, at the time we got fairly far along in the design review believe it or not--and this is almost incomprehensible--we found the consulting engineer had provided no stack of any sort for dispersion of gases from sintering iron ore which was very high in sulphur content. We got onto that one in a hurry, and again, fortunately, we were able to persuade the borrower to do most of the right things. He didn't go as far as we would have liked, but no catastrophes.

I would like to pose a question, perhaps for later discussion if we have time, Luke. Starting from the point that environmental protection is good, it's something that we're all for, we want to promote it, we do promote it. I think we might hear from some in this assemblage on how we might handle the situation when all of our studies have shown that certain environmental actions really need to

be taken in a borrower country with respect to a project and the borrower says yes, I read you loud and clear, I agree with you, these bad things are going to happen but ... to put it in concrete terms: Let's say it's an industrial plant, we know that it is going to completely denude or make unusable say eight square miles, but in order to keep this from happening it's going to cost $2 million. The Borrower then says, "in our situation and in the valuation we put on this tract of land (plus the squirrels and people or what not that might be on it), it is just not that important for us to protect it." My question is: My question is at that point: Are we really in a position to say "if you don't take the environmental protection steps, then we pick up our marbles and go home."

With that, I pass it on to the next member of the panel.

MR. HALE: Jim, rather than try and answer that now, let's delay it until the end, but we won't forget it. It's a good question that we talked about upstairs many, many times when we were going through these manual orders that are now out to the field. And I can tell you what the Agency's view on it is, but let's have the other discussions first.

MR. HALE: Next, Mr. Alan Jacobs, graduated as an Architect and Planner from Princeton. He's a registered architect in a number of states and in the District of Columbia. A member of the American Institute of Architects, he has served and is presently serving on several of its national professional committees. He spent some 20 years in residence in Europe, Africa, and the Near East with the Department of State, Army and private business. For the past six years he's been with AID as Urban, Environmental, and Aviation Affairs Officer in the Supporting Assistance Bureau and its predecessor, the Vietnam Bureau. Alan.

MR. JACOBS: I suppose that I represent an area of the world that has been less concerned about the environment than any other place than you can think of. I'm sure that in Southeast Asia, it's pretty hard to conceive of being overly concerned about improving the environment while everybody's so busy degrading it.

Just the same, a little aside on that question came up ten days or two weeks ago. We heard from one of our Missions that the people of that country were not at all interested in the environment. Well, this information was relayed to us by one of our officials in the Mission and we were told that it would be with the greatest degree of effort on our part to get them involved in a study of the environment.

The day after I got a call from the Office of International Training, asking me to help set up a conference program for an engineer who was to be head of the country's Office of Environmental Affairs in the Ministry of Public Health. So obviously there was a lack of communication, or a failure to know a great deal about what was going on outside one officer's particular area of interest.

Even in this complicated arena, there are indications of interest on the part of the host country in a concern, and a very lively interest among people who represent such things as tourism. I've been involved in some discussions on the question of tourism in the past months, and the environment represents a very important thing to these people. Clean water and clean air, interesting surroundings, all make an enjoyable background for tourists. It's terribly important--to them it means money.

So that when you talk with those people you find a real and genuine interest in the environment. We are, as you all know, under edict to produce an environmental analysis on all of our capital projects; and I suspect before long we'll be involved in having to do the same thing in relation to other development programs.

Just now we are faced with a serious problem in one of the countries in the Supporting Assistance Bureau area, in a project other than a capital project, which has to do with the export of fishery products.

A recent finding on the part of a University professor indicated the presence of a very poisonous substance in the riverine marine life--the substance is called dioxin. There's not a great deal known about it, but it is known to be an accumulative poison and it's definitely not one to treat lightly. We have been working in AID for two years, or three years, on development of fisheries for export. Last year the country exported $25 million worth of products, and this year it was hoped that exports would be as much as $35 million worth of shrimp.

Well, all of a sudden it looks like maybe there won't be any exports of shrimp. We had hoped to get it up to $35- to $40 million. Well this is an environmental problem of first order, and it relates to AID. The reason why the dioxin is in the fish is because of a defoliation effort, where a chemical substance was used that finds its way to the streams and coastal waters, and it's cutting across an effort that we have been making with the country to improve their economic posture.

I jumped from the capital project area into the non-capital projects area, for what I think to be a reasonable idea that I have about engineers and any special sector of functional activity. It occurs to me, and I think it's borne out by the speakers that have been here in front of you yesterday and today, that everybody is involved in this problem of the environment--nobody has a sort of a half Nelson on it. And there has to be a high degree of interest between disciplines.

There isn't enough of this, going back to my colleague who said the people of the country were not interested, the next day I find they are, they seem to be interested. We are too prone in the larger institutions to not know what the right hand is doing, and with that position we fail to see the implications of the different activities that we're involved with. And I would suggest that after this period of intense exposure to some of the problems, that you keep this in mind and act a little bit as missionaries on return to your Missions to see if you can't create an understanding.

I think Bill Niese this morning touched on this same idea, posed the same question, that this question of environment has got to be talked about and it's got to be looked at at the earliest possible stages in the programming, in the early concept of putting things together. If you don't, if you aren't aware of it at that point, then the projects or the programs get so highly developed that all we are able to do is an after-the-fact examination, usually in a sort of a helpless fashion.

We have a program in another country in the Supporting Assistance Bureau to review a loan, an irrigation loan--which is going to be done almost totally in an after the fact way. It isn't the way to do it, but fortunately, in this case, I think there is no harm done.

Going back again to the first country I was discussing, on another project we are pushing for a comprehensive environmental study of the whole highway network. Now this is a big project and we're going to look at it in a very broad sense and not in a very detailed sense. It's going to be looked at from an environmental action program rather than an impact study method.

We are hoping that there will be an appointment made in each Mission, in the Supporting Assistance region, of an environmental officer, or staff officer, who is designated to act as a catalyst, or as a catalytic agent for this question. To pry into the various programs and to try to bring together the elements of the Mission that have an interest in or should have an interest in the environmental aspects of all of our programs. Thank you.

MR. HALE: Thank you, Alan.

MR. HALE: Next, Mr. Arthur Handly, graduated with an A.B. degree from the Lawrence University--is that St. Lawrence University? That's my old stomping ground. He received his Master's from Syracuse, has private experience in management analysis, joined AID in 1962, and is presently Acting Associate Assistant Administrator for the Office of Development Program Review in the Bureau of Program and Policy Coordination. Mr. Handly.

MR. HANDLY: First just a few words to acquaint all of you with the function of the office, that I'm presently associated with. It's relatively new, a year and a half old. It used to be the Capital Development, Finance Office, of PPC. What we're involved in is reviewing all the projects in AID, all loan and grant projects, to see how they fit with Agency policy. And of course we now have an Agency policy on environment. We have manual orders on environment. We look over the projects to see that that policy is in fact complied with. That's the function. It seems to me that on environment we're at the crossroads. As all of you know, we've had policies in the past in AID -- we've had Title IX policies, we have income distribution in employment policies. Often times these policies turn out to be, in the view of those people who are trying to get things done, obstacles--statutory requirements, if you will--requirements to put in a statement of some kind to indicate that the subject was given due consideration.

The question for AID: Is this the route of environment, is this where we're going on environment? Will it continue to be an obstacle to moving something ahead, something we have to satisfy, something we really don't think is terribly important, but somebody throught it was and we've got to get over that hurdle, so we write something down--"We have given environment due consideration."

On the basis of the projects we've looked over in the last year, I would say we're about C grade, that is, I would say there are a lot of projects that are coming in that include a statement on environment, but the attention given to environment appears basically to comply with a manual order, rather than a serious, internalized concern, if you will. And it seems to me this seminar is all about that, attempting to internalize within ourselves professional organizational concern about the environment, and then trying to figure out what are we going to do about it.

Now all of us in this AID business are fully familiar with the fact that in contrast to domestic environmental questions, where there are lobbying groups, there are conservation leagues, there are various organizations that are going to get up in arms unless environment is given some consideration, adequate consideration. In the LDCs we don't find those groups.

So in effect we're trying to lobby ourselves. As Alan said, in one country maybe they aren't interested in environment, as Jim was saying recipient countries maybe aren't willing to pay for it. So we're in a situation of attempting really to lobby ourselves and the the LDC's into giving adequate full consideration to environmental factors in what we're doing.

Also, we have an agency here in the United States, Environmental Protection Agency, that's interested in it--which we don't have that in income distribution and employment or in Title IX. I suspect that environment isn't going to go away, and it's not simply just going to be a Manual Order requirement. We've got Jim Fowler, who isn't going to let us--let it go away. I think we're just kind of at mid-ground now. We've got the manual order requirements, we are looking at projects to see if there is in fact a statement on loans now, but we haven't paid much attention to grants projects, which I suspect we will be doing in the future. But I don't think we're quite sure what we should do; I think the seminar which you people are going to be attending in North Carolina will help provide us some answers. We don't have the answers in PPC. I don't think Jim feels he's got all the answers either. Hopefully, we're all moving together; we're moving together to see what is this thing, environmental protection, what really should we be doing about it, and how serious should we take it. Should we take it as serious as Jim Stephenson has said, to the point of not providing assistance to a project which is going to be deleterious to the environment? I don't know.

After living in Ankara as Jim did for five years, and living in the smog, and seeing it get worse and worse from 1962 to 1967, to go back in 1970 and visit again and find it even worse, rapidly becoming almost an uninhabitable place from October through April, I wish that somebody had or would give consideration to environment. You had in Ankara a very attractive place to live, but it's rapidly becoming a very uncomfortable and unhealthy place for humans to spend their time.

I'm happy to participate in this effort, to investigate and focus our environmental concerns. Thank you very much.

MR. HALE: Thank you.

MR. HALE: The next and purposely saved him towards the last, Mr. Gardiner, joined AID as General Counsel in 1971. Received his Bachelor of Arts degree in history from Yale College in 1957, magna cum laude, Bachelor of Law degree in 1960 from Harvard Law School--where he was a member of the Harvard Law Review. As I say, he's now General Counsel.

He will tell you, also, as we engineers have known for a long time, that you can't avoid the legal implications. And we keep pretty close working relationship with these people so they'll keep us out of trouble, rather than get us out of trouble after we get in it.

Mr. Gardiner.

MR. GARDINER: Thank you very much, Luke. I'm going to make my comments very short because I think what I had intended to say has largely already been said. I did very much want to come here today because I wanted to identify myself as another one of the people in this Agency who is not going to let this problem go away. And that's for two reasons.

First of all because we do have a definite legal concern with the manner in which the Agency responds to the mandate that has been given it and all other government agencies by the Congress in the National Environmental Policy Act. One of the very first jobs that I undertook when I joined AID was to work closely with Jim Fowler on the question of how we would design a manual order in the capital projects area that would be responsive to the policies of the Congress, as expressed in the National Environmental Policy Act.

That obviously is a very complicated question because AID is in a different kind of business than most of the government agencies to which the Act applies. And the manual order in its present form was an attempt, made a year and a half ago, to articulate in some sensible way the way in which those NEPA policies could be applied in the context of AID procedures, to give this Agency an intelligent kind of management framework and format in which to make sure that environmental considerations are adequately taken into account.

It doesn't matter a damn what the policy makers say unless the Agency in its actual operating function, and in discharging the kind of work that you gentlemen are going to be discharging, is in fact on the daily level making a significant and meaningful effort to look at the environmental consequences of the programs that we're undertaking.

When we -- Art Handly and his office, and I in mine, see a capital project paper, representing the culmination of a programming and implementation process that's taken a year and a half and find an environmental impact statement which for one reason or another it looks inadequate, we are truly faced often with the Hobson's choice--very difficult choice--of saying, are we going to put the brakes on, veto, say this project is not going forward despite the tremendous bureaucratic pressures that at that point are behind getting the darned thing signed and implemented.

Or are we going to let this environmental analysis which at least on the surface looks as if it leaves a lot to be desired, stand as the Agency's position. Now that's a silly position for us to be in. The fact is that the work ought to be done, and the work ought to be done at the stage at which you gentlemen are going to have an opportunity to do it. And the reason I wanted to come here today and make this appearance is to emphasize to you what I consider to be the extreme importance of the type of work in the seminar that you're undertaking, and the importance that this Agency as a whole, and you in particular, act in response to what is now a solemn United States Government policy to protect the environment. That is something in which I think all of us as human beings most certainly have to concede is one of the very important problems of our time.

Obviously there are differences between what the United States does in the context of a domestic project, and what it does in the context of a foreign project, and obviously when you get down to the nitty gritty questions of where the trade-offs are in any particular circumstance, the judgment of a foreign country may be different from the judgment of the government of the United States.

But certainly it is our obligation, as a part of the overall assistance effort, to effectively and responsibly point out to the people who are assisting, the reasonably anticipated consequences of projects which they wish to undertake. And I think that is essentially the position of Dr. Hannah and the decision of this Agency, and I wanted to reiterate it once more. Thank you very much.

MR. HALE: As the last on this group of panelists we had arranged for Mr. Martin Dagata from the Latin American Bureau to join us, but he couldn't make it. So we're very happy with the appearance today of Mr. Sidman, in Mr. Dagata's stead. I did not get a bio sheet on Mr. Sidman, so I've asked him to introduce himself if he will, and then give us a few remarks from his position with the Latin American Bureau.

MR. SIDMAN: Martin Dagata is the Chief of our lending division for Central America, in the Office of Development Resources in Latin America. I am the Deputy Director of the Office of Development Resources, which is in a sense the capital development as well as the technical assistance arm of the Latin America Bureau. He delegated up, and so I am here and he is not.

I've been the Deputy Director of Development Resources for several months. Prior to that time I was on the Interdepartmental Group staff for Latin America. Before that I was the legal advisor to the AID Mission in Brazil, and before that I served in the General Counsel's office. Earlier I was a public prosecutor and I was in general practice of law in Washington. Recently I was honored by the title of Environmental Affairs Officer of the Latin America Bureau; that was on Wednesday of this week.

I'm pleased to represent the Latin America Bureau here today. One of the first things I did when I received my new title was to turn to our capital assistance papers to see exactly what we've been doing over certainly the last several months, to comply with the manual orders and environment-related policies generally. And I'm happy to report that there is evidence of substantial compliance in the Latin America Bureau. Let me illustrate.

For those loans to the Central American Bank for Economic Integration, which ultimately will result in construction projects, there are requirements for feasibility studies, which, in turn, address environmental matters. The environmental consequences of the projects, in short, shall be taken into consideration. Borrowers and sub-borrowers shall develop projects keeping in mind the protection of the environment, and following the policy lines established by AID regulations.

We have other projects which more directly affect the environment, for example the Afforestation Project in Jamaica which we are currently processing. It will involve the revitalization of a small forestry industry in Jamaica. It involves extensive technical assistance from the United States. The project is important to the Jamaicans and hopefully in the next several days we'll be able to secure final approval for it.

There are components of our sector loans which raise environmental considerations. For example, the recently approved health sector loan in Colombia has a water and sewerage element. Environmental considerations are raised by that element, and they will be taken into account in the construction of water and sewerage systems. This is a requirement of the loan paper, to be built into the loan agreement.

So I'm happy to say that there is, based upon my limited survey, substantial compliance on the part of the Bureau with AID's environment policies. I cannot report on the extent to which the host country representatives are themselves passive or active, reluctant or eager, to join with us in our pursuit of a more healthy environment. But we do get them to agree with us with regard to AID-funded projects, and that may have an important catalytic effect. Indeed, I have the suspicion that in many cases once the possible adverse effects of a project are explored and discussed with host country representatives they are quite reasonable about minimizing adverse environmental consequences of projects.

As to grant-funded technical assistance projects, I tend to endorse the view that AID should examine them in Washington with an eye towards their environmental consequences. In fact, in Latin America we do. We more and more see a direct link between grant-funded technical assistance activities and follow-on loans. We closely examine technical assistance projects for possible later development into loan-funded activities. Accordingly, environmental questions, which might be raised by a loan-funded project, are looked at at an early date.

Now whether or not PPC decides to impose a formal requirement along this line is somewhat academic from our point of view, because we increasingly are trying to evaluate projects on their substance rather than on their source or type of funding. If a project raises environmental questions, we explore them.

Thank you very much.

MR. HALE: Thank you very much, Mr. Sidman.

MR. HALE: Art Gardiner took a stab at a question that Jim Stephenson raised a few minutes ago as to what you do if an environmental problem comes up in a country that's considering a loan, or being considered for a loan, and you feel the environmental costs in the loan are too much for them to handle, and the environmental considerations are not quite necessary, do you go ahead and make the loan or not.

Well, as Mr. Gardiner said, that underwent much discussion in the early considerations of the manual order and still remains largely unanswered. What is answered, however, is our duty to identify environmental effects so the borrower has the full facts on which to make a decision.

One other element that I think Art maybe purposely didn't refer to, or maybe I missed it, Art, was the political consideration. Sometimes that weighs pretty doggoned heavy. Maybe --

MR. STEPHENSON: I believe that that paragraph is handled in the manual order.

MR. HALE: It has to have considerable flexibility. But the point I wanted to make -- there's a lot of pressure on the political aspect of development from this Agency and from other lending institutions involved in international development. If we back away from it and say no because this implication is going to be really harmful, we don't want to be a party to it; then do you stand by and watch them go to France, Japan or Germany or somewhere else for funds to build that same project, with even less consideration given to the environment than we'd been able to work out with them if we had been willing to give a little bit.

I'd like to respond for just one minute to a question that Jim Fowler -- I don't know for sure if it was Jim Fowler, I think it was though -- I just didn't want to forget it and let it get by. In the very early considerations of this particular seminar, and indeed back when we were working on the manual order, we talked to the Environmental Protection Agency about a great number of these things that involved the Agency's potential policy, the stand we should take, the areas we should cover, the administration of that policy. They indicated they didn't know the answers then, they don't know the answers now.

But the point they were concerned with and shyed away from is particularly odd, and that was the fact that they just couldn't get involved with recommending policy to us, and then being at the same time obligated to do the policing action of that policy that they helped recommend. And rightfully they backed away from it.

I didn't mean to get -- I just didn't want that to pass. Let's have some questions now to these gentlemen. Alan.

MR. JACOBS: Before we get to the questions, whether we should or shouldn't in the final analysis carry out or implement a loan based with an opposition or feeling about it on the part of the host country. I think that Mr. Lee of the IBRD yesterday addressed that question pretty well when he said that they hadn't had to turn down any loans, simply because they had the options and the flexibility to work the issues out at the early stages, in the conception stage of developing the loan. And they really hadn't been faced with the

problem of refusing the loan, if -- and they hadn't even gone into the aid project if they saw there would be potentials where there would be an impasse.

MR. STEPHENSON: Is this gentleman here today?

MR. HALE: No, he isn't.

MR. STEPHENSON: Because there's one coming up I want to ask him about in that context.

MR. HALE: No, he isn't here today, unfortunately. But I'd like to add one more dimension to that, Alan. In his deliberations -- was he talking about general World Bank loans, applications for loans, where they demand a higher interest rate than AID, and they got just a little bit different level of customer than we have? Do we call them customers? I think this has to come into that consideration too.

MR JACOBS: It could be, I'm not sure.

MR. HALE: There's many, many sides to the considerations.

MR. JACOBS: (Inaudible).

MR. HALE: I think that is part of it, but let's see what some of the other people think about it. Mr. Fowler.

MR. FOWLER: What question you would have asked Jim Lee if he were here?

MR. STEPHENSON: The question that I would have asked springs from what Alan said about the IBRD not having had real problems in working out environmental issues with their Borrowers. I would remind you of what Art Handly said about what was happening in Turkey, particularly in Ankara; that is the burning of lignite or soft coal, and how it was making the city almost uninhabitable due to severe smog. Well, a very large project that is up for consideration right now in the World Bank is for the development of a huge, I mean really big, lignite extraction project. Part of the output would be used in an on-site power plant, and part would be used for domestic fuels which puts out the kind of fumes that Art was talking about and is making Ankara almost uninhabitable. I'm not suggesting it can't be managed, but it's one that hasn't been managed yet. Or if it has, not to my knowledge. I'd like to find out how the IBRD is tackling it. It's a real problem.

MR. GARDINER: The provisions in the manual order that we've been talking about, really do address this question. I'd like to say a couple of things about them. First of all, you can pose the final issue in a hypothetical way; what about a disastrous project that you know is going to foul the environment for hundreds of thousands of people for time immemorial. And if you ever do get to that point, then we have a very serious problem, obviously.

But I think point one, and the major point, is that in most cases, if the proper kind of work is done at the right stage, that type of result can be avoided. So you have to recognize the fact that while it's finally an interesting, theoretical issue, in most cases you avoid that.

MR. HALE: That's right.

MR. GARDINER: As long as you're taking the appropriate steps at the right time to figure out the environmental alternatives, and come up with an acceptable immediate kind of solution.

Second, there obviously is a difference between the United States Government providing financing for a domestic United States project, and the United States Government providing financing for a foreign project. And there may be cases where government in a less developed country does consider the environmental hazards incident upon a particular project, worth it -- they're willing to undertake those hazards, even though they're foreseeable, because of the countervailing benefits.

And certainly our posture should be twofold. It makes sense--for us to give great weight to their judgment as to what they want to do. But we have a plain obligation to be precise and point out to them the consequences of the decisions that they're making. And certainly under the National Environmental Policy Act, which is the law that we have to be concerned with, that is something we plainly should do.

MR. KINGERY: How does that NEPA legislation relate to the World Bank, for example. The IBRD, the IDA, does any of that spill over into the World Bank?

MR. GARDINER: It does not

MR. KINGERY: Is it strictly domestic?

MR. GARDINER: It applies to agencies of the United States federal government. There is a question that has been much debated as to whether it applies to activities of agencies in the federal government that are undertaken overseas. But as far as this Agency is concerned, we've considered that to be a leagl issue that really is a non-issue because the policy of this Agency in undertaking its assistance programs is that it ought to, and has to be, involved with the environmental consequences to be effective.

MR. HALE: That's right.

MR. SNEAD: I've been involved with the environmental program and have been interested in this for some time. One of the questions I have is from a practical standpoint. We have a number of on-going engineering contracts, where the contractor has no requirement at the present time to give us an environmental statement, which we hope to change. But this is going to cost additional money. Now, are we going to get the money from the program office?

MR. HALE: Can you hear back there, Jim, well enough? We can have these fellas come up here and ask their questions, if necessary.

UNIDENTIFIED: Yes, this is grant financed projects to start with. That makes it simple.

MR. HALE: Jim.

MR. FOWLER: There has been a decision made that environmental considerations of assistance projects are to be considered as legitimate project costs. To be taken into account like any other project costs, and considered when financing arrangements are worked out. We have not said that any project costs due to environmental considerations will be paid for by A.I.D. assistance. As you know, A.I.D. financing normally only covers a portion of total project costs--the balance is paid for by host country contributions to the project, or by other development financing institutions, etc. We have simply said that appropriate environmental measures are an integral, accepted and legitimate part of total project costs so far as A.I.D. is concerned. Who pays which part of total costs, in this case as in other cases, is left to be worked out in negotiations between the borrower and A.I.D. I would normally expect that if

environmental costs were wholly or substantially local currency costs, they would probably fall on the self-financed side of the project ledger. If, however, such costs entailed foreign exchange for imported machinery or technology, they might well be considered for financing out of A.I.D. or other foreign assistance funds--but there is no rule about this. It is left to be worked out on a mutually satisfactory, sensible, cost-sharing basis.

But this is not the only aspect of environmental costs that worries the developing countries. They've also pointed out that to the extent that individual development projects cost more because of the incorporation of environmental considerations, this reduces the amount of total resources available for doing other kinds of perfectly legitimate development activities. And therefore the LDCs have said, and they are going to go on saying, that the rich developed countries ought to increase the total flow of assistance resources in order to cover the environmental aspects of development. In order to take care of environmental needs, it costs more, and therefore, in terms of gross resource flows from the rich countries to the poor countries; aid flows ought to go up, say the LDC's. None of the developed countries have been willing to commit themselves to such gross increases in aid flows, not because they don't believe that development assistance resources shouldn't increase but because they know how difficult it is just to keep the flow of aid at present levels or prevent further reductions.

We simply can't guarantee to the LDCs that we're going to increase the amount of foreign assistance from the United States, bilateral or multilateral; we have to explain that we're just fighting like mad to hang in where we are. The British, the Canadians, the Swedes, the Germans, are in very much the same position. So that at the gross level, in terms of total resource flows, nobody on the rich countries' side is willing or able yet to make a promise that they will increase the total flow of aid resources because of this concern with environmental matters.

But most of the development assistance sources have said that they are prepared to assist at the project level. They, like we, consider environmental factors to be a very legitimate project cost which ought to be taken into account. And if it works out that this requires more assistance to the project, fine, so be it. Just like good engineering sometimes requires more assistance than bad engineering, or indifferent engineering. And we're buying a quality product, we're prepared to help pay for it. Does that speak to your question?

MR. SNEAD: Well partly. Mine is a little more basic than that, because I have an on-going program where money has already been appropriated for it. Right now I've got to get additional money to meet the environmental requirements. Any my problem is that I don't know whether--

MR. JACOBS: I think I understand Jack Snead's problem in that they have projected certain costs for engineering projects to develop the engineering on projects. And in developing the estimated costs for these projects, there was nothing in there for the factor which makes that engineering cost more if they examine the environmental aspects of the project. And I think this goes, this is a peculiar lag we've had, and its one that you as engineers are going to have to address when you develop the estimates for costs of engineering services.

That you're going to have to put an element in there for this thing. it's going to have to be there. I think if you do that, I think the programs people will recognize it as a legitimate expense.

MR. STEPHENSON: Your problem is that you're already into something.

MR. JACOBS: Yeah, true

MR. FOWLER: Now that's a real problem, and this is what we're trying to get away from. If you stop to think about what the developing countries are saying, you know, it's going to cost more, and you pay it, the best way out of that box is to never let it be possible to identify what that extra cost was. Because it was built in from the beginning.

If you have--in other words, let's accept the proposition the LDCs put forward, environmentally sound projects cost more than the other kind, and you guys ought to pay the difference. Now from here on, let's just take today, from here on that presumes that they will go out and plan and work out an environmentally bad project, and then we will add the amount in to make it good, and they'll send that bill to us.

Now when you're caught in the transition, you've started a project and haven't thought about this, then come in later and think about it, and then you've got an add-on, then you've got a problem.

But if you start at the very beginning, this is why back in August of 1970, this Agency said all feasibility studies shall include in their scope work, a provision for environmental analysis. That was August 1970. We're now in June, 1973, we have a three-year lead time. If you were reading what this Agency said its policies were in 1970, there are few projects that we have studied--or where we had anything to do with the study since then--that shouldn't have had that built in. And if it was built in right from the beginning, then this question of the additional cost to do it right now wouldn't even be arising.

MR. HALE: That's right, wouldn't even be identified.

MR. FOWLER: But it has and therefore we're just going to have to hunker up and live with those. But beginning in August 1970 on, we should have fewer and fewer and fewer of these instances where you've got an added cost element. It should have been built in right from the beginning. And if anybody says to you, "How much more does this cost, because it's environmentally good?" you say, "Damned if I know!. We don't plan environmentally bad ones, so we don't know."

MR HALE: Good. thank you very much. Jim. There are some more questions here?

MR. PETERSON: How important is the noise factor in our considerations? We've heard about air and water, but how about noise? Is it a serious consideration?

MR. HALE: Who wants to take a swing at that first?

MR. JACOBS: I think that's relative as to what the noise is related to. In other words, certainly if we were endorsing or supporting a fine hotel or some activity of this sort in an environment, where an accelerated noise, or an excessive noise condition prevailed, it wouldn't make very good sense. I think noise or any other element of the environmental study has to be taken into--be put in relation to that project.

And the importance of water, air and noise, or anything else as that project exists.

MR. STEPHENSON: I could give you two concrete examples of this that might be at least indicative of some of the things we are doing in one country. As a medium term emergency measure, we have a loan project for a number of gas turbines, large gas turbine power generating units, which we all know are pretty noisy. Well, we have examined this and as a part of the specification, have set the lower limit, or rather, the upper noise level that must not be exceeded.

These are gas turbine units that are sitting in the cities. If you as me the decibel limit we have set, I can't tell you. There are people working with that, but I don't remember the number.

MR. HALE: I think EPA designates that limit about 60 decibels, don't they? It may go up to 80 in some areas.

UNIDENTIFIED: You could try getting rid of all the two-cycle engines on the streets under the highway program, couldn't you?

MR. HALE: Fortunately they don't go up as high in decibels as an ordinary lawn mower, that's one of your higher ones. Jim--

MR. FOWLER: A comment on that. One of the countries which seems to have been most concerned about, and is far along in worrying about noise, is Sweden. When we were in Stockholm they put on several different exhibits of various aspects of noise control. They are looking at what we would call noise pollution, not as an esthetic problem so much as an industrial health problem. They've done some very interesting work. It's not just the problem of somebody in your street using a jack hammer so that you can't sleep at night. I'm sure that bothers everybody, but it hardly could be classed as a primary problem. But the Swedes, and others I'm sure, have done a lot of work on what excessive noise does to the worker, that's a problem of industrial environment, or worker's environment.

And some of the effects of that, obviously, in a highly industrialized society, are very awful when you see them. Now I don't think that this is a priority problem of the LDCs yet, but it could be. You see the effect of constant exposure to extremely high levels of noise, in certain kinds of operations, on the worker. It's something of the type that Jim Lee was talking about, and Lee Howard was talking about. It's a health problem for the worker.

If noise keeps people in the neighborhood awake a few nights a week, that's one thing, and it probably isn't a very high priority problem. But if you're beginning to destroy a lot of potentially productive manpower by excessive noise which could be controlled, I say you have a serious problem. And there's something that could be done about it, a lot of technology has been developed and could be applied.

MR. STEPHENSON: You get some interesting wrinkles, some that you don't think of in spite of your best efforts. We had one case where we had insisted, or had recommended--at least they bought it--they put in a high stack to carry away noxious gases, and there was a huge fan that conveyed the gases to the stack.

Well, somewhere along the line in the design of the stack, done by one group, and the fan leading into it, done by a different outfit, something was overlooked. When they cranked the think off--and this was a stack in a plant surrounded by the houses of several thousand people--it was just a horrible noise.

In this case there was not much trouble because the plant management lived there too. They came in and fixed it fast. These are the kind of day-to-day things you run into and I think interesting to deal with, often times on an ad hoc basis.

MR. SNEAD: I don't entirely agree with you, Mr. Fowler, that it isn't--that noise isn't a concern with the LDCs. I think an airport , for instance its location, is a very decided noise pollution problem and a direct concern to them.

MR. FOWLER: I don't mean to derogate the importance of that, but in the grand scheme of things, I would suppose that an LDC is going to have to make some tough trade-offs. And if we're doing an airport project or something, and the airport project has a lot of economic benefits. If it is a noisy project, there is a minus there, but on balance, perhaps in considering the problem of excessive noise in relation to the positive returns on the investment, an LDC would probably rank noise abatement a hell of a lot less important, and be less willing to do anything about it, than would some guy living over here in a high-rise in Alexandria, and listening to National Airport every day.

The scale of values is simply different. And we have to be very careful not to act as though an airport in Vietnam or Chile and its noise problem has the same scale of values as it does if you're living in Arlington, Virginia.

To an Arlingtonian, or an Alexandrian, that may be a damned important problem, and we've got to do something about it. But to the guys living on the outskirts of Santiago, where if he has a job at the airport, or his stuff is coming in and going out, or tourists are being brought in, or whatever, he may just decide he'd like to live with some of that noise.

MR. HALE: It comes pretty low on the priority list, in most of these countries.

MR. FOWLER: It's a different trade-off. It's still a trade-off. We have to be very careful not to try to export the same value system that we may find very appropriate to us in the United States, in Washington, D.C., and insist that they have to adopt it. This isn't to say that it isn't important, I mean 50 years from now they may wish to hell they'd done it differently.

But this is the kind of thing I was talking about the other day, yesterday; we've got to be very careful not to try to legislate virtue. To say this level of noise is tolerable, and is the only tolerable level, and therefore all of you people have got to live by that tolerable limit because we said that's what it was.

MR. SNEAD: No, I disagree. The thing is we do have a responsibility to point out these problems.

MR. FOWLER: Exactly. That's just what Art Gardiner said, that's one of our primary responsibilities.

MR. HALE: Bill, you had a question, and then get back to Jim's question here.

MR. LONG: Just a supplement to this. I think it's fair to say that one can make a useful and valid distinction between noise and solid waste--instances where the environmental impact is local in character, and pollution of air and water where the effects may be far-ranging. In the first case, I believe that the final decision resides with the country in which the impact is localized. However, we certainly have a responsibility for calling attention to the possible consequences.

I think our overriding concern is with projects which may result in the release of contaminants of the air and water--pervasive pollutants that are liable to spread across national boundaries and impact on third-party countries. In these situations we have special responsibilities with respect to the decision-making process.

MR. HALE: Yes, I've been at many conferences where this has been discussed and it always comes out this way--that noise pollution is a problem, but it comes lower on the totem pole in considerations with respect to some of the others. Jim, you had a question here.

MR. WATSON: Well, that's the thing that would concern me, that people lose sight of the fact that pollution from coal burning, or pollution from the ocean in particular--which I'm beginning to feel a concern for--it has been thought of for so damned many years that it is the biggest cesspool in the world,that we could dump any damned thing in it we wanted to dump into it, and it never bothered anybody. I think we're beginning to find out now that it isn't a cesspool, that it is going to affect all of us.

And I think that in our loan programs, as time goes by, we have to give consideration to the consequences of a loan that we might make. Right now it's no skin off my nose, and it doesn't make my eyes burn since I live in Washington, D. C., and I can say that something that goes on in another country doesn't affect me. But I think as time goes by, that that total pollution <u>is</u> going to affect me, that we're going to have to consider total pollution.

MR. NIESE: Well, I think another factor here is, while we say we're not involved in some of these things, and that we're creating imperialistic attitudes and so forth, in certain instances the country cannot afford not to take care of its natural resources. You may say, "Well, it's going to raise the cost of project X," but when you analyze it totally, it may be in many, many cases--like the discussion about the roads--you create maintenance problems and things that continually harass them, and they're unable to keep up with it. So instead of maintaining a structure or maintaining a road, in two or three years they end up rebuilding the whole thing; it is not a case of whether they can afford to do it, it's whether they can afford <u>not</u> to do it.

MR. HALE: That's true. You had a question.

MR. KINGERY: I wanted to ask Mr. Jacobs more about this dioxin (defoliant) contamination. I guess I've got two questions, one, how are we going to keep them from exporting shrimp? You know, if there's a buyer, how are we going to stop them from selling? And the second question is, what about the people, because they live on fish. You know, the nuoc nam is part of their diet, and you know, especially the little guy, he lives on -- I would say half of his protein, you know, comes from fish. So what about the domestic scene.

MR. JACOBS: The first, how are we going to keep them from exporting it. Well, it doesn't work that way. The importers will refuse to import, so that shuts off the export. In other words, it's controlled at the import side, and not at the export.

MR. KINGERY: I kind of assumed it was, but who's been buying?

MR. JACOBS: Well, the principal purchaser is--let's call it country Y--it has the big market at the moment. There are secondary markets in other countries but they have not been affected in this particular case. Country Y has put an embargo flat out on any more importation of shrimp until they can get a better position on this.

Now, what is going to help the country public official change his position on that, we don't know yet, and we are concerned, and we are examining the question. The other question of domestic public health in the exporting country is a very serious one, it may be even more serious than the export question.

The difficulty, of course is--there is relatively little known about this substance at the moment. There is a lot of scattered information, but it has not come into such significance until very recently. And it's going to take a little time to sort out and to try to solve the problem. Some of the things that some people say are accurate and true, it does constitute a very serious problem.

MR. HALE: Is there any work being done to correct it?

MR. JACOBS: Well nothing--as yet.

MR. HALE: Obviously it's a long range problem.

UNIDENTIFIED: Stop defoliating.

MR. JACOBS: In 1968 we stopped using the compound. There are other possibilities for pollution, other elements that might contribute to this pollution. We don't know how lasting the compound is, or how long the areas that were defoliated can contribute to pollution of the waterways and the coastal waters. We don't know that.

And we don't know whether the pollution stops or whether the water going over the soil into the waterways will continue to pollute over a certain period of time. We also don't know how long, once polluted, marine life continues to be polluted. So you can see there are an awful lot of unanswered questions, and it's going to take some extremely serious consideration by some extremely capable people in the next six or eight months.

MR. SNEAD: I have a question, Alan, on that. I understand that the problem was not anywhere near as serious on a second look as it was originally thought, but it would more or less raise the question.

MR. JACOBS: The Mission reaction was that if we hold our breath, stick our head under the sand long enough, it'll go away.

MR. SNEAD: No, this wasn't the Mission I'm talking about, this was what was reported in the newspapers just before I left.

MR. JACOBS: No, the government got the scientists who reported it in the press to try to make another statement which would modify somewhat the original position. This was not a very successful effort. The position is just as serious as it ever was, or more so, now that more is becoming known about the problem. And we are currently talking with--in Washington, and at State--several of the Bureaus, several of the elements of AID that are involved in this.

And we will try from the AID position to see what we can do to meet his situation. Whether we can do anything--whether anything can be done to change, cure, or modify, or whether more can be found out about what the actual effects of dioxin are, we don't know yet. We're right at the very beginning.

My only point in bringing this up was that this kind of problem--capital projects, that is--are not the only problem makers. You, as engineers, are probably more interested in capital projects. This problem of environment reaches into every element of our activities in the foreign assistance program, and it is, I think, necessary that as engineers you be aware and alert and interested in these other things. Because they do react back.

MR. HALE: I'm listening too.

Let's take these questions as they come. I think you had one here first.

UNIDENTIFIED: I was interested in the fact that we do take some consideration in political aspects. Also as Mr. Gardiner pointed out, a country has and must have a lot to say in the final decision. By the same token, using the illustration Jim Stephenson gave, and I don't know if that's an AID project or not but in the final analysis, is there any record where we back off and we say okay, we won't force you to do it.

But now the public feeling is there, and the government is blaming AID. The American technology did it, you know. It's easy to wash your hands of it, and down the drain goes AID in particular, and Americans overall; and we can continually point to that black cloud six months of the year and say we didn't do it, but nobody listens and the end result is that you can't live there.

Do we have any situations right now where we are in that bind?

MR. STEPHENSON: Let me say that in the project that I mentioned, it came out right. Because it was pointed out, they did go ahead and take the right steps, and we don't have the black cloud. But it would be an interesting thing if they had said, we hear you but we don't want to spend the $2 million because (as was true) we're right alongside a fertilizer plant where nobody is paying any attention to a damned thing, and it's polluting the countryside anyway.

UNIDENTIFIED: But that isn't our plan.

MR. STEPHENSON: But that isn't how to plan. They went ahead and did the right thing, but if they--they could have made a pretty good argument from one point of view, not to have done anything, which would have raised the kind of problem you spoke of. And it's pretty trying to be exposed to sulphur dioxide, strong concentrations, even for two days, or --

MR. HALE: Would you suggest a sign on that building that says, this wasn't built with AID funds.

(laughter)

I've got a question here.

MR. DUKE: Some countries, such as the one I'm in, burn out their fields, as you know, for two months a year. And create a situation just about as bad as the one we were speaking of. And I often wondered if we couldn't work with agriculture to develop a long-term education program, getting them to plow these leaves and foliage under, instead of burning it off.

I was in the capital city there for weeks at a time, and it would be as unpleasant a place to live as you could find.

But it's a Department of Agriculture problem.

MR. HALE: I would suggest that you become a crusader and look into it a little bit. Let's see what might be done--it's worth thinking about.

Jim, I think you were next, then we'll get back to Bill.

MR. WATSON: Yes, I'd like to direct a question to the lawyer. I think it's going to hit America sooner or later, if we dump that pesticide dioxin in another country, then we've caused a fish problem. Can they take the United States to the World Court?

MR. GARDINER: There have been cases. Let me say, I'm speaking from second hand knowledge--I haven't read them myself. But there is a very famous case that I think arose in the 1930's--Trail Smelter. Rick, am I right?

MR. RICKSTEIN: Trail Smelter.

MR. GARDINER: Right, a plant in Canada that was polluting United States air. And did go to the International Court and if I'm not mistaken there was a decision that the United States was entitled to reparations. Is that right, Rick?

MR. RICKSTEIN: It was an arbitration.

MR. GARDINER: It was an arbitration.

And this is a hot, international legal issue now, particularly in Europe--the gray rains over Belgium. It's very clear I think that there is a strong argument under international law that one state is subject to--has to pay another if it's fouling the other's territory with an environmental hazard.

MR. HALE: Jim, you had a question.

MR. FOWLER: A footnote to that. Whatever the law may be, it's interesting if you read the Declaration of the Human Environment that was adopted at the Stockholm Conference. One of the principles, I think it's number 21, I hope that somewhere in the documentation of this course everybody gets a copy, of the report of the Stockholm Conference, including the Declaration.

But principle 21 is in effect a principle that's been adopted by the international community that you don't "beggar your neighbor." whether that's legally important or not, is not the question. But at least the international community in effect said, one country can't do something in its own benefit which harms its neighbor, without at least consulting and advising and taking into consideration that effect.

To get back to what Bill Long was mentioning, once a little bit earlier. I think it's going to be one of the most difficult problems that those of us in the assistance business are going to have to cope with. It's one thing to work with country X on a project or program where whatever the environmental effect, it's purely domestic to that country. But the World Bank has already run into this, and the day will come when we will run into this, where project X in country Y has its adverse environmental impact on country Z.

MR. HALE: We coped with that one for about three weeks on a committee I was on two years ago. I think Bill was on it for a short time, too. On weather modification.

MR. FOWLER: As development assistance agencies, the World Bank or the InterAmerican Bank, or AID, have got a tough problem. Are we the ones to walk over to the guy who lives next door and say, hey fellas, we want to tell you, the country X, next door, is just about to do something that's going to have a hell of a bad effect on you people in Country Z. Is that our business?

MR. STEPHENSON: Yeah, we're putting mine tailings in a stream that flows into--let's say Country X. I say, we--I mean a project that we're involved in. A neighboring installation is already doing it; ours is not helping it. But I could hardly see us, as you say, walk over to the people in this Country X and say hey --

MR. FOWLER: The World Bank has been successful on a couple of projects, they've come to the conclusion the answer to this question is, "yes." They're building a copper smelter or looking at building a copper smelter where all of the environmental impacts in terms of air and water pollution, didn't effect the country in which the plant is being built at all, but it sure raised hell next door. The Bank went next door and said look, this is what's going to happen, and they got together with them and ultimately worked it out.

But they took the responsibility to, in effect, assure that country A didn't foul the nest of country B.

MR. HALE: This is what we got into, if you modify the weather in one country, it does involve the other one, both negatively and positively. We've got time for two or three more questions. Mr. Kim, you had one.

MR. KIM: I'd like to address this comment to Mr. Handly. You mention the income distribution in employment policy of AID. This morning there was some discussion which pertains to this that I'd like your comments on. Mr. Ridker mentioned that in Java there were people harvesting rice with a knife blade, individually, stalk by stalk. And that, for example, if they were furnished sickles, that would create possible surpluses of people who flock to the urban centers and create

disruptions there. Mr. Long talked about pesticides and its use in agriculture, and that the trade-offs favored the use of the pesticides because the increased productivity would assist in helping feed their people.

Well, implicit in Mr. Ridker's statements or comments was that there should be equitable distribution of both employment and wages, and explicit in Mr. Long's statements was that we should provide a lot of capital to help these countries feed themselves. This policy on the income distribution and employment seemed to lean toward what Mr. Ridker's comments indicated. Can you elaborate on how we should pick positions with regard to these conflicts here.

MR. HANDLY: I think we need a seminar on income distribution.

There are of course trade-offs on this, and I think in many ways the Agency position on income distribution and employment is like environment. We need to give consideration in developing and designing projects too -- what are the impacts on these subjects. Can we estimate them. Other than just the direct objectives of projects that we hope to accomplish, what are the side effects of these projects? We're growing increasingly concerned that sometimes the side effects can have major negative effects on broader development objectives. The answer to these concerns is in full consideration, full professional consideration of these factors and effects.

MR. HALE: You had a question.

MR. FROEMMING: Yeah. In the country I'm from, the population lives in a narrow, fertile, marshy strip, 10-12 miles wide, right along the coast, and there's hundreds of truckers that make a living by striping off the slightly higher land inland, and hauling sand down for highway construction purposes. We've got a fairly sizeable highway loan project there, and the result of all this is going to be several dozen acres of wooded land which will be converted to a sandy waste.

But this has been going on for 70 years, and when we pull out it'll go on for another 50 or 70 years. Do we disrupt the while system of furnishing sand for highway jobs? In other words, do this thing properly, striping top soil, putting it back, putting these truckers out of business, and getting one centralized excavation point? Or do we just let it go on as it always has?

You can't really change it because the thing exists over a 500 mile stretch over the coast of this country.

MR. HALE: That gets into economics. How much top soil have you got to strip, if you go down underneath it to the gravel and sand that you need? This is a problem in a lot of places.

MR. STEPHENSON: I like your question because it gets down to the real nitty gritty of what we're talking about in environmental protection. These are the kinds of problems that the person who ultimately signs off a loan or tantamount to signing off, has to make a decision on.

MR. GARDINER: Luke.

MR. HALE: He has to make that decision, along with the country, that's right. Art, go ahead.

MR. GARDINER: I'd like to point out one thing that is in our manual orders: that it's an accepted proposition now -- is certainly one of our obligations of that kind of decision making -- to figure out what the options are.

To have a careful analysis of what the choices are. Finally in a case like that, perhaps it is the type of situation which does have a localized impact, it should be left to the local people to decide. But we ought to be, from a political point of view and a diplomatic point of view, as well as just from discharging our obligation to the world's environment, in a position of telling them what the results are, what the alternatives are and what the trade-offs are. In that type of a circumstance. And I think that's the best position for AID.

MR. STEPHENSON: Did you imply that nothing has been done about this or that nothing could be done about it?

MR. FROEMMING: Well, on this one it's of course a comp job with the materials being supplied by the host government itself, by purchasing from these small dealers. They just get it everywhere, and the destruction is terrific. But considering our project, the impact measured against the total problem would be very slim.

MR. STEPHENSON: Yeah. Then it gets into the -- I certainly agree with what you said our obligation is, but I think a legitimate question one might raise if the answer is 99 and 44/100 percent a foregone conclusion, does it make a great deal of sense to spend money building up the record that this is something that you -- that really shouldn't be done, but there's not much can be done about it.

MR. FROEMMING: We can change maybe half of one percent of what's going to go on in the next three years. And then they'd revert back. So a serious consideration on that --

UNIDENTIFIED: The option I think is very important. If there are no options, well--too bad.

UNIDENTIFIED: We could set a good example --

MR. GARDINER: There's a going in question. Logically there's a first question: Is the activity one that's going to have a significant environmental effect? That's the first question to ask yourself. If in this type of case you reach a conclusion that the AID activity is really not going to change the course of things at all, that you're talking about one half of one percent of the destruction that's occurring in any event, it might be your reasonable judgment to conclude that --

MR. STEPHENSON: It needs to be recorded, doesn't it Jim?

MR. GARDINER: That has to be recorded.

MR. HALE: That's right.

MR. SNEAD: What is the serious environment effect?

MR. GARDINER: That's a facts and circumstances test. It's -- you know, you can't --

UNIDENTIFIED: What do you use as guidelines for measuring this?

MR. GARDINER: That it's almost impossible for a person to sit down and write out for any particular circumstance. The manual order, again I commend it to your attention, does talk illustratively about that. What it says in Jim Fowler's usual prose is this: Since in the broadest sense of the term, all developmental activities have or should have environmental impact in the sense that they improve the quality of life, increase production, create jobs, increase standards of living, et cetera, it's clear that more selective criteria are required.

Common sense and a rule of reason are probably the best techniques to apply. When a project will clearly have potential deleterious environmental side effects, air, water or thermal pollution, et cetera, et cetera, it would be obvious that environmental impact should be analyzed,alternative methodologies studied and appropriate safeguards proposed.

But the test finally is a common sense judgment, you can't -- and over the course of time it may be we could find a precedent for yourself in a particular circumstance, if the agency has faced a comparable issue before. But it -- finally the manual order can't possibly spell it out, I don't think in much more detail than it does.

MR. STEPHENSON: Well, I rather like the last sentence in paragraph B.2.

UNIDENTIFIED: At least.

MR. GARDINER: Yeah. At least the questions of whether such projects have a potential for significant adverse environmental effects, should be addressed, examined, and answered, for such type of activity. And in fact the manual order in section B 1 does require that, for a person who's -- the organizational unit responsible for that project has to make that determination, and it should be in writing and it should be in the project file.

MR. HALE: Jim, you had a question.

UNIDENTIFIED: With respect to the point I'm trying to make, when you read these statements it looks like -- generally there are a lot of statements that pretty much meet the manual order, yet don't sound as if or look as if there's been a lot of attention or common sense given to it. It's something that had to be done, it's late in the game; if you forget that, write something in.

MR. HALE: Jim, you had a question.

MR. FOWLER: I'd like to make a comment that ties this little discussion back to something that was said this morning. In reaching that "common sense" determination, I think it's very important that agency representatives go out and seek the kind of advice that they may need in order to reach that common sense decision. Just to cite something Lee Howard was talking about earlier; if there is an engineer who's planning a highway project, and he's got it all designed with respect to engineering standards, but he hasn't called in a malariologist, or a public health doctor, and said, "Am I creating a health problem here by the way I'm proposing to run this water off?" If he hasn't asked that question to the right people, he hasn't done his job.

He may not himself know the answer as to whether his solution is sensible or not, but he ought to go and find somebody who does, or who will give him some advice, so that when he reaches that common sense decision he does it in an intelligent and advised way. He knows what he's doing.

Now take the case of the highway engineer who is faced with the situation where somebody, under force - account, is hauling sand off the beach; I would go and find myself somebody who knows something about the coastal flow currents and the beach problem in this country, which we all know is a terrific one, a hell of a lot of money has been put in there in building sea walls, and I would ask him, "If we keep on hauling sand off this beach, what's going to happen?"

If he says, "Not much!" then I wouldn't worry about it. But if he says you are starting a little problem here which is today no bigger than a man's hand, but ten years from now it's going to cause a serious problem, then I think we ought to stop and take a look at it. I don't think that unless you get that kind of expertise brought in at a stage early on, that the best common sense judgments can ever be reached.

MR. FROEMMING: Well, actually we're hauling the sand to the beach from about 15 miles inland. But as an absolute thing, if some photographer came there and took a picture of the virgin land before, and then afterwards showed that land like a West Virginia open pit mine, in order to create our role -- this is the destruction -- it certainly would look bad in the picture even though in total it's only --

MR. STEPHENSON: It's only one percent of the picture.

MR. FROEMMING: It's only a part of what they've been doing themselves all this time. It's bad publicity.

MR. HALE: It does come down in the end to good judgment, and cooperation and coordination with other people that know the broad picture. And one thing that I've done and have not been afraid to do -- and I hope that all of you won't be afraid that you don't know the answer -- was to get a line of communication started that will be better than it has been in the past, so you can get some assistance on these questions.

Bill Long, you had a question.

MR. LONG: I was just going to comment on the remark about the interpretation of what is "significant" in terms of project impact. That language is taken, I believe, directly from Public Law 91-190, The National Environmental Policy Act. The question of what constitutes a significant impact has been the focus of discussions by Congressional committees, in the courts and by the Council on Environment Quality. I think that no one has yet been able to define it with any acceptable precision, but I think the rule of thumb is that if there is any doubt, the environmental consequences should be analyzed.

MR. HALE: Nobody's come up with a better statement, have they. You had a question.

MR. NIESE: Well, I wanted to point out that if we look at coal mines in West Virginia instead of this sand mining problem, what you need to do is show some of your counterparts pictures of the damage we have created by our own ineptness, and maybe they might start doing something about their problem before we feel we have to get into the act and make something big out of it.

I found that a lot of times if we try to make ourselves out to be stupid in the way we miss half of our real estate, it often times prevents them from doing some of the same things.

MR. HALE: Well there's a suggestion to put into consideration. Another question over here, who had -- back on this side.

MR. KINGERY: I was a little disturbed by Mr. Fowler's remark about the engineer building the road without calling in the malaria eradication specialists, and if he didn't do so he wouldn't be doing his job right. The Agency at this particular point in time seems to be heading in two directions at once. If the Thomas paper is any indication of where we're going, we're all going to wind up being technical generalists and we're not going to have the malaria guys around. And in fact I've been in two different countries where there is -- where the malaria program has been one of the first things to go.

And while at the same time we're building hundreds of kilometers of roads in north and northeast Thailand, we certainly haven't ground in the malaria aspect to all of our road programs in Thailand that I know of. And there are other projects in the country where I am right now where we're being cut right down to the bone personnel-wise and we don't have these people at our disposal.

If the requirements for environmental protection is really going to be done in a serious fashion, we've got to get this expertise somehow. And so I'd just like to know where we're going to get it.

MR. HALE: Well, first, I'll take a quick stab at it and then somebody else can chip in. Don't limit yourselves to the expertise available in your country. If the expertise can't be made available through the backstop offices that are available to you in Washington, -- either the health or engineering or the legal or any other -- this is documentation that you ought to have - - -

MR. STEPHENSON: It's usually this in the first instance.

MR. HALE: Well, we can find it somewhere. We have PASA's with many agencies, EPA and others, and we can get support and expertise for you if you need it.

MR. KINGERY: I'm not limiting myself to what's in country, I know we're going to get cut here as well. You know, it's agency-wide, not only overseas but in Washington. Unless I've been mislead.

MR. HALE: Who knows the status of that Thomas paper better than I do. Do you know, Art.

MR. HANDLY: Well, I know it hasn't yet been considered by the Administrator's advisory committee. It is to come up next week.

MR. HALE: Yeah, I thought it was.

MR. GARDINER: I think the answer is that there are other resources in the federal government and people in AID.

MR. HALE: Yes, indeed there are.

MR. GARDINER: And that the most important thing in the circumstances which you really are not able adequately to cope with some of these environmental considerations, is that the problem gets to the people here in Washington who are expert in the problems, so that you will get the support you need. And because the federal government's here, and its not totally AID -- we do have PASAs with EPA and a number of other agencies too. And if we don't have adequate facilities available, we will get more.

MR. HALE: I would like to see some of those requests coming in here, where we need to know your needs.

MR. GARDINER: It's impossible for the agency in Washington to deal with that problem unless we know it exists.

MR. KINGERY: Well, that's why in my particular case, this two weeks is going to be very profitable, because I'm, you know --

MR. JACOBS: Well, I think you will find that the regional bureau, whichever area you're in -- the first step is your regional bureau backstop. And you will find a greater awareness of this problem in the regional bureaus, and a willingness to find, among all the resources we have here -- in-house, contractual, professional, -- the kind of assistance that needs to be given.

One thing about this is that it's so varied that it would never be possible to expect to have it in-house. It comes up at odd moments, it's -- the requirement is a limited requirement so that the field is going to have to ask the regional bureau, the regional bureau is going to have to go to the supporting elements of AID and other places to get this expertise to you, because there is certainly a greater awareness of this. And you can expect a lot better reaction in the future.

MR. HALE: When these questions come up, get hold of Dick Dangler -- he is your coordinator for your Bureau. And he'll get the answers for you, if they're available anywhere in Washington. He can handle that.

MR. GARDINER: Luke, can I ask a question?

MR. HALE: Yes, indeed.

MR. GARDINER: Does everybody have a copy of our manual orders?

MR. HALE: They are in the folders that were given to them. I think all of them got them, Art. Anyone that didn't, or anyone that finds you need it when you get back to your Missions. we can provide additional copies.

Who else had some questions here?

MR. WATSON: What is the Thomas paper? The point that's been brought up, all of us are not aware of.

MR. HALE: Rather than review it here, let's get you a copy of it, Jim. I'm sure we have several copies in the office.

Did you say this is going to be discussed? It's going to be discussed, I'm sure, in just a few days.

MR. KINGERY: It was supposed to take place last week, but they put it off, it was postponed.

MR. HALE: It's quite a controversial paper, and we've commented on it, and every other office in the agency has commented on it.

Any other questions from you people for this panel. How about questions from the panel to the engineers who are going for two weeks at Chapel Hill to get initiated into a rather technical discussion on environment.

MR. GARDINER: Luke, I do have one more thing that I intended to say in my opening remarks, and that is you do have a copy of the manual order, that reflects thinking as of last year. There's one very helpful thing you could do for us here: that would be to make sure that we are aware of any places where the manual order may be imprecise, or doesn't really fit the kind of operating problems that you're facing. The manual order is unavoidably general, and does not cover all situations in detail.

If you do find in particular instances that you're faced with a problem, and it looks like the manual order just obviously doesn't speak to it, although it was designed to, if we get feedback on those so that we are aware of places where the order doesn't fit with the realities of how the agencies operate, it's obviously extremely helpful to us in terms of attempting to refine it, improve it, and develop a set of procedures that do make sense in terms of the operations of the agency.

So that's certainly a standing invitation to everybody to --

MR. HALE: Yes, we had covered that. We covered it by request early on when they were sent to the field for comments. But certainly any aditional comments now -- or after this next two weeks when you may have many more questions than you had before, obviously -- will be welcome. So don't hesitate to get them in.

MR. SNEAD: One of the reasons I asked the specific question I did -- I can foresee problems with CPF type contractors. In other words, we give them a broad general statement on a contract, and they can take this thing very literally. And we've got to have some bounds somewhere along the way in order -- it's a judgment factor, I agree. But who's going to make the judgment? The contracting Officer? The contractor? Who could make the judgment?

MR. HALE: Well, maybe these bounds or control points should be a part of that contract then; they should be, rather than there being any question later.

MR. SNEAD: Well, I know, but we can only tell a contractor in the scope of work that he has to consider environmental impact on the -- of the project, in the contract. When he considers this, it's very obvious to me that I could write a long, long book on this thing, on one project alone.

MR. STEPHENSON: There's quite a -- have you seen the publication that is out, that gives a list of suggested --

MR. SNEAD: Yes.

MR. HALE: We made one up, and the World Bank's got a very good one out that is part of your handout.

MR. STEPHENSON: Of course that has to be used with judgment too but --

But you do have something other than either broad instructions or one that covers everything -- nuts, bolts and screws. And it's really the rule of reason, I think, that just has to apply, and certainly on engineering projects there's no one better than an engineer to make the first cut at what it should be.

MR. HALE: That's right. I wouldn't be afraid of it.

Any other questions? If not, I thank you, panel members, very sincerely for your time, efforts, and contributions to this seminar, and to you other gentlemen, thank you very much.