

nature

12 October 1978

Linking science to technology: harder than it seems for Third World

THERE is a moral, a lesson and a set of danger signals in the three articles on science policy in Latin America in this week's *Nature* (pages 472-475). The moral is that linking a country's scientific activities to its technological needs can, in practice, be very much harder than the familiar political rhetoric would often have us believe. The lesson comes from the Andean Pact countries, who have been able to demonstrate how cooperation in research can help overcome some of the problems resulting from an over-dependence on scientific and technical skills of industrialised nations.

The danger signals relate to the increasingly important role of foreign investment—rapidly replacing the multinational company as the bogeyman of development—in determining scientific and technological research policies, not only in content but also in form.

Each of these observations must be seen in relation to a basic premise: that, in the words of a major study of the instruments of Latin American science and technology policy financed by Canada's International Development Research Centre, "the development of indigenous science and technology capabilities [is] an essential condition for achieving a certain degree of autonomy in decision-making on industrial development."

The experiences of both Venezuela and Peru in putting flesh on the bare bones of such statements have implications for other developing countries. Venezuela, for example, has attempted to develop a centralised strategy for its research policy through the creation of a National Council for Science and Technology (CONICIT), a model adopted by several other countries in the region. But the explicit goals of this strategy have been undermined by the consequences of an economic policy which, in pursuing rapid industrialisation, has encouraged joint ventures between foreign multinational companies and local capital. The result has frequently been to stimulate, rather than restrain, the flow of foreign technology into the country, providing companies with little incentive to support an indigenous research and development capacity.

Peru's problems have been slightly different. Since taking power in 1968, the country's military rulers have attempted to pursue a strongly independent economic policy; this has included not only the nationalisation of basic industries, but also the rapid increase in research budgets (up by a factor of 10 since the late 1960s) and support for both public and private research institutes. Subsequent moves to centralise science planning, however, seem destined to be moulded, at least in part, by the economic measures being demanded by the International Monetary Fund; these have been made the condition for bailing Peru out of the plight caused among other things by high military spending and the declining world price of copper.

In both Venezuela and Peru, science and technology policy is increasingly coming to reflect the domestic role played by foreign capital. And the danger of this is that it

skews decision-making to favour research and development policies, for example those concentrating on capital rather than labour-intensive production techniques, that benefit the upper and intermediate groups in society but have little impact on the plight of the poorest. Even where a "basic needs" technology is simultaneously advocated, this lies open to charges of "buying-off" the demands of the latter for an equitable share in the fruits of development.

Such issues can no longer be ignored by those concerned about the role of science in the development process. Fifteen years ago, the argument that the path to development lay in the rapid transfer of scientific and technological knowledge to the Third World, led participants in a United Nations conference to list priorities for such transfer in a "World Plan of Action". Today it is accepted that limitations and constraints on the transfer process are such that this philosophy is no longer adequate; indeed these limitations and constraints are the main focus of consideration.

This shift, embodied in the agenda for next year's United Nations Conference on Science and Technology for Development (UNCSTD), itself implies recognition that science and technology lie at the very heart of the development process. In practice, it is also coming to be recognised that policy matters in these areas can no longer be legitimately left to groups of experts, scientific or otherwise, but can only be forged through the type of bargaining and negotiation conventionally limited to more overtly political areas of national and international diplomacy.

Here there are lessons to be learnt from the recent UN conference on Technical Co-operation Among Developing Countries (TCDC) in Buenos Aires last month. Despite gloomy forebodings for the conference which predicted that the "real issues" would disappear in a storm of political acrimony, the meeting seems to have turned out relatively successful. In particular, the developing nations were able to unite behind a coherent and well-thought out position; and their combined strength was sufficient to add considerable bite to the draft plan of action which had been submitted by the UN secretariat, for example giving them greater control over the allocation of technical development funds.

TCDC marked an important shift from confrontation to negotiation that other UN conferences, including UNCSTD, would do well to try to follow. Certainly there are common scientific and technological interests between rich and poor nations; but given that these reflect broader social goals, no-one should be surprised that there are also conflicts. How to make such conflict productive, rather than merely self-defeating, is one of the most important issues that UNCSTD will have to confront. Encouraging joint research projects between developing countries, for example, can both provide practical benefits and increase the negotiating strength of the countries concerned; and ultimately it is this which determines who gets what share of the cake. □