LEVELLING THE PLAYING FIELD TO PROMOTE TECHNOLOGY TRANSFER AND INNOVATION IN AFRICAN LEAST DEVELOPED COUNTRIES

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ABSTRACT

Indisputably, technology and innovation play a crucial role in promoting development and the betterment of people's lives. However, access to technology is often hindered by proprietary claims from private corporations who are its major rights holders. Over the years, the efforts to facilitate access and transfer of technology for the states in need, especially the least developed countries (LDCs), have been frustrated by the lack of adequate international legal frameworks. The provisions of arts 7 and 66.2 of the TRIPS agreement that have attempted to set a basic regime to promote the transfer of technology for the benefit of LDCs has failed to ignite the necessary flows of technology. Accordingly, this paper recommends two approaches to promote technology transfer for the benefit of LDCs, especially in Africa, which are: the improvement of the provisions of the TRIPS agreement related to technology transfer and/or the establishment of a unified legally binding international instrument – the Agreement on Trade Related Issues of Technology Transfer.

KEYWORDS: Technology transfer; LDCs; African LDCs; TRIPS agreement

1. Introduction

Technology is hailed as the main driver of societal development.[1] The relevance of technology to promote development has prompted the need for every state to either generate it or, where they are unable to, to acquire it from other states.[2] States lacking capacity to develop their own technology were left with only one option: acquiring it mainly from private corporations

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1 EA Godwill 'Science and technology in Africa: the key elements and measures for sustainable development' (2014) 14(2) *Global Journal of Science Frontier Research G Bio-Tech & Genetics* 21; SJ Patel 'The technological dependence of developing countries' (1974) 12(1) *The Journal of Modern African Studies* 4.

2 A Breitwieser and N Foster 'Intellectual property rights, innovation and technology transfer: a survey' (2012) The Vienna Institute for International Economic Studies (Working Paper 88) 47; H Duller 'Role of technology in the emergence of newly industrializing countries' (1992) 9 *ASEAN Economic Bulletin* 1 (Population dynamics and economic transition: Asia-Pacific towards the year 2000) 45–54.

through technology transfer mechanisms.[3] Therefore, technology transfer is of paramount importance for the realisation of the right to the enjoyment of the benefits of technological progress as it plays a major role in facilitating the necessary inflows of technology to states in need.

Having observed the strong link between technology transfer and progress of nations, some attempts have been made to establish an international regime to regulate flows of technology for the benefit of developing states without much success.[4] In light of the above, this paper seeks to explore how the existing legal frameworks can be better strengthened to ensure the flow of technology to developing states, especially the least developed countries (LDCs) in Africa.[5] As an alternative to improving the existing legal regimes, the paper explores the possibility of adopting a new binding multilateral treaty that will ensure technology transfer to those countries.

2. The Importance of Technology and Technology Transfer for the Progress of Nations

The role of technology as a key driver of development, improvement of productive capacities and people's lives cannot be overemphasised.[6] Article 15(1)*(b)* of the Convention on Economic, Social and Cultural Rights (ICESCR) unequivocally provides that the right to the benefits of scientific progress and its applications must be enjoyed by all without discrimination.[7]

However, in the current global context, private corporations are the major rights holders of scientific and technological information and proprietary rights encapsulated in the intellectual property system and, very often, they

3 S Ray 'Technology transfer and technology policy in a developing country' (2012) 46(2) *The Journal of Developing Areas* 371; BA Larson and M Anderson 'Technology transfer, licensing contracts, and incentives for further Innovation' (August 1994) 76(3) *American Journal of Agricultural Economics* 547; S Tomlinson, P Zorlu and C Langley *Innovation and Technology Transfer Framework for Global Climate Deal* (2008) 56–64.

4 SK Sell *Power and Ideas North-South Politics of Intellectual Property and Antitrust* (1998) as cited by P Gottschalk 'Technology transfer and benefit sharing under the biodiversity convention' in HH Lidgard, J Atik and TT Nguyen (eds) *Sustainable Technology Transfer A Guide to Global Aid & Trade Development* (2012) 199.

5 There are currently 47 countries that are classified by the United Nations as LDCs; 33 of them are located in Africa. Some the countries will graduate and be removed from the list: Angola in 2021 and São Tomé and Príncipe in 2024. See the list available at https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf (accessed on 20 August 2020).

6 Godwill (n1) 21; S Young and P Lan 'Technology transfer to China through foreign direct investment' (1997) 31(7) *Regional Studies* 670; KE Maskus 'Encouraging international technology transfer' (2004) *Intellectual Property Rights and Sustainable Development*, ICTSD (Issue Paper 7) 7; Breitwieser and Foster (n2) 47; Patel (n1) 4. D Acemoglu and JA Robinson *Why Nations Fail The Origins of Power, Prosperity and Poverty* (2012) 77 argue that technology is an important 'engine of prosperity'. However, there are some isolated voices against reliance on technology transfer to promote development in LDCs, such as RS Bhalla 'Third world transfer of technology through patents' (April–June 1999) 41(2) *Journal of the Indian Law Institute* 256–63; F Stewart 'Arguments for the generation of technology by less-developed countries' (November 1981) *New Issues, New Analysis* 97–109.

7 United Nations 'Covenant on Economic, Social and Cultural Rights' (1966) available at https://treaties.un.org/doc/Treaties/1976/01/19760103%2009-57%20PM/Ch_IV_03.pdf (accessed on 5 March 2018).

are the ones controlling access to this vital information.[8] This poses serious challenges to developing states that aspire to encourage the acquisition of skills and incentivise innovations in technology but lack the resources, adequate policies and institutions to do so.[9] To catch up with the progress recorded in developed states, LDCs are compelled to engage in technology transfer processes to acquire the necessary technology.[10]

Nevertheless, technology transfer is not a one-way mechanism that depends solely on the action of developed states but also requires proactive efforts by the recipient countries to set up enabling environments and incentives that can attract technologies into their respective states.[11] LDCs have systematically failed to set up the enabling environment and the basic economic, financial, fiscal and infrastructural conditions for technology transfer to occur.[12] Therefore, the important role of recipient countries in promoting inflows of technologies to their respective territories cannot be overemphasised. However, this paper focuses on the international transfer of technologies covering the mechanisms involved in the shifting of technologies from developed countries (where technology developers are mainly located) into recipient economies, primarily in developing countries.[13]

Technology transfer is broadly defined as any process by which one party gains access to a second party's information and successfully learns and absorbs it into his production function.[14] The emphasis on the absorption of the technology that features in this definition is relevant because an effective technology transfer requires absorption, by the beneficiary, of the technology transferred.[15]

8 Ray (n3) 373.

9 Acemoglu and Robinson (n6) 313.

10 P Cullet 'Human rights and intellectual property protection in the TRIPS era' (2007) 29(2) *Human Rights Quarterly* 408.

11 DC Mowery and JE Oxley 'Inward technology transfer and competitiveness: the role of national innovation system' (1995) 19 *Cambridge Journal of Economies* 67–9; W Keller 'Absorptive capacity: on the creation and acquisition of technology in development' (1996) 49 *Journal of Development Economics* 200–2; J Ahrens 'Governance and the implementation of technology policy in less developed countries' (2002) 11(4–5) *Economics of Innovation and New Technology* 451; AJ Glass and K Saggi 'International technology transfer and the technology gap' (1998) 55 *Journal of Development Economics* 369–98.

12 Some interventions required include: liberalisation of regulatory frameworks; improvement of national policies and competitive atmosphere; protection of intellectual property rights; development of adequate infrastructures; support to research and development centres; development of local skills and absorptive capacities; grant of subsidies, tax preferences, encouragement of foreign investments and financial support.

13 Maskus (n6) 7.

14 Ibid 9.

15 Ibid 9 and 33. On the fundamental issue of absorption of technology or development of absorptive capabilities see: Young and Lan (n6) 670; WM Cohen and DA Levinthal in their seminal work 'Absorptive capacity: a new perspective on learning and innovation' (1990) 35(1) *Administrative Science Quarterly* Special Issue: Technology, Organizations, and Innovation 128; G Todorova and B Durisi 'Absorptive capacity: valuing a reconceptualization' (2007) 32(3) *Academy of Management Review* 774–86; WM Cohen and DA Levinthal 'Fortune favors the prepared firm' (1994) 40(2) *Management Science* 227–51; SA Zahra and G George 'Absorptive capacity: A review, reconceptualization, and extension' (2002) 27(2) *The Academy of Management Review* 189–90; JJ Daspit and DE D'Souza 'Understanding the multi-dimensional nature of absorptive

3. Fragmentation of the Technology Transfer Regime and Possible Solutions

As early as the 1960s it was observed that an international legal framework to govern the issue of technology transfer was sorely lacking.[16] Some attempts were made to establish such an international regime, without much success.[17] Indeed, the United Nations Conference on Trade and Development (UNCTAD) developed a draft International Code of Conduct for the Transfer of Technology to remove constraints on the acquisition of technology by developing countries imposed due to domination of the international technology market by multinationals. The draft code was abandoned in 1986 due to a lack of consensus.[18] Since then, new international legal instruments dealing with health, agriculture (protecting new varieties of plants) and climate change provided for separate regimes of technology transfer.[19] UNCTAD identified over 80 international instruments and numerous sub-regional and bilateral agreements that contain provisions dealing with technology transfer.[20] The World Intellectual Property Organization (WIPO) Development Agenda adopted in 2007 included recommendations[21] calling for the need to explore intellectual property-related initiatives, measures and policies to promote the transfer of technology, access to knowledge and technological information, and the promotion of debates surrounding the topic.[22] Debates in the context

capacity' (2013) XXV(3) *Journal of Managerial Issues* 300–2; T Schmidt 'Absorptive capacity – One size fits all? A firm-level analysis of absorptive capacity for different kinds of knowledge' (2010) 31(1) *Managerial and Decision Economics* 1; FAJ van den Bosch, R van Wijk and HW Volberda 'Absorptive capacity: Antecedents, models and outcomes' (2003) Erasmus Research Institute of Management, ERS-2003-035-STR available at https://ssrn.com/abstract=411675; Keller (n11) 200–2.

16 Sell (n4) 199.

17 'Draft International Code of Conduct for the Transfer of Technology', available at http://unctad.org/Sections/dite_tobedeleted/iia/docs/compendium/en/14%20volume%201.pdf (accessed on 13 May 2018).

18 Gottschalk (n4) 200.

19 Some of the relevant international instruments that contain provisions on technology transfer include: United Nations Convention on the Law of the Sea, 1982 (art 144); Montreal Protocol on Substances that Deplete the Ozone Layer, 1987 (art 5.5 and 10A); Convention on Biological Diversity, 1992 (art 16); United Nations Framework Convention on Climate Change (UNFCCC), 1992 (art 4); and Kyoto Protocol to the UNFCCC, 1997 (arts 2 and 10C).

20 UNCTAD *Compendium of International Arrangements on Transfer of Technology Selected Instruments* (2001). See also: PG Sampath and P Roffe 'Unpacking the international technology transfer debate: fifty years and beyond' (2012) *ICTSD Programme on Innovation, Technology and Intellectual Property (Working Paper 49)*; ZF Ma 'The effectiveness of Kyoto Protocol and the legal institution for international technology transfer' (2012) 37(1) *The Journal of Technology* 77.

21 See WIPO Development Agenda Recommendations 25, 26, 28–31.

22 To that end WIPO developed projects to support the development of legal, organisational and professional skills in LDCs in the area of innovation and technology transfer. The WIPO Development Agenda is available at https://www.wipo.int/ip-development/en/agenda/recommendations.html (accessed on 18 August 2020); WIPO 'Project paper on innovation and technology transfer support structure for national institutions (Recommendation 10)' (2010) – CDIP/3/INF/2/STUDY/VII/INF/1. See also in this regard A Michaels 'International technology transfer and TRIPS Article 66.2: can global administrative law help least-developed countries get what they bargained for?' (2009) 41(1) *Georgetown Journal of International Law* 258; UNCTAD 'The Least Developed Countries Report 2007: Knowledge, technological learning and innovation for development' (2007) 100.

of the WIPO Committee on Development and Intellectual Property (CDIP) suggested the need for the establishment of a model contract on the transfer of technology or an international treaty related to technology transfer, which did not yield any concrete result.[23]

The World Trade Organization (WTO) Agreement on Trade Related Aspects of Intellectual Property (TRIPS agreement) as the main international legal instrument that has shaped the intellectual property system in recent times, also attempted to promote technology transfer and innovation for LDCs. Regrettably, the implementation of the relevant TRIPS provisions, namely arts 7 and 66.2, failed to ignite flows of technology to LDCs. Consequently, there is no unified or harmonised legal international regime to govern the transfer of technology in the world. Instead, several sectoral regimes of technology transfer are currently in place. Those initiatives are therefore fragmented and are also failing to achieve the objective of promoting flows of technologies to developing states.

To overcome challenges posed by the inefficiencies in the flow of technologies to LDCS and the fragmentation of the technology transfer regime, this paper proposes the maximisation of the implementation of the TRIPS agreement related to technology transfer and the adoption of an internationally binding legal instrument on the matter under the WTO system.

4. Maximising Implementation of the Trips Agreement to Promote Technology Transfer and Innovation in Africa

4.1 The nature of obligations imposed by art 66.2 and their corresponding challenges

A compelling attempt to address the issue of promotion and dissemination of technological innovation for the benefit of LDCs is found in the TRIPS agreement.[24] This was made explicit in art 7, which sets as the main purpose of the intellectual property system the promotion of technological innovation and technology transfer.[25] This provision is further reinforced by art 66.2,

23 WIPO 'Report on the 4th Session of the CDIP' (2009), Geneva, 16 to 20 November 2009 (Doc CDIP/4/14) 49-51; WIPO 'Report on the WIPO expert forum on international technology transfer' (Doc CDIP/15/5), 15th session of the CDIP, Geneva, 20 to 24 April 2015 available at http://www.wipo.int/edocs/mdocs/mdocs/en/cdip_15/cdip_15_5.pdf (accessed on 26 August 2018). The proposal for an international treaty on technology transfer was modelled on the Multilateral Agreement on Access to Basic Science and Technology (ABST) that was first proposed by J Barton and KE Maskus 'Economic perspectives on a multilateral agreement on open access to basic science and technology' (2004) 1(3) *Script-ed* 369. The ABST is a proposal for an agreement at the WTO to expand the availability of the outputs of publicly funded research into the public domain, or to devise mechanisms to make available basic technological information at modest cost.

24 'Agreement on the Trade Related Aspects of Intellectual Property Rights' available at https://www.wto.org/english/docs_e/legal_e/27-trips.pdf (accessed on 17 December 2015).

25 The text of art 7 establishes 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.

which calls for developed states to provide incentives to encourage technology transfer.[26]

From the text of these provisions when read conjunctively, the scope is clearly defined: it consists of placing the responsibility squarely on governments of developed states to provide incentives to companies and institutions that are located in their territories. However, it is worth clarifying that since the technologies to be transferred are owned by private companies, the responsibility of developed states takes the form of the nebulous concepts of encouragement, promotion and facilitation.[27] Therefore, the provision does not create an obligation to transfer technology, but is instead limited to assigning a duty on developed states to provide incentives as an enabling factor to promote technology transfer, without further guidance on the specific incentives to be provided.[28] Nevertheless, there seems to be consensus among developed states that the incentives proposed shall be adequate to address the tax issues, funding, capacity building, infrastructure-related concerns that are usually highlighted as hindrances to the technology transfer process.[29]

Nonetheless, the main challenge that is posed with regard to art 66.2 relates to the effectiveness of these incentives.[30] This requires clarification of the real extent of the responsibilities imposed on developed states, especially with regard to how to trace technology transfer programmes that are relevant to the

26 The text of art 66.2 states that developed states shall provide incentives to companies and institutions in their territories for the purpose of promoting and encouraging technology transfer to LDCs in order to enable them to create a sound and viable technological base.

27 See European Union 'Report on the implementation of article 66.2 of the TRIPS Agreement' (Doc IP/C/W/631/Add 7); J Watal and L Caminero 'Least-developed countries, transfer of technology and the TRIPS Agreement' (2018) *Staff Working Paper ERSD-2018-01*, World Trade Organization, available at https://www.wto.org/english/res_e/reser_e/ersd201801_e.pdf (accessed on 24 April 2018) 5–6.

28 Watal and Caminero (ibid); Maskus (n6) 33–6; 'Proposal on the implementation of Article 66.2 of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement' Communication from Cambodia on Behalf of the LDC Group (Doc IP/C/W/640); 'Proposed format for reports submitted by the developed country members under Article 66.2: Communication from Angola on behalf of the LDC Group' (Doc IP/C/W/561); WTO 'Minutes of the session of the TRIPS Council' 24–25 October and 17 November 2011 (Doc IP/C/M/67) 51; WTO 'Minutes of the session of the TRIPS Council' 27 February 2018 (Doc IP/C/M/88/Add) 25–32; D Foray 'Technology transfer in the TRIPS Age: the need for new types of partnerships between the Least Developed and Most Advanced Economies' (2009) *ICTSD Intellectual Property and Sustainable Development Series (Issue paper 3)* 46.

29 Tax incentives could target profit and non-profit firms and entities transferring technologies to developing states. Non-tax-related incentives could encompass facilitation of trade and access to technological information and markets, capacity-building, technical assistance and infrastructure-related incentives. Financial incentives could consist of establishing special trust funds, allocating public resources and devising grant programmes to promote technology development and transfer to developing states.

30 Foray (n28) 9; N Chakroun 'Using technology transfer offices to foster technological development: a proposal based on a combination of articles 66.2 and 67 of the TRIPS agreement' (2017) *The Journal of World Intellectual Property* 2–3; 'Proposal on the implementation of Article 66.2' Communication from Cambodia (n28); 'Proposed format for reports' Communication from Angola (n28); WTO 'Minutes' (24–25 October and 17 November 2011) (n28) 51; WTO 'Minutes' (27 February 2018) (n28) 25–32.

recipient countries;[31] how to capacitate LDCs to assess technology flowing into their territories and measure their impact; and how to encourage the use of the WTO Dispute Settlement Mechanism to settle disputes related to international technology transfer dynamics. In the next section, possible improvements that can facilitate the implementation of art 66.2 will be unveiled.

4.2 Possible improvements in the implementation of art 66.2

4.2.1 Improvement in the reporting mechanism to the TRIPS Council

It is pertinent to highlight that the 2001 WTO Ministerial Conference realised that there was a distinct lack of progress in the implementation of art 66.2 and had directed the TRIPS Council to put in place a mechanism for ensuring the monitoring and implementation of the provision.[32] The Council then established a reporting mechanism in its Decision of 19 February 2003.[33]

Despite the establishment of such mechanism, several issues were flagged, namely: the irregular or failure to submit the reports and the lack of specific focus on technology transfer directed to LDCs.[34] Most importantly, there is a challenge regarding the fact that the reports submitted by developed states to the TRIPS Council do not reveal whether technology received is transferred deliberately as part of the implementation of obligations resulting from art 66.2 or whether the transfer is simply part of the routine investment decisions of the business people involved, making it extremely difficult to assess whether developed states are indeed effectively fulfilling their obligations. Doubts are therefore often legitimately cast concerning whether the initiatives are supported by any incentive at all, and evidence that the private sector may have initiated transactions that involve transfer of technology as a result of the

31 Recipient countries bear the responsibility of defining their priorities of development and the necessary technologies to achieve their objectives. The technological flows can only have the desired impact if they are channelled towards these specified priority areas of development. Recipient countries are also called upon to develop technological competencies through appropriate human development capital, dedicated institutional frameworks, adequate funding in order to develop the necessary absorptive capacities that will facilitate indigenisation and adaptation of foreign technologies with the view to solve the local problems. This view is also shared by UNCTAD by suggesting that national policies to promote technological learning and innovation should increase the absorptive capabilities of countries through the development of human capital and skills, financial incentives for learning and innovative investment and increasing linkages in the domestic knowledge system – UNCTAD (n22) 73–5.

32 WTO 'Implementation-Related Issues and Concerns – WTO (Decision of 14 November 2001 of the Ministerial Conference, 4th Session (WT/MIN/(01)/17)).

33 WTO 'Implementation of Article 66.2 of the TRIPS Agreement' Decision of the Council for TRIPS of 19 February 2003 (IP/C/28).

34 S Moon 'Does TRIPs Art 66.2 encourage technology transfer to LDCs? An analysis of country submissions to the TRIPS Council (1999–2007)' (2008) *Policy Brief 2*. See progress made in S Moon 'Meaningful technology transfer to the LDCs: A proposal for a monitoring mechanism for TRIPS Article 66.2' (2011) ICTSD Programme on Innovation, Technology and Intellectual Property, Policy Brief 9. The inadequacy of the reporting mechanism is also questioned by HH Lidgard 'Assessing reporting obligations under TRIPS Article 66.2' in Lidgard (n4) 43.

adoption of incentives by any developed state is scant.[35] Although it has been repeatedly indicated by developed countries that technologies are owned by private enterprises,[36] studies have demonstrated that paradoxically incentives provided to private companies are very small while more incentives are granted to institutions and multilateral organisations.[37]

To address this challenge, it is proposed that the reporting mechanism be substantially improved by linking the initiatives purportedly implemented for the benefit of LDCs with specific incentives adopted by governments.[38] Therefore, when reports of developed states are submitted to the Council, they should expressly mention the incentive provided and the initiative being reported upon. Formally adopting this proposed format would substantially assist the Council in its assessment and deliberations, while simultaneously reducing the amount of work required by LDCs to interpret the reports.

35 Communication from Rwanda 'Priority needs for technical and financial co-operation' Council for TRIPs 2010 (IP/C/W/548) 23 expressly states that 'In the context of TRIPS Article 66.2, there was, however, no evidence that Rwanda is benefitting from specific programmes from developed countries'. Senegal (IP/C/W/555 of 27 June 2011) and Sierra Leone (IP/C/W/499 of 3 October 2007) had previously presented their 'priority needs for technical and financial cooperation' in view of the fact that no significant flows of technology were recorded as a result of incentives adopted by developed countries. Communication from Cambodia on behalf of the LDC Group (n28) clearly indicates that implementation of art 66.2 continues to fall short of the letter and spirit of TRIPS agreement mandate and that incentives (if any) do not result in the transfer of technology. During the TRIPS Council of 2019, the delegation of Bangladesh indicated that 'we should be honest to admit that not all assistance programmes are technology transfer as stated in TRIPS Article 66.2 …. But we must acknowledge that many technical assistance programmes, a large portion of which falls under TRIPS Article 67, by the development partners are helping the LDCs in capacity enhancement in different areas. Many projects and programmes cited in the workshop by the LDC delegates are virtually the examples of technical assistance programmes' (Minutes of the TRIPS Council – IP/C/M/91/Add 1) 20. The same sentiments were echoed by the delegation of Chad on behalf of the LDC Group in the same meeting: some of the programmes mentioned by the developed country Members seem to improve the level of information and lead to technology transfer and incentives. However, it also appears that other programmes mentioned in the reports do not relate to Article 66.2 and are not consistent with it' IP/C/M/91/Add.1) 19. The situation has not shown signs of improvement because the intervention of Bangladesh in the TRIPS Council of 6 February 2020 (IP/C/M/94/Add.1) 21 states that: 'many reports do not clearly give information on incentives provided to enterprises and institutions in the territory of the developed Members. Instead, these reports contain a mixture of the technical assistance programmes under Article 67 and a few technology transfer initiatives under Article 66.2.'

36 EU (n27); A Naghavi 'Strategic intellectual property rights policy and north–south technology transfer' (2007) 143(1) *Review of World Economics* 76; MS Taylor 'TRIPS, trade, and technology transfer' (1993) 26(3) *The Canadian Journal of Economics* 625–37.

37 DM Fox 'Technology transfer and the TRIPS agreement: are developed countries meeting their end of the bargain?' (2019) 10(1) *Hastings Science and Technology Law Journal* 27–8 reveal that in 2017 out of 134 programmes related to technology transfer undertaken by the USA, only 10 (7%) derived from incentives given to private entities. Most shocking is that, in the same period, Australia, Canada and Japan did not provide any incentive to the private sector to transfer technology to LDCs.

38 From inception, the format of the report to be presented to the TRIPS Council required that developed countries present an overview of incentives put in place, which has been seldom followed by the concerned states (Implementation of Article 66.2 of the TRIPS Agreement – IP/C/28).

4.2.2 Streamlining the interpretation of developed states' obligation to provide incentives

In directing developed states to grant incentives to companies and institutions located in their territories, the negotiators of the TRIPS agreement had in mind that the obligation would stimulate technology transfer to LDCs.[39] With respect to the interpretation of this provision, some assert that the responsibility of developed states is limited to providing incentives to their own companies and institutions, while the actual obligation to create a sound and viable technological base remains with the LDCs.[40] Viewing the obligation in this way would limit the obligations imposed on developed states and untenably narrow the overall objectives of TRIPS to promote the effective use of intellectual property as an enabler to set up sound and viable technological bases for LDCs development.[41] Therefore, developed countries should ensure that the process is not only about fulfilling the obligation of reporting, but also is aimed at accurately promoting and encouraging measurable technology transfer to LDCs. Furthermore, in interpreting the obligations of developed states regarding the incentives to be provided, emphasis should be placed on their effectiveness. Incentives that fail to address this concern should not be considered as such for the purpose of art 66.2 and the state that has enacted them should be held accountable for failure to discharge its obligations.

4.2.3 Establishing national institutions to monitor implementation of art 66.2

One of the difficulties that developed states is encountering in fulfilling the obligations related to reporting established by art 66.2 concerns gathering, compiling and consolidating information from the various government agencies for submission to the TRIPS Council. Apparently, a mechanism is lacking both upstream and downstream to facilitate the preparation of the reports by developed states and also improve consumption of information by

39 'Extension of the Transition Period under Article 66.1 of the TRIPS Agreement for Least-Developed Country Members for Certain Obligations with Respect to Pharmaceutical Products' (IP/C/25 of 1 July 2002); 'Declaration on the TRIPS Agreement and Public Health' (WT/MIN(01)/DEC/2); 'Request for an Extension of the Transitional Period under Article 66 1 of the TRIPS Agreement for Least Developed Country Members with Respect to Pharmaceutical Products and for Waivers from the Obligation of Articles 70.8 and 70.9 of the TRIPS Agreement' Communication from Bangladesh on behalf of the LDC Group (IP/C/W/605 of 23 February 2015); 'Extension of the Transition Period under Article 66 1 of the TRIPS Agreement for Least Developed Country Members for Certain Obligations with Respect to Pharmaceutical Products' (IP/C/73 of 6 November 2015). Importantly, the TRIPS agreement was amended by the insertion of art 31*bis* that allows WTO members to grant special compulsory licences exclusively for the production and export of affordable generic medicines to other members that cannot domestically produce the medicines in sufficient quantities for their patients. The amendment does not negate the noble objective of creating those manufacturing capacities in LDCs but is a clear acknowledgement that the objective can only be achieved in the long term. In the interim and in the face of health challenges, countries lacking manufacturing capacity can resort to art 31bis to address urgent pharmaceutical needs.

40 Chakroun (n30) 3.

41 Fox (n37) 9.

relevant institutions in LDCs. The LDCs have tabled a request to developed countries to address the shortcoming, which is worth considering.[42] Further, the current practice in developed countries shows that the same institutions that deal with overseas aid, development or technical assistance are given the mandate to provide some sort of support related to technology transfer as an additional task.[43] This approach of providing technology transfer under the umbrella of technical assistance risks to perpetuate the confusion between technical assistance initiatives and technology transfer and has proven to be ineffective.[44] Considering the growing importance of technology transfer, this study advocates for the establishment of relevant focal points and dedicated institutions on the transfer of technologies in developed states to co-ordinate the process of gathering information, submission of reports and develop a structured and targeted intervention for the fulfilment of obligations under art 66.2.

Downstream, it is to be noted that LDCs have established several institutions that are responsible for technology transfer mainly in the ministries responsible

42 The 'Workshop on the Implementation of Article 66.2 of the TRIPS Agreement' that was held 11–2 February 2019 recommended 'The setting up of focal points at LDC and developed country Members level in order to coordinate and report on the incentives provided by developed country Members to enterprises and institutions in their territories for the purpose of promoting technology transfer to LDCs, and the results achieved in LDCs.' The delegation of Chad, speaking on behalf of the LDCs during the TRIPS Council held on 13 February 2019 (IP/C/M/91/Add.1) also reiterated that 'It would therefore be useful to designate focal points among the LDCs to monitor technology transfer and ensure appropriate follow up … Likewise, designating focal points among developed countr[ies] to engage in the same follow up would be particularly relevant and help meet the expectations of LDCs.' This continued plea for the designation of focal points that can assist in compiling and making follow-up of the implementation of art 66.2 clearly denotes that such mechanism is absent or not currently yielding the expected results.

43 For example, in Switzerland, the Swiss Agency for Development and Cooperation (SDC) and the State Secretariat for Economic Affairs (SECO) are jointly responsible for the formulation and implementation of the Swiss international development co-operation policy and it is in that capacity that they are also entrusted with issues related to transfer of technology – Report on the Implementation of Article 66.2 of the TRIPS Agreement, Switzerland (–IP/C/W/646/Add 1, 2). Australia expressly indicates that many incentives for technology transfer take the form of official development assistance (Report on the Implementation of Article 66.2 of the TRIPS Agreement – Australia, IP/C/W/656/Add.3, 1). The same approach can also be found in Canada as evidenced by activities of IDRC, Global Affairs Canada and ISED international cooperation institutions with a residual mandate on technology transfer (See Report on the Implementation of Article 66.2 of the TRIPS Agreement – Canada IP/C/W/631/Add.3, 2-6). Norway also has two agencies with funding for private sector development, which also extends funding for initiatives related to technology transfer: NORAD and NORFUND (– IP/C/M/90/Add.1, 29-30 and Report on the Implementation of Article 66.2 of the TRIPS Agreement – Norway– IP/C/W/656/Add.6, 1–3). In Japan, the Japan International Cooperation Agency (JICA) provides technical cooperation through ODA, through which knowledge and technologies are also transferred (Report on the Implementation of Article 66.2 of the TRIPS Agreement – Japan, IP/C/W/656/Add 1, 1).

44 WTO (n42) 20–7.

for science, technology and innovation.[45] However, there is no evidence of such institutions undertaking deliberate action to monitor the impact of the support that developed states claim to have provided to their respective countries in the reports submitted to the TRIPS Council. It is therefore recommended that the contact points of WTO in each LDC work hand-in-hand with the institutions responsible for technology transfer and innovation at the national level to track the initiatives that are highlighted in the reports submitted to the TRIPS Council with a view to assessing their impact in promoting technology transfer.[46]

4.2.4 Impact-assessment studies on the implementation of art 66.2

Establishing mechanisms to systematically assist LDCs to measure the impact of initiatives reported by developed states to the TRIPS Council is imperative for guiding future developments. That can be achieved by emphasising the unequivocal benefit that has accrued to an LDC as a result of the incentives granted in a specifically developed state and the corresponding technology that was transferred. As such, empirical studies must be undertaken to assess the impact of the implementation of the projects that were included in the developed states' reports to the TRIPS Council.[47] The studies should assess concrete projects implemented in some LDCs and ensure that the same are effectively facilitating access to technologies and that technological capabilities are being developed in the targeted states. These studies would also be useful for developed states because they could be used as best practices to be emulated by other states and would drive future efforts to adopt new incentives and initiatives to implementation of art 66.2.

Considering the crucial role that technology can play in promoting national development, individual LDCs should strive to set up their national institutional frameworks or better co-ordinate existing ones to assess the impact of the support that they are receiving from developed states that claim

45 In Tanzania, the responsibility for promoting the development, use and dissemination of technology falls within the Tanzania Commission for Science and Technology (COSTECH), which established the Centre for the Development and Transfer of Technology (CDTT). Among other responsibilities the CDTT is implementing an Appropriate Technology Programme in collaboration with WIPO. In this context it would also be appropriate for the CDTT to liaise with the focal point on TRIPS to monitor the technologies purportedly provided by developed countries to Tanzania; confirm effective flows; and measure their impact. Similar patterns are found in other African LDCs and the recommendation holds: The Ministry of Science and Technology of Mozambique established the Center for Research and Transfer of Technology for Community Development; The Ministry of Higher Education of Zambia established the Department of Science and Technology with an oversight role on technology transfer. In Rwanda, the National Industrial Research and Development Agency (NIRDA) and the National Council for Science and Technology (NCST) play a central role on transfer of technology issues. In Lesotho, the Ministry of Communications, Science and Technology established the Department of Science and Technology.

46 Contact points on intellectual property of WTO members established in accordance with art 69 are available at https://www.wto.org/english/tratop_e/trips_e/trips_notif5_art69_e.htm (accessed on 14 October 2018).

47 WTO (n42) 24–5.

to facilitate technology transfer. The designated entities from LDCs should collect information regarding the support that was provided to their respective states; locate the projects implemented in the field; and assess their status, focusing their attention on the transfer of technology components and its impact on supporting the state to create a viable technological base. Where necessary, the LDC should request technical assistance under art 67 of TRIPS to conduct the assessment.

4.2.5 The proposal for a WTO Advisory Centre for Technology Transfer and Innovation

LDCs may not possess the necessary skills to undertake the assessment of technology flows into their respective territories. To assist LDCs to undertake national assessments, an institutional framework should be devised at the WTO level. This would consist of the establishment of an Advisory Centre for Technology Transfer and Innovation (ACTTI). ACTTI mimics two previous experiences: the Advisory Service on Transfer and Development of Technology (ASTT)[48] and the Dispute Settlement Mechanism Advisory Centre on WTO Law (ACWL).[49] Taking advantage of the ACWL facility, many developing states have used the services to initiate disputes before the WTO DSM.[50] Similarly, the proposed ACTTI should assist LDCs to benefit from the provisions of arts 7 and 66.2 of TRIPS by providing advisory services with the view to facilitating access to technologies by LDCs and assessing the impact of the incentives provided by developed states to promote transfer technologies to LDCs.

4.2.6 Using the WTO Dispute Settlement Mechanism to enforce implementation of art 66.2

One of the unique features of the WTO system is the Dispute Settlement Mechanism (DSM).[51] The DSM is a mandatory and unified system to settle disputes, applying to all WTO agreements, as stated by Appendix 1 of the Understanding on Rules and Procedures Governing the Settlement of Disputes

48 ASTT was established by UNCTAD's Transfer of Technology Division in 1976 to provide advice, technical assistance, and operational assistance to developing states on the transfer and development of technology – see *Handbook on the Acquisition of Technology by Developing Countries* (1975) 57 (UNCTAD/Tr/AS/5).

49 The ACWL acts as a law firm at a concessional fee and provides legal advice to developing states in the dispute settlement process. See 'The Agreement Establishing the Advisory Centre on WTO Law, Annex II' (13 November 1999), available at http://www.acwl.ch/download/basic_documents/agreement_establishing_the_ACWL /Agreement_estab_ACWL.pdf (accessed on 15 May 2018).

50 A Kaushik 'Dispute Settlement System at the World Trade Organization' (2008) 43(2) *Economic and Political Weekly* 27.

51 M Bütler and H Hauser 'The WTO Dispute Settlement System: a first assessment from an economic perspective' (October 2000) 16(2) *Journal of Law, Economics, & Organization* 504–5; P van den Bossche 'The Doha development round negotiations on the Dispute Settlement Understanding' (2003) WTO Conference 'New Agendas in the 21st Century' Taipei, 28–29 November 2003.

('the Understanding'). Therefore, a violation of a mandatory obligation under the WTO agreements by any WTO member may trigger a complaint by another member.[52] In particular and based on art 23 of the Understanding, a state can lodge a complaint if any benefit accruing to it directly or indirectly is nullified or impaired or the attainment of any objective of the agreement is being impeded as the result of the failure of another contracting party to carry out its obligations. [53]

The implementation of the provisions above potentially confers on LDCs, individually or collectively, the right to legitimately raise a complaint to the WTO Dispute Settlement Body arguing that developed states are violating the obligation placed on them under art 66.2 to provide incentives to companies so as to promote transfer of technologies to their respective territories.[54]

Despite the existence of this potential avenue and a strong cause of action, no African WTO member has ever initiated any procedure under the DSM, including complaints related to non-compliance with art 66.2 on technology transfer.[55] Instead, the LDC group has complained for years that its members are facing challenges in using the DSM due to its complexity and the excessive cost of litigation.[56] Some scholars doubt the legitimacy of this complaint as it appears to be more the lack of political will to pursue cases than the lack of capacity or knowledge of the complaints process.[57] To address the excessive cost it was objected that the ACWL should be used instead.[58] Therefore, there is seemingly no plausible justification for African states to fail to make use of the same service.[59]

Additional challenges confronting LDCs that ostensibly prevent them from using the DSM are the lack of legal expertise in WTO law and the capacity to collect relevant information to initiate cases.[60] To overcome this challenge, it is hereby submitted that experience should be drawn from the example of the EU and the USA that rely on the private sector and trade associations to provide

52 T-L Tran-Wasescha and X Groussot 'TRIPS Article 66.2: between hard law and soft law?' in Lidgard (n5) 19; Bütler and Hauser (n51) 509. See also MA Forere *The Relationship of WTO Law and Regional Trade Agreements in Dispute Settlement* (2015) 128–9.

53 A Taubman *A Practical Guide to Working with TRIPS* (2003) 137; Michaels (n22) 252.

54 This is also the view by Fox (n37) 33, 35–6.

55 A Bouët and J Métivier 'Is the WTO dispute settlement procedure fair for developing countries?' (2017) IFPRI (Discussion Paper 01652) International Food Policy Research Institute 6; M Forere 'Revisiting African states participation in the WTO dispute settlement through intra-Africa RTA dispute settlement' (2013) 6(2) *Law and Development Review* 171–2; E Kessie and K Addo 'African countries and the WTO negotiations on the dispute settlement understanding' ICTSD 20, available at https://www.ictsd.org/sites/default/files/event/2008/05/african-countries-and-the-wto-negotiations-on-the-dispute-settlement-understanding.pdf (accessed on 11 May 2018).

56 Proposal by the African Group, 25 September 2002 (TN/DS/W/1) 5; Special session of the Dispute Settlement Body – Report by the Chairman (TN/DS/26).

57 Forere (n55) 168–70.

58 'Agreement Establishing the Advisory Centre' (n50). India, Thailand, Ecuador, Guatemala and Indonesia have taken advantage of this facility and lodged their cases with the DSM. See Kaushik (n50) 27.

59 Forere (n55) 171; A Alavi 'African Countries and the WTO's Dispute Settlement Mechanism' (2007) 25(1) *Development Policy Review* 40.

60 V Mosoti 'Does Africa need the WTO Dispute Settlement System?' in V Mosoti (ed) *Towards a Development-Supportive Dispute Settlement System in the WTO* (2003) 26.

support to build strong WTO legal cases.[61] Where necessary, the ACWL could provide its support, including by using the existing WTO regional centres such as the Trade Law Centre for Southern Africa (TRALAC).[62] Accordingly, there is no excuse for the LDCs not to take advantage of the extant institutions within the WTO structure to pursue cases in order to claim the benefits accruing to them under art 66.2.

5. The Proposal to Establish the Agreement on Transfer of Technology

5.1 Introduction

As highlighted previously, the multiple sectoral approach in dealing with the transfer of technology has created a situation of fragmentation that arguably generates inefficiencies in the process of transfer of technologies to LDCs.[63] Therefore, this section seeks to advance the proposal on adopting an Agreement on Trade-Related Issues of Technology Transfer and Technology (TRITTI) within the WTO framework. It is not within the scope of this paper to table a full proposal of the text of the future TRITTI, because such a text can only result from global diplomatic negotiations. Nonetheless, this paper endeavours to highlight some of the main themes that should be addressed by the proposed international legal instrument if it is to make any difference in the pursuit of effectively promoting the transfer of technology to developing states. This is so because any attempt to revive the debate on an international regime on technology transfer requires that the unresolved issues in the UNCTAD draft code be tackled first.[64]

61 Mosoti (n60) 29–33.

62 See www.tralac.org.

63 See n19 on some of the sparse provisions on technology transfer found in different international instruments.

64 Gottschalk (n4) 200; PK Yu 'A tale of two Development Agendas' (2009) 34 *Ohio Northern University Law Review* 498; DM Haug 'The international transfer of technology – lessons that East Europe can learn from the failed third world experience' (1992) 5 *Harvard Journal of Law & Technology* 221.

5.2 Framing the content of the TRITTI proposal

5.2.1 Scope

The UNCTAD draft code proposed liberalisation of trade in technology and the introduction of guidelines on the terms and conditions of the transfer of technology to developing states.[65] It was therefore an open-ended treaty that tackled the commercial exchange of all forms of technology.[66] However, the UNCTAD text was limited in scope because it was one-sided, by focusing exclusively on the obligation imposed on developed states to transfer technology to developing states.[67] The text was also limited in that it merely addressed the regulation of single transactions without much concern for their future effectiveness and impact.[68] Resultantly, the majority of the efforts made in crafting the international legal framework focused on mending the glitches identified in the process of the transfer of technology at international level and on the role played by multinational companies.[69] It was submitted that the technology transferred would subsequently ignite local dynamics leading to technological progress and enhancement of local productive capacity. This view is misleading and, therefore, this paper argues that more than merely providing access to technology, the most important objective of the new international legal instrument is to assist states in facilitating technological learning and developing absorptive capacities and adaptation of technology to the local context. Resultantly, this aim must feature prominently in the preamble to the TRITTI and in the provisions that set out the objectives of the legal instrument in order to enable its effective implementation.

Another important aspect to be considered is related to the tendency of the most recent proposals of international treaties or instruments in force related to technology transfer that focus only on one sector, as evidenced by the proposal by Ma that is limited to transfer of environmentally sound technologies.[70] The proposal of TRITTI, in contrast, intends to capitalise on the long and rich content developed and agreed upon in several instruments to advance a far-reaching framework. TRITTI is presented with a unique opportunity to amalgamate under one instrument all of the solutions that were incorporated in the previous treaties. This would be an easier exercise because the provisions of those legal instruments were fully negotiated by the parties and agreed to.

65 UNCTAD 'Transfer of technology (2001) – series on issues in international investment agreements', available at http://unctad.org/en/docs/psiteiitd28 en.pdf (accessed on 13 May 2018).

66 See paras 1.5 and 2.2. Paragraph 1.3 includes in the concept of technology a wide spectrum of sectors, such as industrial property; know-how; technical expertise and knowledge for the operation of plants; equipment; intermediate goods; and raw materials.

67 Sampath and Roffe (n20) 47–8.

68 P Roffe and T Tesfachew 'Revisiting the technology transfer debate: lessons for the new WTO Working Group', available at http://www.ictsd.org (accessed on 1 September 2019). For the opposite view see DS Olawuyi 'From technology transfer to technology absorption: addressing climate technology gaps in Africa' (2017) Paper 5 *Fixing Climate Governance Series, Centre for International Governance Innovation* 2.

69 Roffe and Tesfachew (n68) 7.

70 Ma (n20).

5.2.2 Applicable law

The positions of developed and developing states on the law applicable to technology transfer transactions differ substantially. Developing states that usually import technology demand the application of their own law. Arguably, developed states that are the main exporters of technology prefer the application of general principles of private international law and, in particular, the principle of party autonomy, that leads to the application of the law of the technology exporting state.[71] Transactions related to technology transfer largely occur between private firms, and the regulation of these transactions is effected through domestic contracts, competition and property law, which by their very nature, are territory-dependent, hence subject to national law.[72]

The fundamental question to be answered in this context is whether it is the national law of the exporting or the importing country that applies to technology transfer? In regulating this issue the proposed TRITTI must be cautious about striking the right balance. To force developed states to apply the laws of importing states will be viewed with scepticism. But, on the other hand, LDCs may only be assured that transactions are taking place in terms that can benefit them if their national law is applied.

The view of this paper is that the solution lies in-between the two opposite poles on the spectrum and consists of crafting laws in both exporting and importing states that may create an enabling environment to promote technology transfer. The national laws of developed states will provide for incentives to cause local companies to engage in technology transfer for the benefit of developing states under favourable conditions. On the part of developing states, laws must provide assurance that protection of the technology exported to the state is assured by way of robust intellectual property rights, safeguarding contracts on technology transfer and protection of investments. There is established practice that follows this pattern in the most recent international instruments that deal with international technology transfer, such as the Convention on the Law of the Sea.[73] To cause the exporting and importing nations to enact such national provisions, TRITTI should set them as obligations that must be complied with by the members that will accede to the treaty. The existence of laws modelled in a way that safeguards mutual interests is the most advantageous approach to avoid a stalemate.

71 M Waibel and WP Alford 'Technology transfer' (2011) in R Wolfrum (ed) *Max Planck Encyclopaedia of Public International Law* (2012) vol IX, 801–4.

72 Ibid.

73 The convention encourages states to actively co-operate on marine technology transfer on 'fair and reasonable terms and conditions' but safeguards existing proprietary rights, and exhorts states to 'foster favourable economic and legal conditions for the transfer of marine technology for the benefit of all parties concerned on an equitable basis', balancing the rights and duties of holders, suppliers, and recipients of marine technology. See Convention of the Law of the Sea, available at https://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed on 31 August 2019).

5.2.3 Legal character of TRITTI

The main reasons behind the failure of the UNCTAD draft code were related to the divergent and intransigent positions regarding the legal character of the instrument. Developing states have consistently pushed for the mandatory effect of the instrument while developed states pursue guidelines or standards to be observed by the companies involved in technology transfer.[74]

The Convention on the Law of the Sea initially followed the same trend and made the transfer of marine technology mandatory, with specific regard to seabed mining associated technology.[75] With such provisions in place, Western states, led by the USA, resisted acceding to the convention. The deadlock threatened the subsistence of the convention and was only overcome in 1994 through UN Resolution 48/263 that repealed art 5(3) that had imposed the mandatory regime.[76]

The lesson to be learned from this development is that it is unrealistic to impose a full legally binding instrument and expect that developed states will sign up to it. Therefore, the proposed TRITTI has more chances of success if it follows a more malleable approach. The experience of TRIPS is valuable in this context: it includes both mandatory and non-mandatory rules and even some neutral provisions where agreement was not achieved, such as in the case of art 6 on exhaustion of rights.[77] Whereas binding rules are necessary in some cases, there are agreements on technology transfer that are not legally binding but provide better solutions and are more persuasive, hence more prone to promoting technology transfer.[78] Worth noting is that regardless of the category in which the provision belongs, the obligations imposed by TRIPS are subject to WTO DSM.[79]

Therefore, the practice seems to suggest that a radical position is untenable and counter-productive. On this matter, negotiations should not focus on

74 In the text of the preamble proposed by developing states it was clearly stated that 'an internationally legally binding instrument is the only form capable of effectively regulating the transfer of technology' hence such instrument was strongly recommended for adoption. See also M Blakeney *Legal Aspects of the Transfer of Technology to Developing Countries* (1989) 134–5.

75 J Stavridis 'Marine technology transfer and the Law of the Sea' (1983) 36(4) *Naval War College Review* 41.

76 'Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982' – GAOR 48th Session Supp 49 vol 2 of 28 July 1994 7.

77 The provisions of the TRIPS Agreement impose on its members three types of obligations: provisions distinguished by an initial 'shall' that denote strong mandatory obligations; provisions that includes the verb 'should' that denote strong hortatory commitments; and provisions introduced by the word 'may' that constitute optional commitments. See Tran-Wasescha and Groussot (n52) 19–21. Further, TRIPS also adopted a neutral position where agreement was not reached during negotiations such as in the case of the exhaustion regime where members are free to adopt the regime of their choice. Article 6 of the TRIPS Agreement reads: 'For the purposes of dispute settlement under this agreement, subject to the provisions of Articles 3 and 4 nothing in this Agreement shall be used to address the issue of the exhaustion of intellectual property rights.'

78 Ma (n20) 91. Examples of non-binding but highly persuasive tools are: Bali Action Plan (FCCC/CP/2007/6/Add.1* of 14 March 2008); Copenhagen Accord (FCCC/CP/2009/11/Add.1 of 30 March 2010); United Nations Sustainable Development Goals – Agenda 21, available at https://sustainabledevelopment.un.org/resourcelibrary (accessed on 3 September 2019).

79 Tran-Wasescha and Groussot (n52) 19.

the legal character of the full TRITTI, but rather on establishing the most effective and appropriate mechanism to enable its enforcement and to be able to persuade the private sector to collaborate in the transfer of technology. Thus, the outcome of negotiations of TRITTI will determine which rules will be binding, non-binding and neutral.

5.2.4 Dispute settlement

In the context of the debates on the UNCTAD draft code, two opposing positions were tabled: one from developing states suggesting that the state that is acquiring the technology should have exclusive jurisdiction over any disputes arising therefrom; and the position from developed states advocating that the parties should be free to choose the preferred forum for resolving disputes.[80] The two groups later converged on the idea that disputes should be amicably resolved or have recourse to arbitration to settle them.[81]

The most recent multilateral environmental agreements that address issues related to technology transfer depict a typical scenario of fragmentation with a variety of solutions for the settlement of disputes that include: negotiation, mediation, arbitration, conciliation and submission of cases to the International Court of Justice. Accordingly, it is the view of this paper that TRITTI could address the current chaos by submitting all possible conflicts arising from technology transfer transactions to the existing WTO DSM. This is recommended because the WTO system establishes a mandatory and unified tool that can be used in any trade disputes under all WTO agreements, including the TRIPS agreement.[82] According to Appendix 1 of the Understanding on Rules and Procedures Governing the Settlement of Disputes, states can lodge complaints to the WTO DSM related to three kinds of disputes, namely: violation complaints; non-violation complaints; and situation complaints.[83]

Consequently, a distinct advantage of establishing TRITTI under the WTO system is the possibility of having recourse to the DSM whenever conflicts arise. Indeed, although UN-based frameworks, such as the CBD, UNFCCC and the Kyoto Protocol, contain binding provisions, they have completely failed to promote technology transfer due to the lack of an enforcement mechanism that the WTO provides.[84]

80 Blakeney (n74) 159; see also art 9 of the UNCTAD Draft Code (n17).

81 Blakeney (n74) 160.

82 Bütler and Hauser (n51) 509. See also Forere (n55) 128–129; Tran-Wasescha and Groussot (n52) 19.

83 Ibid.

84 Ma (n20) 83–8. Resultantly, any state is entitled to lodge a complaint if any benefit accruing either directly or indirectly to it is being nullified or impaired, or the attainment of any objective of the agreement is being impeded as a result of the failure of another party to carry out its obligations.

5.2.5 Technical assistance

In order to capacitate developing states and LDCs to access, use, absorb and adapt technology to their own needs, adequate support from developed states is required.[85] The UNCTAD draft code alluded to supporting these states in chapter 6 under the heading 'special treatment to developing countries'. Nevertheless, since the code was never adopted, it did not lead to any concrete implementation. Instead, art 67 of TRIPS has required developed states to provide the necessary technical and financial co-operation to developing states and LDCs, which has ignited several initiatives.[86] This precedent set by art 67 of TRIPS, art 4 of the UNFCCC and other sectoral regulations shall be taken into account as the foundation of the new regime. Relevant is the fact that those legal instruments focus on promoting the development of absorptive and adaptive capabilities of developing states in order to fast-track technological catch-up and innovation.

Therefore, the issue of technical assistance needs to be expressly included in the future TRITTI and concrete mechanisms should be established for its operationalisation.

5.2.6 WTO as a host organisation

During the negotiations of the draft code it was agreed that the institutional machinery to implement it would be provided by UNCTAD.[87] With the failure of the UNCTAD initiative, the proposed institutional machinery never took off. Precisely, the fragmentation of the technology transfer regime that followed also prompted the fragmentation of the institutional framework with several UN agencies being entrusted with the responsibility but without achieving satisfactory results. This suggests that the UN framework is inadequate to deal with the issues of technology transfer, because its approach leans more toward issues of public interest whereas technologies are owned by the private sector that is primarily guided by the objective of profit-making. Since the UN decision-making process does not fully involve the private sector and does not pursue primarily private interests, it is unlikely that a system developed in that context will adequately address private sector concerns.[88]

The WTO is therefore unique in that it focuses on global trade issues, and has developed the TRIPS agreement that has established the minimum standards for the protection of intellectual property rights; has included

85 C Thomas 'Transfer of technology in the contemporary international order' (1998) 22(5) *Fordham International Law Journal* 2110.

86 Regrettably, technical assistance provided under art 67 focused on establishment of IP institutions and adoption of TRIPS-compliant legislation instead of assisting LDCs to build a 'sound and viable technological base' – UNCTAD (n22) 121; C May 'Capacity building and (re)production of intellectual property rights' (2004) 25(5) *Third World Quarterly* 825–7; T Pengelly 'Technical assistance for the formulation and implementation of intellectual property policy in developing countries and transition economies' (2005) Intellectual Property Rights and Sustainable Development, Issue Paper 11, ICTSD.

87 See art 8.4 of the UNCTAD Draft Code (n17).

88 Ma (n20) 92.

provisions dealing with technology transfer; and has devised a unique DSM. The WTO platform is appropriate because technology transfer transactions are trade in nature and, therefore, efforts to facilitate transfer of technologies will always have an impact in the trade system that is now governed by the WTO.[89] Furthermore, the fact that the WTO is also a negotiating forum on trade issues may facilitate trade-offs in concessions across sectors and agreements that may have an impact on technology transfer. TRITTI and its institutional framework could leverage its strategic position at the WTO to effectively participate and influence the debates running parallel in the WTO TRIPS Council regarding technology transfer. The WTO could be the right location to set the balance between the protection of intellectual property rights and promoting access, use, absorption and adaptation of technology by LDCs.

5.2.7 Measures to promote collaboration of the private sector in the transfer of technologies

One of the main challenges in the establishment of an effective regime to promote technology transfer at the international level is the lack of collaboration from the private sector that owns the technologies that ought to be transferred. The UNCTAD draft code was anchored on the establishment of obligations imposed on governments of member states only. However, developed states have always expressed their inability to force the transfer of technology to occur, claiming that they do not own the vast majority of technologies subject to transfer and cannot force the private sector to transfer them.[90] Consequently, developed states argued that incentives can only take the form of encouragement, promotion and facilitation of projects that promote transfer of technologies.[91] This persistent position of developed states seems to be a clear sign of market failure that requires government intervention.[92] Therefore, for the TRITTI to be successful it should establish mechanisms that are capable of persuading the private sector to collaborate with their respective governments to facilitate the transfer of technologies that they own to developing states.

At the operational level, this could be achieved through general commands or minimum standards to be imposed on states to enact and implement national legislation that is conducive to the transfer of technology. One way of achieving that is through establishing regulatory benefits for the private sector

89 This is the case with respect to incentives, subsidies or any other initiatives giving special treatment to developing states and LDCs.

90 See EU 'Report on the implementation of article 66.2 of the TRIPS Agreement' (IP/C/W/631/Add.7).

91 Ibid.

92 Ahrens (n11) 442–4.

in the context of the national trade regime in exchange for them facilitating transfer of technologies.[93]

Developing states should also play a role through the enactment of national laws that provide assurance that technology exported to their states is safe by way of protection of intellectual property rights, safeguarding the contracts of technology transfer and protection of the investments. That would make it possible for private companies to move their technologies confidently with the assurance of legal protection.

6. Conclusion

The provision of art 66.2 of the TRIPS agreement that requires developed states to provide a set of incentives to encourage technology transfer by companies and institutions located in their own jurisdictions to LDCs has not received much attention in the context of the implementation of the TRIPS agreement.[94] Consequently, LDCs are struggling to access technologies and to develop capabilities to establish the much-desired sound and viable technological base for their development. Accordingly, this paper has tabled proposals intended to make art 66.2 of TRIPS far more meaningful so that it can benefit LDCs. This includes the proposal for the improvement of the reporting mechanism to the TRIPS Council; the proposal for the establishment of ACTTI to provide advisory services to facilitate access and use of technologies by LDCs; the maximisation of the exploitation of the DSM; the establishment of focal points to monitor the implementation of the provision; the development of studies on the impact of the implementation of the provision; and the adoption of TRITTI, a unitary or harmonised international legal instrument that can promote a sustainable technology transfer for the benefit of LDCs.

93 Relevant, in the context of the implementation of art 66.2 of the TRIPS Agreement, is the proposal tabled by the LDCs to the TRIPS Council for developed states to set conditions for companies in their jurisdictions to participate in contracts tendered for by their governments in exchange for incentives to those companies to transfer technology. In these circumstances, LDCs accept that developed states could provide for the payment of royalties as an incentive when technologies are effectively transferred to LDCs by enterprises in developed states – Communication from Cambodia on Behalf of the LDC Group (n28).

94 Fox (n37) 18; according to Moon (n34) a few reports were first presented in 1998 and only from 2001, regular submissions of the reports were recorded.