

Remarks at International Round-table Discussion

on Problems of Terrestrial Environment

The Defence of Green Earth Foundation

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First I would like to associate myself with those before me who have welcomed the establishment of this Foundation. It is a very timely event, ten years after Stockholm. It is also timely when seen from another vantage point; namely, that we are now in a situation in which in the industrial North, as a result of the recession, environmental considerations have moved to the back burner, while in the South we cannot as easily run away from environmental awareness, because of the close linkage between our environmental problems and our endemic poverty. The name of this Foundation is a very appropriate one, because the title seems to denote a spirit of offensive defence, which, I believe, is highly necessary. Because of the time limitations, let me now simply make very briefly three points.

After several years of environmental research at the United Nations University, we have found that in spite of the current level of understanding of local ecosystems resulting from research and interventions

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by many organizations and in spite of the successful efforts to improve the environment in many countries, this knowledge is not adequate to the task of comprehending the ecology of the earth as a whole. We need to be able to identify the ecological zone that is critical to maintaining the atmospheric oxygen we breathe. It is important to understand how the narrow range of temperatures crucial to life on earth has been maintained. As the destruction of tropical forests proceeds, it becomes imperative to ascertain on a regional basis the minimum forest cover necessary to maintain the appropriate atmospheric water balance before it is too late. But this knowledge will not be obtained merely by continuing further research on local ecosystems, important though that is. Nor will this research help us in understanding the mechanisms and interactions involved in the recycling of elements or of the effects of increasing atmospheric concentrations of gases such as CO<sub>2</sub>.

The higher level of understanding and greater degree of predictability required call for a major research effort to systematically obtain the data needed on a global scale. But in order to comprehend the interactions at the planetary level, a planetary ecological model that goes beyond the sum of local and regional approaches is also necessary. This dynamic computerized model should include not only climatic and ecological components, but also make provision for a rapidly growing human population actively involved in exploiting the earth's natural resources. The model will have to comprise a series of detailed regional models established to determine how the undisturbed natural ecosystems, managed forests, annually-cropped farmland, and urban and industrial areas with their products and effluents

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impact on each other and on the total ecosystem. This will help us to determine the outer limits of the particular mix of these natural and managed ecosystems within a region. Furthermore, the global model will enable us to shed light on basic questions of a longer-term character. One of these is whether and how the homeostatic capacity of the planet as a whole is able to maintain itself against an even larger scale of human interventions resulting from population doubling and growing industrialization of the South. While obviously such a model, if developed successfully, will make a great deal of information available, it will still be a crucial task to identify those points of the planetary ecosystem critical to the self-regulation of the environment. It can therefore serve as a powerful tool in planning for a productive yet sustainable global environment, in planning for the defence of the green earth.

In our view, this approach is central to any attempt to understand and successfully manage the environment and requires a scientific effort in which Japan could play a leading role. Its scientific capability, powerful computing facilities, extensive experience in handling such problems and current high degree of interest in the environment make this an important area in which Japan could make a valuable international contribution.

Among the major urgent projects required to defend the green earth, reforestation on a global scale has a high priority. While ecological research is needed, social considerations make the implementation of any reforestation project a very complex undertaking. The relationship between

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maintaining and enlarging the tropical forest cover and the food, energy and water requirements of the poor is a central one, but is very little understood. While the model could provide information about the absolute limits to renewable resource use for various sizes and growth rates of the population, whether the population will actually be able to sustain itself while utilizing and still maintaining these resources in a sustainable way is a crucial question that has to be addressed. The same considerations apply to the problem of increasing numbers of lowland populations migrating to marginal uplands, which may well become a major global problem in the next 20 years.

Let me make one additional point here about the scale of the research effort that needs to be undertaken. It is my firm belief that the research effort that is going to be needed to be successful in this global reforestation programme should be of an order of magnitude that is similar to the scale of preparations that made the Green Revolution possible. This was done through a global effort of interconnected international research institutions, which worked together through a loose consultative network, the CGAR. In this particular case, such an effort should be mounted, and should include not only the usual research on agro-forestry and on the various types of tropical forests including the mangroves, but should also include the new avenues that are opening up through biotechnology and genetic engineering. This might make possible a shortening of the timeframe within which it will be possible to expect the research results for implementation. Of course such research institutions will also have to take into their purview the social problems I mentioned just now,

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that is, the relationship between the need of the poor for food, energy and water and the relationship with the forest.

In the past, attempts at managing these problems have relied on the establishment of policies of a sectoral nature. Even the United Nations has encouraged this by convening conferences to focus on separate topics, for example, on environment, water, desertification and new and renewable sources of energy. However, the management of environmental problems will have to be more inter-sectoral in concept and more concerned with the social implications and viability of the policies to be implemented. It will be necessary to go beyond the sectoral focus of the plan-of-action programmes that have resulted from the UN conferences. The interfaces between the sectors will determine the areas where policies are reinforced and where they cancel each other out. An understanding of the trade-offs that can and must be made between individual sectoral objectives will be crucial to the formulation and implementation of successful policies. Similarly, at the governmental level, it will be necessary to thoroughly analyze the strategic points or nodes which will determine the overall effectiveness of policies that flow from a number of sectoral decisions into a more integrated approach.

The United Nations University has undertaken some work in this direction, but plans to move more boldly in approaching the environment from a planetary point of view and in encouraging an integrated approach to its management. This is all the more reason to wish your new Foundation well in the development of an agenda that will hopefully lead to opportunities for fruitful collaboration, and to thank you for the opportunity to address this assembly.