Revisiting the Technology Transfer Debate: Lessons for the New WTO Working Group

By Pedro Roffe and Taffere Tesfachew

At Doha, Ministers agreed to establish a working group to examine 'the relationship between trade and transfer of technology, and of any possible recommendations on steps that might be taken within the mandate of the WTO to increase flows of technology to developing countries.' The Doha Ministerial Declaration also states that the 'General Council shall report to the Fifth Session of the Ministerial Conference on progress in the examination.'

The debate on transfer of technology to developing countries is not new. It acquired special importance in the international economic agenda with the launching of negotiations on a draft International Code of Conduct on the Transfer of Technology in the 1970s. Although negotiations on the code of conduct ended in 1985,[1] their failure did not necessarily mean that the interest and concerns about transfer of technology to developing countries had diminished. To the contrary, technology transfer to developing countries has been a recurrent theme in the multilateral discussions that have taken place in recent years.

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In the context of multilateral environmental agreements (MEAs), for example, the issue of technology transfer, more specifically environmentally sound technologies (ESTs), to developing countries has been a regular feature of any such agreements negotiated ever since the Rio de Janeiro Earth Summit. Indeed, in these agreements, the transfer of ESTs to developing countries is often presented as an essential condition for successful realisation of the agreements. Hence many MEAs include provisions on the transfer of technology on favourable terms, including financial support. The Framework Convention on Climate Change states, for instance, that:

> '*The developed country Parties... shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to the parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties should support the development and enhancement of endogenous capacities and technologies of developing country Parties...*' (Article 4.5).

Broad statements about transfer of technology have also been made in the context of a number of WTO Agreements, including the Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPs). Although the TRIPs Agreement does not establish an operational link between the reinforcing of intellectual property rights, the promotion of domestic technological development and the transfer of technology, it nevertheless contains some general statements about the importance of technological innovation and the role of transfer of technology in this process. For instance, Article 7 states that

> '*the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations*'.

The Agreement also calls for technical co-operation (Article 67) where developed countries are invited to provide technical and financial cooperation in favour of developing and least-developed countries. Furthermore, in the case of least-developed countries, industrialised countries '*shall provide incentives to enterprises and institutions... for the purpose of promoting and encouraging technology transfer...in order to enable them to create a sound and viable technological base*'. A parallel treatment is found in the GATS Agreement which, with a view to increasing the participation of developing countries in world trade, recognises that further negotiations should be pursued to strengthen their domestic services capacity, their efficiency and competitiveness, '*inter alia through access to technology on a commercial basis*' (Article IV).

What are the lessons that could be drawn from past and recent attempts to deal with technology transfer at the multilateral level? In the past, much emphasis was placed on the international transfer of technology *per se* rather than on what happens to it once it has been transferred. Although the importance of domestic technological and innovative capacity-building was fully recognised, the focus of attention was predominantly on the acquisition and transfer of technology from abroad. The assumption was that once technology was transferred, technological upgrading would take place which, in turn, would enhance local productive capacity. Consequently, much of the analysis focused on the imperfections of the technology-transfer process and on the role played by transnational corporations. Little attention was paid to domestic absorptive and adaptation capacity. The policy envisaged was primarily – but not exclusively – to adopt defensive measures to remedy defects in the international market for technology.

Since the mid-1980s, the way technology, and the process of technology transfer, are perceived has changed. Several factors have contributed to this evolution, including the experience of newly-industrialised countries in technology acquisition and development, which has shown that in building technological dynamism what matters most is not the transfer of technology *per se* but its adaptation and assimilation in the local economy. Thus, though transfer of technology from abroad remains important, it should not be viewed as a substitute but rather as a complementary positive stimulus to domestic technological dynamism.

This evolution has meant paying greater attention to the processes of technology adaptation and domestic technological mastery rather than just the 'transaction' aspect of technology transfer. We have also learned that the process of transferring technology is much more complex than assumed in the past. It involves not only a commercial transaction of tangible goods such as machinery and equipment, but also the transfer of knowledge and skills needed to operate it and other elements that are important components of the transfer process such as intellectual property rights and investment. Indeed, with rapid advances in technology, especially information technology, intangible investments now dominate the production and investment patterns of most dynamic enterprises. It is estimated, for example, that the knowledge component of the output of manufactured goods has risen from 20 percent in the 1950s to 70 percent in 1995.

A widely acknowledged fact is that technology transfer is a multifaceted process involving property rights, know-how, trade

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and technology policies, investment flows and competition policies. Only when all these aspects are dealt with can one claim that effective transfer has taken place and that the concerns of developing countries about technology transfer have been fully addressed. These are some of the important elements that the new working group at WTO should bear in mind as it considers its agenda on trade and transfer of technology.

The relationship between transfer of technology and trade is not automatic nor is it cost-free. Successful technology transfer involving partners from developed and developing countries requires financing, but above all it requires home *and* host country policy measures to stimulate the transfer and local adaptation of technology. In effect, therefore, new multilateral efforts to increase flows of technology to developing countries and promote linkages between trade and transfer of technology should:

a) incorporate flexibility in the design of national technology policy to foster the development of competitive productive sector;
b) recognise the need to create conditions conducive to fostering transfer of technologies by international firms whose collaboration is vital to make it effective;
c) formulate a workable mechanism for effective implementation of existing technology-related provisions in WTO Agreements; and
d) promote opportunities for capacity-building and international co-operation in research and development aimed at improving trade from developing countries.

What is needed are mutually beneficial arrangements that maintain a balance between the concerns and interests of technology generators/suppliers and those that rely on transfer for their technological development. Transnational corporations as the main, but not exclusive, suppliers of technology to developing countries seem to prefer methods of transfer where they can exercise some control over the process, while host countries prefer transfers that contribute to local technological development. What would therefore seem appropriate is to create conditions in the host countries that encourage a multitude of channels of transfer of technology and permit the designing of incentives that would motivate international firms to participate in the efforts of developing countries to boost their domestic capabilities.

The development of new approaches and initiatives aimed at supporting and strengthening human, entrepreneurial and institutional capacities in developing countries need to be taken into consideration in future international trade agreements, with a view to enabling developing countries to benefit and participate fully and more effectively in those agreements.

In summing up, the persistence of transfer of technology issues in multilateral negotiations, as demonstrated by the decision to establish within WTO a working group on trade and transfer of technology, calls for a renewed assessment of this subject and the formulation of a new agenda that takes into account recent developments including the evolution of thinking on technology and the process of technology transfer.

Pedro Roffe and Taffere Tesfachew are staff members of UNCTAD, Geneva. The views expressed in this note are their own and not those of the organisation.

[1] See Patel, Roffe, Yusuf: *International Technology Transfer: The Origins and Aftermath of the United Nations Negotiations on a Draft Code of Conduct*, Kluwer law International, 2000.

Chinese, EU Biotech Regulations Face Intensifying US Fire

The US biotechnology lobby is urging the government to take a tough stance against China's new labelling and safety inspection regulations on imports of genetically-modified commodities and products. The 'implementing regulations' – released in January to complement legislation adopted in May 2001 – will require labels on GMO imports, as well as documentation on testing and other information as of 20 March 2002. Applications from exporters will be processed within 270 days of their submission.

The US is seeking further clarification of the regulations and a delay in their application. Among its major objections are unclear provisions regarding the criteria and procedures for obtaining a safety certificate from the Chinese Ministry of Agriculture, as well as the short time given to exporters to adapt their products and documentation to the new regulations. US corn exporters are particularly worried as their annual shipments of genetically-modified varieties have averaged US$1 billion for the last three years. Twenty-three agricultural/industry associations wrote to President Bush in February asking him to ensure undisrupted access for US GMO products to the Chinese market. They argued that the 20 March date did 'not comply with China's new WTO obligations to provide other parties notice of new regulations and sufficient time for comment prior to their implementation' and thus failed to provide 'a transparent and predictable framework for exporters and importers'.

Some business analysts speculate that the new regulations are intended to protect China's own biotechnogy industry, which stands to reap the benefits of the developing world's largest research programme. China's biotech research spending accounts for more than half of the developing country total, easily dwarfing the budgets of Brazil, Argentina or India. According to the January 2002 issue of *Science*, the strength of the Chinese programme is its focus on food security and crops that have received little attention elsewhere. The same *Science* article says that in China, 90 percent of research is directed toward developing insect- and disease-resistant varieties, while in the industrialised world 45 percent of research targets herbicide tolerance/product quality and only 19 percent goes to insect resistance.[1]

US Questions Science of Biotech Regulations

The US also has problems with what it sees as a non-science-based Chinese requirement that even products made with GMOs but no longer containing traces of them must be labelled. In the WTO's Committees on Technical Barriers to Trade and on Phytosanitary and Sanitary Measures, the US has repeatedly questioned the scientific justification the European Union's pending new labelling regulations, which contain similar requirements. The US government is currently consulting the biotech industry on the timeliness of a WTO challenge of the EU's stalled GMO approval process. Such action may, however, be counterproductive as it would further inflame European public opinion already more than sceptical of GMO foods and crops. In addition, the entry into force of the EU's new regulations may lift the *de facto* moratorium on approvals within a year while a WTO case is likely to take at least two years.

[1] Jikun Huang, Scott Rozelle, Carl Pray and Qingang Wang. 'Plant Biotechnology in China'. *Science* Vol. 295, pp. 674-677.