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WCED/85/15

Item 5.2 of the Provisional Agenda

SCIENCE, TECHNOLOGY, ENVIRONMENT AND DEVELOPMENT

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

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SCIENCE AND TECHNOLOGY ENVIRONMENT AND DEVELOPMENT

Note by the Secretary-General

The relationships between science, technology and environment and development are extremely important and particularly complex. Technology is at the very center of the process of development. Its characteristics are basic determinants of development, of the effects that development will have on the environment (both natural and social) and, vice versa, the effects that environment will have on the development process. At the same time, different environments will require different technologies to support a successful and sustainable development process.

Given the importance of the subject and the wide range of opinions on the issues at stake, three experts have been asked to prepare papers on the subject. One, Dr. Rémi Barré, was asked to write a paper dealing basically with the points of view of the western industrialized countries. Another, Dr. Paolo Bifani, was asked to do the same from the point of view of the developing countries in the South. Dr. Edward Ayensu was asked to examine the issues from the perspective of a scientist with experience in institutional development in the Third World. Dr. Umberto Colombo , Chairman of the Industry Advisory Panel, unable to participate in the Commission's discussion on Science and Technology has agreed to the distribution of a paper in which he discusses several of the issues.

The papers raise several questions of particular importance. It would be desirable, perhaps in Oslo, to concentrate on certain general questions that stem from the relationship between environment, technology and development. The Commission will have other opportunities to discuss more specific questions that arise in the context of each of the items on its alternative agenda. Each of the Advisory Panels (e.g. Food Security, Energy, Industry, etc.,) will be examining science and technology and offering specific policy recommendations.

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Among the important questions found in the papers is that of whether developing countries (and perhaps even developed ones) should seek access to the most modern and sophisticated technologies or if, on the contrary, they should accept older technologies, even those that are being discarded by highly industrialized countries, as a basis for their development. Do they have a choice in the matter? Some believe that the use of a wide range of sophisticated and older technologies, combined according to the diverse national or local settings, is the answer. But these different technologies have also quite different effects on the environment.

There is the question whether science and technology are neutral and therefore stand on their own untouched by socio-economic and political events or whether they are a product of the latter. This leads into the question of possibilities of social control of technology and therefore of acting to plan and manage the development of technology by public and private institutions, national and perhaps even international. Is it possible to have explicit S&T strategies nationally or even internationally in association with international cooperation? Perhaps another way to pose the question is: is it possible to avoid having such strategies embodied, at least implicitly, in national and international approaches to environment and development?

Although more than 90% of new technology and innovation is generated in the private sector, particularly the transnational corporations, there is an important element of participation by governments in the management of the process. This is so in the case of industrialized countries' governments. There is, as one of the papers suggests, a possible role for governmental institutions in developing countries - some of them already in place - to implement a national technological strategy. It seems possible to reinforce these institutions and provide them with real functions.

Access to science and technology is seriously limited for developing countries, more so for the least developed. The reasons for this are several. Their lack of infrastructure for science and technology and the institutions on which this is based, their weak financial capacity, their poor bargaining power and the international market structure for technology all serve to limit their access. The absence of strong science and technology capabilities is extremely important. Although it would be difficult for developing countries to catch up soon with the industrialized countries in the generation of technology, they need good science and technology capabilities at home to be able to select appropriately, adapt, upgrade and eventually innovate in some areas.

This points directly to the need for immediate changes in education, particularly in developing countries. Education is the basis for acquiring science and technology capabilities and infrastructure.

A significant part of new technology and innovation generated stems from military objectives. Because of the priority attached to them, they secure the necessary funding for research and development. There is ample room in this area for constructive change.

Environmental measures should be designed to induce innovative science and technology adapted to sustainable development. Experience shows this can be done effectively and successfully.

There seems to be no doubt that a new era of science and technology is dawning. The important changes have appeared and will continue to appear in the industrialized countries, but the impact of those changes on the social and natural environment will take place both in industrialized and developing countries. There will be important differences, however, in the nature of the impact, due to differences in development level and socio-cultural ethos. Developed and developing countries both have to prepare for these impacts.

Some of the new technological advances could well emerge with relative ease in developing countries. This should be considered and also the possibility of carrying out regional activities which could be negotiated with less difficulty if they refer to science and technology issues related to the environment. In any event, the future seems difficult but there also seem to be several useful and possible actions that could be taken: in developed and developing countries and at the international level.

NOTE TO WCED/85/15

For 'Environment-Technology/Development by Rémi Barre, see WCED Collection, Volume 1, Paper no. 1

For 'Science and Technology/Environment and Development by Paolo Bifani, see WCED Collection, Volume 1, Paper no. 2

For 'Science, Technology, Environment and Sustainable Development by Prof. Edward Ayensu, see WCED Collection, Volume 1, Paper no. 4

For Technology and Industrial Development by Prof. Umberto Colombo, see WCED Collection, Volume 1, Paper no. 5