

# Third World's Need for Technology

*Developing countries want to strengthen technological capabilities; LES members can make the difference*

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The subject of Technology Transfer into Developing Countries has been one of the most popular topics of the 70s, particularly its second half. The subject reached its highpoint in August 1979 at the United Nations Conference on Science and Technology for Development in Vienna. As you no doubt know, the conference adopted the Vienna Program of Action on Science and Technology for Development. It provided the general guidelines and framework of specific action needed at the national, sub-regional, regional, interregional and international levels. The program provided three broad areas on which the Vienna Program was focused:

1. Strengthening the scientific and technological capacities in developing countries.
2. Restructuring the existing pattern of international scientific and international relations.
3. Strengthening the role of the United Nations in the field of science and technology and the provision of increased financial resources.

An Intergovernmental Committee on Science and Technology was set up to follow up the implementation of the Vienna Program. An Interim Fund on Science and Technology was established for a bridge-over period of two years until an official financing system could be established, based upon government contributions, to make possible the implementation of the Vienna Program. And an Advisory Group on Science and Technology for Development was created, composed of 28 prominent members in the field of science and technology drawn from various developed and developing countries to give advice and guidance in ensuring the implementation of the Vienna Program.

In line with the Vienna Program, UNIDO also made a significant reorientation of its work in the field of technology development and transfer. There are other reports and papers available which describe details of UNIDO's work, so I shall focus on three matters which I feel might be of interest here:

1. Strengthening the technological capabilities of the developing countries.
2. The implications of major technological

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developments on technology policies of the developing countries.

3. UNIDO-LES cooperation.

## STRENGTHENING THE TECHNOLOGICAL CAPABILITIES OF THE DEVELOPING COUNTRIES

The Vienna Program essentially focuses on the ways and means of strengthening the scientific and technology capacities of the developing countries as its main backbone theme. When reviewing the international cooperation, or what is usually referred to as technical assistance for the developing countries, bilateral or multilateral, one gets a feeling that in spite of the millions of dollars of financial resources, and hundreds and thousands of man-years of expert services from the developed or industrialized countries to the developing countries, there has been very little practical results that can be recorded, at least from an objective cost/benefit viewpoint.

Of course, there are some exceptions. Certain developing countries have succeeded in "taking off". Brazil, Mexico, Korea, Singapore, India, Egypt, Argentina, etc., are a few of these "success" cases. However, these are less than 10% of the 110-odd developing countries that are still suffering a below-status of development.

The reason perhaps could be explained from the standpoint that there was a definite lack of technological capabilities and capacities in most of these countries, which did not permit them to effectively absorb the inputs, financial and intellectual, that were being given by the developed countries. By technological capabilities, I refer to the human manpower and resources; and technological capacities to the institutional infrastructure and networking. Unless these elements are strengthened, the developing countries will continue to face the problem of having a minimum yield of technical assistance offered to them.

To cope with this problem, UNIDO is carrying out, apart from the various technological cooperation projects and programs amounting to US\$80 million in 1980, and slightly above in 1981, a program of sensitization to convince the policymakers in the developing countries to pull together all available resources toward a strategical orientation that would serve to promote the overall economic, industrial, and technological development plans of the country.

For that purpose, we try to sensitize the policymakers to the need for drawing up technology policy and plans on basis of which programs and projects should be formulated. We urge taking into account the various inputs required not only from the in-

dustrial field but encompassing aspects covered by the Ministries of Finance, Education, Agriculture, Construction, Energy, Rural Development, etc. Unless these elements focus on the same strategical orientation the fundamental basis of development cannot be ensured.

Case studies of the more developed of developing countries as mentioned before, indicate that they all did have, in one way or another, a "total" approach to coordinate these elements effectively. Another point in this respect is that we have seen many cases in which an expert from a developed country enters a developing country to execute a technical assistance project, and although there is supposed to be on-the-job training of the local counterpart, it is not done in an effective manner. As soon as the project terminates and the expert departs from the country, the activity falls on its nose. It is therefore of utmost importance that the developing countries are taught "how to fish", instead of being served the "fish." In important decision making, it is necessary that the persons responsible in the developing country make their own decisions. Otherwise they will permanently be in the status of being "dependent to the developed countries".

I will not go into detail about how UNIDO approaches this problem, but information is available.

#### IMPLICATIONS OF MAJOR TECHNOLOGICAL DEVELOPMENTS ON TECHNOLOGY POLICIES OF THE DEVELOPING COUNTRIES

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*There is a number of rapidly developing fields in science and technology which are going to have a significant impact on the longer-term development problems which will face humanity in the years ahead. These include the broad spectrum of activities related to satellite technology, computer communications, microprocessing and electronics and information science in general. Other areas which are attracting growing attention are activities in the field of nonconventional generation of energy, solar energy, and the use of alcohol as fuel, in the field of biology, including biotechnologies, genetic engineering, enzyme technology, and in the marine sciences, including ocean ecosystems, etc. The research and development in these areas may provide major breakthroughs which could have great significance for humanity in both developed and developing countries."*

That paragraph is from the Vienna Program. It refers to emerging technological breakthroughs. UNIDO has taken up this matter and has selected a few areas for in-depth approach. UNIDO has organized meetings and carried out studies on such subjects as:

Genetic engineering and biotechnology.

Microelectronics.

Lighter-than-air technologies.

Petrochemicals.

Machine tools.

Energy technologies.

Exploration of seabed mining; etc.

It is interesting to note that in all of those fields, there are already activities carried out almost entirely in the developed countries, but with a considerable

percentage of "brains" from the developing countries. This means that the research and development and application of such technology breakthroughs are, first, oriented toward problems of interest for the developed countries, and second, dominated by the incentives and market forces that orient the activities away from the problems and preoccupations of the developing countries. A group of experts has therefore urged UNIDO, in cooperation with other suitable international and national organizations and institutions, to look into the problem of sensitization of the subject and promotion and advisory services, as well as creation of training facilities that are oriented toward the benefit of the developing countries.

When we speak about sensitization and orientation of the work for the benefit of the developing countries, we do not mean that these advanced technologies should be applied in the developing countries immediately. We are referring more to giving out warning signals to the developing country policymakers of the new developments which could mean the emergence of a second industrial revolution, or according to, for instance, Albin Toefler and Serban Schreiber and others, a third wave of technology development, that would basically effect the world's industrial and technological order in the 1980s and the 1990s.

Some of our critics tell us that when the majority of the developing countries still have to learn the alphabet, it would be useless to try to teach them how to read Shakespeare in its original version. We counter by explaining that we fully recognize the insensibility of doing so, but this is a subject which each of the developing countries, and for that matter even the developed countries, would have to develop its own strategy and policy in order to best cope with the new situation which might be facing the world in the not too distant future.

#### COOPERATIVE ARRANGEMENTS BETWEEN UNIDO AND LES

The two organizations have been cooperating since the early 70s, when some UNIDO staff, who were also members of LES, were making contributions at various LES meetings. In the last four or five years the intensity of such contacts have been increasing significantly. For example, in 1979, a meeting was organized jointly by LES International and UNIDO in Lisbon, Portugal, in the field of technology transfer. The Heads of Technology Registries of developing countries, benefited from two papers prepared by LES and introduced by LES members followed by intensive discussions and exchanges of views. These cooperative activities are opportunities for UNIDO and LES to increasingly recognize the importance of international cooperation, especially the significance of technology transfer to developing countries.

A series of discussions has been carried out with leading members of LES International concerning a cooperative program between UNIDO and LES International which would enhance in a concrete manner the transfer of technology from the developed to the developing world. It was felt that both organizations

have the technical knowledge and capabilities at the level of the developing countries to achieve programs in Third-World industrialization to the benefit of improving the socio- and economic structure of those countries.

Areas have been identified for such cooperative programs. These include:

- Assistance of LES members to UNIDO programs on ad hoc basis for short-term assignments.
- Joint organization of conferences, meetings, workshops and seminars in areas of common interest.
- Arrangement of training programs for decision makers in government and industry of developing countries as well as for potential licensing executives in these countries.
- Identification of new sources of technology from industrialized countries, in particular from small and medium enterprises is considered to be of great importance by UNIDO for developing countries; LES members could contribute greatly.
- It is felt important to publish articles on policy and issues which relate to or affect the flow of

technology to developing countries; efforts should be made to promote cooperation between the two organizations in this area.

Of course, the list is not exhaustive, but it is also fully recognized that it would be better to have a real Semmel baked rather than paint a beautiful Sachertorte on paper. For this reason it was agreed that continuous consultations should be carried out between LES and UNIDO on any matters that may emerge that would be of interest to both, and to seek ways and means of cooperating in order to make  $1 + 1 = 3$ .

It is my sincere hope that, being a U.N. organization established in Vienna we shall be able to develop some practical cooperation between LES Austria and UNIDO. We would welcome any proposal that you may have about which we could continue our dialogues. It is our firm belief that in promoting the technology transfer into developing countries, there is a tremendous scope of possibilities where LES Austria and UNIDO could collaborate, in order that we may contribute to the overall economic and social developments of the countries in the Third World.