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The World Trade Organization and The Problem of Technology Transfer to Developing Countries

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ABSTRACT

The WTO Agreement contains provisions on technology transfer to developing countries, but many are less applicable because they are not binding. For increasing the technology transfer to developing countries, the Working Group on Trade and Transfer of Technology (WGTTT) was established.

The effectiveness of WTO provisions on technology transfer and the role of the WGTTT in enhancing technology transfer to developing countries were examined in this study using normative legal methods. Data were collected by library research and were analyzed by a qualitative method.

This research found that the WGTTT only identified WTO provisions related to technology transfer and failed to make concrete recommendations to the WTO General Council to increase the flow of technology transfer to developing countries. The WGTTT should be given a deadline to make concrete recommendations that could be used to increase the flow of technology transfer to developing countries and make WTO provisions on technology transfer more effective and enforceable.

Keywords developing countries; international trade; transfer of technology; WGTTT

INTRODUCTION

The Uruguay Round of GATT negotiations, which took place from 1986 to 1994, resulted in the Agreement Establishing the World Trade Organization (WTO) and its annexes. Unlike the 1947 GATT, which only dealt with trade in goods, the WTO agreement also regulates trade in services and intellectual property rights (IPR). Under the WTO, trade in goods is regulated under Annex IA of the WTO Agreement, namely the Multilateral Agreements on Trade in Goods, which includes the 1994 General Agreement on Tariffs and Trade and several other agreements. Meanwhile, trade in services and intellectual property rights (IPR) are regulated under the General Agreement on Trade in Services and Annexes (GATS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), respectively.

The WTO agreement has become the primary and most important regulation in international economic and trade relations today. The primary objective of the WTO, as stated in the Preamble of the WTO Agreement, is to improve the economic welfare of all its members through free global trade (Valencia, 2024). The realization of WTO free trade is carried out by considering the interests of its members, who are still classified as developing countries and least developed countries (LDCs).

The WTO currently has 166 members and 23 observers. Based on their economic capabilities, approximately two-thirds of WTO members are developing countries (including LDCs), and one-third are developed countries (WTO, 2025). The majority of WTO members are developing countries. WTO member countries have varying levels of economic capabilities and competitiveness, thus offering varying opportunities to benefit from WTO free trade.

Developed countries members of the WTO with strong economic capabilities have the opportunity to get greater economic benefits from WTO free trade. Conversely, developing countries and LDCs struggle to seize opportunities in free competition under the WTO. This situation will certainly not support the achievement of the WTO's goal of creating free global trade that benefits all its members, including those still classified as developing countries and LDCs. Developing countries and LDCs members of the WTO need to improve their economic capabilities and competitiveness in the WTO free trade.

One reason for the low economic competitiveness of developing countries is that they lack mastery of modern technology. Technology plays an important role in increasing the economic growth of developing countries (Quoc, 2021). Therefore, developing countries members of the WTO must improve their modern technological capabilities. One way to improve the technological capabilities of developing countries is through technology transfer. Technology transfer can reduce the gap in technological mastery and global economic development (Xu, 2024). Several WTO agreements, particularly the TRIPS Agreement, regulate technology transfer from developed countries to developing countries members of the WTO.

To encourage technology transfer from developed countries to developing countries, members of the WTO, the Working Group on Trade and Transfer of Technology (WGTTT) was established in 2001 (Organization, 2024). The purpose of establishing the WGTTT is to examine the relationship between trade and technology transfer from developed countries to developing countries and to examine ways to improve channels of technology transfer to developing countries.

Despite the existence of technology transfer regulations based on WTO agreements and the establishment of the WGTTT, the smoothness of technology transfer to developing countries is often considered slow. Therefore, this study will analyze the



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issues in the implementation of WTO provisions on technology transfer and the role of the WGTTT in implementing WTO provisions on technology transfer to developing countries members of the WTO.

The research results show that the technology transfer provisions of WTO agreements are not binding. This causes the flow of technology transfer to developing countries members of the WTO to be slow and not smooth. The WGTTT, which was established to increase the flow of technology transfer to developing countries, has so far only identified the technology transfer provisions in the WTO agreements. The WGTTT has not yet succeeded in making concrete recommendations to the WTO General Council on steps that can be taken to improve technology transfer channels to developing countries. The WGTTT should increase its role in making recommendations to make WTO provisions on technology transfer more effective and enforceable. Considering the importance of technology transfer to developing WTO member countries in achieving WTO objectives, it is necessary to establish a WTO body that handles the implementation of WTO provisions relating to technology transfer.

RESEARCH METHODS

This research is a normative or doctrinal legal research, namely, based on the study of positive legal norms. The approach method used is the statutory regulatory approach and the conceptual approach. The data used are secondary data in the form of primary legal materials, namely the WTO covered agreements, especially the TRIPs Agreement, secondary legal materials in the form of previous research results, law books, expert opinions, and tertiary legal materials such as those obtained from websites. Data were collected through literature studies and analyzed qualitatively, descriptively, and comparatively. The conclusion is done deductively, using a thought pattern called a syllogism, which is composed of two statements (major premise and minor premise) and a conclusion.

RESULT AND DISCUSSION

The Need for Technology Transfer to Developing Countries

Technology is an important factor in economic and industrial activity in every country. A country's level of economic prosperity is generally determined by its technological mastery. The higher a country's technological mastery, the greater its prosperity and economic competitiveness (Syam, 2024).

One of the problems facing developing countries is the lack of modern technology. To address this problem, the United Nations (UN) has long encouraged technology transfer from developed to developing countries through various legal instruments. In May 1974, the UN General Assembly Resolution on the New Economic Order (the NIEO) was adopted. One of the principles of the NIEO is to "provide access for developing countries to have modern technology and science, to encourage technology transfer and the creation of indigenous technology for the benefit of developing countries. Then, in December 1974, the UN General Assembly Resolution on the Charter of Economic Rights and Duties of States was adopted, which in Article 13 (2) states that every country has the right and obligation to cooperate mutually beneficially in the progress and development of science and technology and to encourage technology transfer.

The technology transfer provisions in the UN General Assembly Resolutions have laid the international legal basis for technology transfer to developing countries. International agreements in specific areas also state the obligation to transfer technology to developing countries, such as the 1982 Convention on the Law of the Sea, the 1992 UN Convention on Biological Diversity, and the WTO Agreement.

The 1985 Draft Code of Conduct for the Transfer of Technology defines transfer of technology as the transfer of systematic knowledge for the production of goods, the application of a process, or the provision of services, and does not include transactions relating to the sale or leasing of goods (Svalerit & Irawan, 2021). Meanwhile, according to the Association of University Technology Managers, technology transfer is defined as "the process of transferring scientific findings (such as academic inventions) from one organization to another (i.e., industry) for further development and commercialization" (Alkhazaleh et al., 2022).

The WTO regulation on the transfer of technology

Some provisions of the WTO agreement relate to the technology transfer between countries, particularly technology transfer to developing countries. WTO agreements that contain provisions on technology transfer are the TRIPs Agreement, the Agreement on the Application of Sanitary and Phytosanitary Measures, the GATS Agreement, and the Agreement on Technical Barriers to Trade.

General provisions on technology transfer in WTO agreements are regulated under the TRIPs Agreement, which is regulated in Articles 7, 8, 40, and 66. Article 7 of TRIPs states: "The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and the transfers and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to the social and economic welfare, and to a balance of rights and obligations."

Article 8 of the TRIPs contains provisions to prevent practices in protecting intellectual property rights and trade that hinder technology transfer. Under Article 8, paragraph (2), WTO Member States may take appropriate measures under their



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national laws to prevent the abuse of intellectual property rights by rights holders or to prevent the implementation of practices that reasonably restrain trade or have an effect contrary to technology transfer.

Article 40, paragraph (1) of the TRIPs states that WTO Members agree that certain licensing practices or conditions relating to IPR that hinder competition can have a detrimental effect on trade and can hinder the transfer and diffusion of technology. Furthermore, paragraph 2 states that nothing in this Agreement shall prevent WTO Members from establishing in their national legislation practices or conditions that may, in certain cases, give rise to the abuse of IPR and have an effect contrary to competition in the relevant market. WTO Members may take, following the provisions of this Agreement, appropriate measures to prevent or control such practices. Based on Article 40 of TRIPs, WTO member countries are permitted to establish rules prohibiting the inclusion of certain restrictive business practices in IPR licensing contracts that hinder technology transfer.

Furthermore, Article 66 of TRIPs contains provisions that indirectly encourage technology transfer from developed countries to LDCs. Article 66, paragraph (2) of TRIPs states that developed country members of the WTO must provide incentives to companies and institutions under their jurisdiction to encourage and promote technology transfer to LDCs to create a real and strong technological basis. Article 66 paragraph (2) of TRIPs is very important, considering that the presence of multinational companies from developed countries in developing countries can be a very effective channel for technology transfer (Arini et al., 2021).

In addition to TRIPs, WTO agreements governing specific areas also contain provisions relating to technology transfer, although they are less explicit. For example, Article 9 of the Agreement on the Application of Sanitary and Phytosanitary Measures contains provisions relating to technology transfer to developing country members of the WTO. It states that WTO members agree to facilitate the provision of technical assistance to other members, particularly developing countries, both bilaterally and through appropriate international organizations. Such technical assistance may take the form of, among other things, processing technology, research, and infrastructure, including the establishment of national regulatory bodies, and may also take the form of advice, loans, donations, and grants, including to acquire technical expertise, training, and equipment to enable countries to adapt and comply with sanitary and phytosanitary measures necessary to achieve appropriate levels of sanitary and phytosanitary protection (health standards) in their export markets. Furthermore, in cases where substantial investment is required for the exporting country, which is a developing country, to meet the sanitary and phytosanitary requirements (health standards) of the importing member country, the latter country should consider such technical assistance as will enable the developing member country to maintain and develop its market access opportunities for the product concerned.

Provisions relating to technology transfer are also contained in the Agreement on Technical Barriers to Trade. The Preamble of this agreement, among other things, acknowledges the contribution that standardization can make to technology transfer from developed to developing countries; acknowledges that developing countries may face particular difficulties in formulating and implementing technical regulations and standards; and is willing to assist these countries in meeting these needs. Article 11 of the Agreement requires WTO members to provide technical assistance, upon request, to developing countries, particularly LDCs.

The technology transfer provisions in the WTO Agreement primarily contain provisions that encourage technology transfer between countries, particularly to developing countries members of the WTO. Furthermore, several WTO provisions prohibit trade practices that hinder technology transfer between countries. The WTO also permits its members to prohibit certain clauses in IPR licenses that hinder technology transfer. Developed countries are expected to encourage multinational companies from those countries to transfer technology to developing countries and LDCs.

Under the WTO Agreement, there are no binding rules requiring developed countries to transfer technology to developing countries. The lack of obligation and the lack of binding provisions on technology transfer in WTO agreements are often cited as reasons for the impediment to the smooth process of technology transfer from developed countries to developing countries members of the WTO.

Indeed, the WTO plays an important role in establishing legal norms for technology transfer between countries. As demonstrated in the various WTO agreements mentioned above, within the WTO framework, technology transfer is a legal concept reflected in various WTO agreements. However, the technology transfer provisions in these WTO agreements did not get attention until the establishment of the WGTTT. Various suggestions have been put forward to make the technology transfer provisions in WTO agreements more binding and to include obligations for technology transfer to developing and LDCs (Xu, 2024).

The establishment of WGTTT

To facilitate technology transfer to developing countries, the members of the WTO established the WGTTT. The WGTTT was established due to several provisions in WTO agreements relating to technology transfer, particularly to developing countries and LDCs.

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As previously mentioned, the WGTTT is a working group established under the WTO General Council. The WGTTT was established based on paragraph 37 of the Doha Declaration, which states: “We agree to an examination, in a Working Group under of the auspices of the General Council, of the relationship between trade and transfer of technology, and of any possible recommendations on steps might be taken within the mandate of the WTO to increase flows of technology to developing countries.”

The purpose of establishing the WGTTT is to examine the relationship between trade and technology transfer from developed countries to developing countries members of the WTO, and to explore ways to improve technology transfer channels to developing countries. The establishment of the WGTTT is expected to ensure the implementation of technology transfer provisions in the WTO agreements.

In addition to examining the relationship between trade and technology transfer, the WGTTT also serves to provide recommendations, following its WTO mandate, to increase the flow of technology to developing countries. The work program decided to be undertaken by the WGTTT includes: 1) analyzing the relationship between trade and technology transfer, 2) considering the work of public international organizations and academics on the subject under review, 3) exchanging experiences among member countries, 4) identifying provisions related to technology transfer in the WTO agreements, 5) making recommendations that can be implemented by the WTO mandate to increase the flow of technology transfer to developing countries, and 6) discussing other topics raised by members.

The WGTTT has held a series of meetings and discussions. In 2002, it identified provisions in WTO agreements relating to technology transfer, particularly technology transfer to developing countries members of the WTO: 1) Articles 7, 8, 40, and 66 of TRIPs; 2) Article 9 of the Agreement on the Application of Sanitary and Phytosanitary Measures; 3) Preamble and Article 11 of the Agreement on Technical Barriers to Trade; 4) Articles IV and XIX of the GATS; and 5) Article 8.2 of the Agreement on Subsidies and Countervailing Measures.

The purpose of this identification was to implement the technology transfer provisions in WTO agreements and identify appropriate steps to increase the flow of technology transfer to developing countries members of the WTO. It should be noted that these provisions have not yet made an effective contribution to technology transfer, and in some cases do not involve technology transfer (Centre, 2005). In a trade analysis presented in the South Centre, October 2005, it was stated that the WGTTT reached an impasse in formulating practical recommendations that could be achieved within the WTO framework and submitted to the WTO General Council (Centre, 2005).

In the 2006 WGTTT meeting on the study of the relationship between trade and technology transfer, the discussion was based on a case study conducted by the UN Conference on Trade and Development (UNCTAD) and the UN Industrial Development Organization (UNIDO). The UNCTAD study stated, among other things, the following: “Based on the 2005 World Investment Report, UNCTAD found that the benefits of increased technology transfer were concentrated in only a few countries and a few industries. Sectors such as health, agriculture, and energy, which are the foundation of infrastructure, were neglected and did not benefit.” Meanwhile, the UNIDO study entitled “Technology Transfer and Trade: The Toy Industry” emphasized the importance of technology and innovation for creating competitiveness, developing local skills and capacity, and so on.

During the WGTTT discussions, several members emphasized the need for all WTO provisions relating to technology transfer to be effectively implemented. WGTTT members continued their consideration of possible recommendations on measures that could be taken within the WTO mandate to increase the flow of technology transfer to developing countries, based on drafts submitted by India, Pakistan, and the Philippines. Recommendations also suggested that the WG3T could make to increase the flow of technology transfer to developing countries, emphasizing the important role of technology and know-how in improving productivity, promoting export growth, and achieving development goals.

In 2008, the 23rd Session of the WGTTT was held in Geneva. It was stated that the WGTTT, which held the meeting by the mandate of Paragraph 37 of the Doha Declaration, had so far been unable to formulate substantive and deliverable recommendations. The absence of specific targets in this area and the scarcity of contributions from developed countries may have been among the reasons for the slow progress. The discussions at the WGTTT led to well-established conclusions about the benefits of technology in raising productivity, individual and corporate income, competitiveness, and economic growth. Technology transfer is believed to thrive through openness and investment (which, on the other hand, are sensitive for developing countries), direct access (through information/telecommunications technology), and the licensing of patents.

To encourage technology transfer, the WGTTT discussion illustrates the importance of public-private partnerships, research/innovation organization networks, foreign education/training, and the presence of the diaspora. This is an area that needs continuous refinement by relevant government institutions. This role is exclusive, and its success is highly desired by all stakeholders. When the World Bank concluded that the success of technology transfer is determined by education,



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macroeconomic conditions, the financial regime, and governance, the government's central role in determining a country's technological progress becomes clearer.

The reports and input presented in subsequent WGTTT discussions also resulted in agreement on the importance of technology transfer to developing countries and the agreement that technology transfer is a key determinant of development. As stated in the 2021 WGTTT Report to the WTO General Council, the WGTTT discussions highlighted that "technology and technical knowledge are essential for increasing productivity, promoting growth, and achieving the development goals of less developed Members; and, that technology transfer can be an important tool for narrowing the technological gap between developed and developing countries, and for integrating developing countries into the multilateral trading system (Organization, 2023). Therefore, improving the provisions for technology transfer to developing countries is important, and concrete steps must be taken to operationalize these provisions.

From the data and descriptions above, it can be seen that although the WGTTT has successfully identified various provisions of WTO agreements concerning technology transfer to developing countries, various reports and discussions also indicate that some technology transfer provisions need to be revised for implementation. However, the WGTTT itself is not a rule-making forum and does not have the authority to amend WTO provisions relating to technology transfer.

To date, the WGTTT has not succeeded in providing concrete (applicable) recommendations to the WTO General Council to make these provisions operational and to improve technology transfer channels to developing countries. The WGTTT often faces difficulties in making meaningful recommendations due to differing priorities between developed and developing countries (Syam, 2024). Developed countries, which possess much modern technology, are more inclined to strengthen IPR protection rules and less supportive of increased technology transfer to developing countries. Developed countries such as the United States and the European Union also oppose efforts to create regulations that oblige technology transfer to developing countries (Xu, 2024).

Thus, the WGTTT can be said to be more of a discussion forum, focusing solely on the relationship between trade and technology transfer, without producing applicable recommendations to make WTO provisions on technology transfer more implementable and effective. The WGTTT considers the issues discussed important, but it is difficult to make recommendations that address the interests of developing countries (WTO WGTT, 2024).

CONCLUSION

Some provisions of the WTO agreements regulate the transfer of technology to developing country members of the WTO, but these provisions are ineffective due to their non-binding nature. The WGTTT, established to increase the flow of technology transfer to developing countries, has so far only served as a discussion forum examining the relationship between trade and technology transfer. To date, the WGTTT has only succeeded in identifying the technology transfer provisions in WTO agreements. The WGTTT has not yet succeeded in making concrete recommendations to the WTO General Council on steps that can be taken to improve technology transfer channels to developing countries and make the technology transfer provisions in WTO agreements implementable and effective.

Considering the importance of technology transfer to developing countries and LDCs in achieving the WTO's goal of creating fair and beneficial free trade for all its members, the technology transfer provisions in the WTO agreements must be made binding and mandatory. The WGTTT should be given a time limit to make the necessary recommendations to increase the flow of technology transfer to developing countries. In addition to the WGTTT, a WTO body is needed that is tasked with and authorized to oversee the implementation of the WTO technology transfer provisions.

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