

## THE GEOSCIENTIST AND THE DEVELOPMENT PROCESS

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Mr. Chairman, Ladies and Gentlemen.

I am very pleased to have the opportunity to address this audience, in which there are so many distinguished Japanese scholars as well as leading geoscientists from around the world. I would first like to express my deep appreciation to President Wadachi and Chairman Kyuchi and their colleagues at the Tokyo Geographical Society for all their help and support in organizing the Workshop on Geosciences in Development, including the public lecture here this afternoon. We look forward with keen interest to the lecture by Dr. Kellogg, an eminent scholar in the field of meteorology.

The Tokyo Geographical Society is one of the oldest and most respected scientific societies in Japan, having celebrated its centenary in 1979. The United Nations University is one of the newest additions to scientific endeavour, in Japan and around the world, and we are greatly honoured at being able to join with you in helping to arrange these meetings. The rich discussions of the past few days have been highly rewarding to us at the University for the insights and perceptions they have offered us about very important environmental and resource issues. They have also provided most heartening evidence of an increasing mutual collaboration between the UN University and the

Japanese scientific community.

The discussions have led you over a range of questions that very deeply involve the geoscientist in the development process -- questions of land development, survey and cartographic work, mineral exploration, climatic and agricultural resources, water, forestry, mining, industrialization, energy studies, and many other considerations. These are very important concerns in the development of natural resources policy, and they point up the central role geoscientists could play in encouraging a more rational and more provident use of the planet's finite resources.

Improving the management of our global resources stands out as one of four fundamental and intimately interlocked needs -- the others being food, energy and jobs -- that the world must meet if it hopes to lift hundreds of millions of people out of their present poverty, squalor and despair and move humanity into the 21st century with some measure of justice and dignity.

World food production must be at least doubled by the year 2000 to meet the global population's food requirements adequately. The energy needed for the production of most crops has sharply increased, and improved agricultural productivity will call for even greater energy inputs. There is also pressure to convert part of the existing food crops into energy crops, thus reducing the total food produced and creating economic conditions where the food market can be influenced by the energy market.

This increased productivity will have to be achieved in different ways -- and, above all, in a manner that is also ecologically sustainable.

In many parts of the Third World, the delicate ecological balance between man and nature has already been seriously upset by the combination of poverty and over-population. In such areas, there is little prospect of increasing the food and fuel supply unless erosion and large-scale deterioration of the natural environment are arrested.

We will simply have to find better ways to relate the needs of society to the satisfactory maintenance of the environment. Projects such as reforestation, the creation of sound coastal and marine management systems, terracing of hillsides, improvement of irrigation canals, and rehabilitation of salinized and alkalinized fields could both increase the carrying capacity of the environment and generate additional income for the poor.

Generating employment and income for the poor is essential to the solution of both hunger and environmental ravage -- for the roots of both these problems can be traced to the intractable character of poverty in the low-income and densely-populated countries. It is not enough to grow more food, even in an ecologically-sustainable manner, if the consumer has no ability to purchase it. The poor man cannot afford the luxury of ecological considerations when he must cut down another tree to keep his family warm or move farther up slopes already gullied by erosion in search of land to keep his family fed.

Thus any discussion of improved resource management inevitably forces us to look with new eyes at the problems of the poor and ways to safeguard their interests. Furthermore, it must be recognized that whatever solutions we develop -- in attempting to cope with resource use, energy demand, food, unemployment or the host of other problems

that afflict the poor -- the ultimate answers are not going to come from the experts and the technocrats alone. They will arise from the ability to relate their recommendations to the real interests, hopes and aspirations of the marginalized and the powerless.

Resource management strategies will, in the long run, be fashioned out of countless millions of decisions by individuals around the globe -- decisions made on the basis of their own needs and interests, within the perspectives of their own cultural values, societal customs and moral guidelines. It is essential that we keep this "human component" very much in view in the development of resource scenarios and models.

At the United Nations University, we have recently broadened our horizons in an attempt to respond more effectively and more flexibly to sets of interlocking global crises that have grown more acute since the University began operations in the mid-1970s, as well as to enhance our capacity to deal with emerging problems that loom ahead as the world prepares to enter the 21st century.

In this endeavour, we have naturally assigned the management of global resources a central priority. For beyond the specific questions of food, energy and employment needs with which it is so closely linked, it is also related to equally broad issues of resource security, access to resources, and the conflicts and realignments in the global constellation of power that these concerns might trigger. In all of this new work, the perceptions and the experience of the international community of geoscientists will be badly needed -- and so we welcome these meetings as the beginning of fuller co-operation and participation. Thank you very much.