

Meaningful Technology Transfer to the LDCs: A Proposal for a Monitoring Mechanism for TRIPS Article 66.2

ICTSD Programme on Innovation, Technology and Intellectual Property

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Introduction

Technology and innovation play an increasingly important role in the global economy, and can potentially contribute to meeting urgent human needs for improved health, food security, water and energy, among others. The role of technology in development has attracted increased attention in recent years, particularly around the question of how to bridge the technological gap between countries with different levels of industrial capacity. Considerable debate has centred on the impact of the 1994 World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) on technology transfer - especially, whether TRIPS has helped or hindered the flow of technology to developing countries and their capacity to generate technological innovation.

The Least Developed Countries (LDCs) have attracted special consideration in these debates, in recognition that TRIPS implementation would put an additional burden on the LDCs, with few perceived benefits in exchange. In general, WTO Members agreed 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.¹

Special consideration was given to LDCs in the TRIPS Preamble² and Article 66.2, which requires developed country WTO Members to provide incentives to induce technology transfer to LDC Members, in order to enable them “to create a sound and viable technological base”. However, analysts and developing country Members have raised concerns that the impact of Article 66.2 has been rather limited, and that the existing reporting system is insufficient to monitor Article 66.2 implementation in a meaningful way (see, e.g., Correa, 2007; Moon, 2008; WTO, 2010a; WTO, 2010b).

The question of whether TRIPS can be implemented in a manner conducive to technology transfer is becoming more urgent, as the end of the transition period for LDCs to implement the Agreement is rapidly approaching in 2013 (2016 for pharmaceutical patents). (Notably, WTO

¹ Article 7, TRIPS Agreement.

² The Preamble to the TRIPS Agreement states: “Recognizing also the special needs of the least-developed country Members in respect of maximum flexibility in the domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base”.



Members may agree to extend these deadlines). Furthermore, unless the technology gap between the least and most developed countries can be narrowed, LDCs risk becoming increasingly marginalized in the global economy.

Against this backdrop, it seems timely to revisit the question of TRIPS and technology transfer to the LDCs and the implementation of obligations under TRIPS Article 66.2. This policy brief updates and expands upon the analysis and recommendations contained in earlier work (Moon, 2008). It also outlines the main elements of a proposed monitoring mechanism to improve the functioning of Article 66.2 so as to induce more relevant, timely and sufficient transfer of technology to the LDCs.

1. Country Submissions to the TRIPS Council (1999-2010): An Updated Analysis

TRIPS Article 66.2 establishes a mandatory, binding, positive legal obligation on “developed country” Members of the WTO, as follows:³

Developed country Members shall provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base.

Developed country Member governments are not obligated to carry out technology transfer themselves, but rather are to provide incentives to their “enterprises and institutions” to encourage technology flows to LDC Members. The term “enterprises and institutions” encompasses not only private-sector entities, but also not-for-profit and public-sector entities (e.g. research institutions), all of which may be in a position to engage in technology transfer. It has been argued that Article 66.2 obligates developed countries not only to provide incentives for technology transfer, but also to ensure the effective functioning of such incentives (Correa, 2005). From a purely legal perspective, there may be some disagreement on the extent to which countries are responsible for the impact of the incentives they provide. However, from a practical and development-oriented perspective, it is critical to understand how well the incentives are functioning, how they can be improved, and how Article 66.2 can be made into a more effective instrument for technology transfer.

At the TRIPS Council in 1998, Haiti requested further information from other WTO Members regarding their implementation of Article 66.2 (WTO, 1999). Members began to submit regular reports after the 2001 Ministerial Conference in Doha mandated that the TRIPS Council put in place a monitoring mechanism for Article 66.2 (WTO, 2001b, para. 11.2). The TRIPS Council subsequently decided in February 2003 that developed Members must submit full reports on activities undertaken to meet these obligations every three years, beginning in late 2003, with annual updates to be provided in intervening years (see Annex 2; WTO, 2003).

This policy brief provides an update of the 2008 analysis of these reports, and incorporates all developed country reports submitted from 1999-2010 that were publicly available as of 1 March 2011 (79 reports totalling about 1200 pages).⁴ The 2008 policy brief sought to discern the extent to which the Article 66.2 obligation led developed countries to increase incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to LDC Members. It did not analyze the volume or nature of the technology that has actually been transferred, but rather, examined the actions taken by developed countries to encourage such transfer. Furthermore, it did not ask whether developed countries encourage technology transfer *at all*, but rather, whether Article 66.2 has led to an increase over business-as-usual incentives for technology transfer to LDC Members *in particular*.

Five types of data were extracted from each country report:

1. The country submitting the report;
2. Funding amounts and dates associated with any policy or programme (where stated);
3. Target country, and whether it was an LDC and/or WTO Member;
4. Whether the policy or programme related to a field of technology;
5. Whether the policy or programme involved transfer (of skills, knowledge or technologies).

Methodical coding of the data was difficult, since there is no uniform reporting format between Members, nor do individual Members report in a consistent format from year to year. Furthermore, Members have different definitions

³ This obligation is reiterated in a number of WTO documents. See, e.g., WTO (2001a) and WTO (2001b).

⁴ The EU report for 2010 was not publicly available on the WTO website as of 1 March 2011, and has therefore not been included in this analysis. All country reports to the TRIPS Council are available at: http://www.wto.org/english/tratop_e/trips_e/techtransfer_e.htm.

of technology transfer, which are only sometimes made explicit. Finally, there is wide variance in the level of detail provided regarding target countries, the size and duration of programmes, and other crucial pieces of information.⁵ Although the TRIPS Council’s February 2003 Decision specified a number of detailed categories on which Members should report (see Annex 2, paragraph 3), in practice the requested information is provided with varying consistency across countries, programmes and years - or, more often, not at all. These results should be interpreted with these limitations in mind.

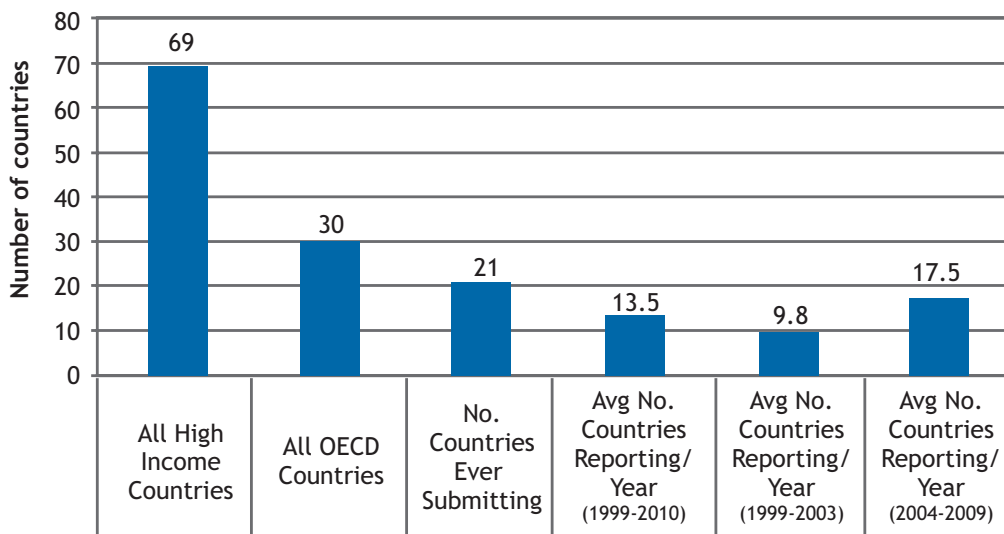
2. Results

2.1 Which countries report, and how regularly?

A total of 21 countries (and the European Union) have ever submitted a report,⁶ with an average of 13.5 countries reporting each year between 1999-2010. Reporting has increased over time, with an average of 17.5 countries reporting from 2004-2009, compared to only 9.8 countries from 1999-2003. Since the WTO does not formally classify countries as “developed”,⁷ a proxy

definition of this category is required in order to assess the extent to which developed countries are meeting their reporting obligations. If we use membership of the Organisation for Economic Cooperation and Development (OECD) as a proxy for “developed” country, then 70% of required Members have ever submitted a report, and on average 45% report each year.⁸ In contrast, if we use the World Bank’s High-Income Country (HIC) categorization as the proxy,⁹ then less than one-third (30%) of 69 countries have ever participated. Among the 21 countries that have ever submitted a report, out of the twelve years (1999-2010) in which they were explicitly asked to submit, one-third (7 countries) submitted reports in 50% or fewer of the years. No Member submitted a report every year, though New Zealand, Norway, Switzerland, the US, and the EU were most consistent in reporting (10-11 reports) (See Figure 1). While the mere act of submitting a report does not accurately reflect the nature of a government’s policies to provide incentives for technology transfer to LDCs, it does provide some indication of a government’s commitment to meeting its obligation. Countries that *never* submitted a report are assumed not to have adopted measures to implement Article 66.2.

Figure 1: Developed country reporting to the TRIPS Council on Article 66.2



5 For a more detailed description of the data and methodology, see Moon (2008).

6 Countries that have ever submitted a report are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Slovak Republic, Spain, Sweden, Switzerland, the UK, the US and the EU.

7 From time to time, WTO Members self-identify as “developed” in a particular negotiation; however, there is no definitive list of “developed countries”, either with respect to TRIPS or more broadly for the WTO.

8 At the time of this report, the OECD had 34 members. However, four of these members joined in 2010. Since the analysis covered reports submitted to the WTO through 2010, and since new members of the OECD may not have had sufficient time to prepare reports for the 2010 reporting cycle, for the purposes of counting what proportion of OECD members reported we use the number 30 (the number of members as of 1 January 2010). In addition, we note that the EU reports separately from many of its member states. It is not clear if the EU submission is intended to represent all of its member states, nor if such a submission would be considered by the TRIPS Council to meet reporting requirements for each “developed” member state. If we assume that EU-level policies fulfill the obligations of all EU member states, then Greece, Hungary, Luxembourg, Poland, and Portugal, which never submitted reports, are covered, and the rate of developed country participation increases to 83%.

9 The World Bank classified countries as HICs if their per capita Gross National Income was greater than USD 12,196 in 2009.

2.2 To what extent do policies target LDC WTO Members?

Many of the policies and programmes reported either barely targeted or did not at all target LDCs. Overall, out of 384 unique programmes or policies reviewed, 33% were targeted specifically towards LDC WTO Members; 18% were targeted toward LDC non-Members, and the remainder were targeted either to non-LDC developing countries (17%), to regions (in which LDCs may or may not be present) (24%), to developing countries as a whole (29%) or globally (all foreign countries) (7%) (see Table 1 and Figure 2).¹⁰ All

LDC Members were the intended beneficiaries of at least some subset of these various policies and programmes. While it is possible that LDCs benefited from technology transfer as a result of broader policies covering all developing countries, a key aspect of Article 66.2 was to single out LDCs for targeted action. Presumably, one reason for this preferential status was that LDCs would be less likely to receive technology transfer through regular market channels if they competed directly with middle-income countries. When policies fail to target LDCs specifically, it seems unlikely that they were put in place as a result of Article 66.2 obligations.

Table 1: Summary of results

All Reported Programmes/Policies	384 (100%)
Targeting LDC WTO Members	128 (33%)
--Of which qualify as technology transfer	42 (11%)
Targeting LDC Non-WTO Members	69 (18%)
Targeting non-LDC Developing countries	66 (17%)
Targeting regions	91 (24%)
Targeting all developing countries	111 (29%)
Targeting all countries (global)	26 (7%)

2.3 To what extent do programmes and policies encourage technology transfer to LDC Members?

This analysis assessed developed country incentives by adopting the relatively broad definition of “technology transfer” put forward in New Zealand’s submissions to the TRIPS Council:

Technology transfer is interpreted in this report broadly to include training, education and know-how, along with any capital component. Using the United Nations definition, New Zealand sees four key modes of technology transfer: (i) physical objects or equipment; (ii) skills and human aspects of technology management and learning; (iii) designs and blueprints which constitute the document-embodied knowledge on information and technology; and (iv) production arrangement linkages within which technology is operated.¹¹

The analysis considered the following types of incentives as qualifying:

- Financing the purchase of technologies;
- Incentives for foreign direct investment in technologically-oriented fields;

- Matching businesses in developed countries with those in LDCs for skills-building purposes;
- Training (including various scholarships and other educational opportunities in technical fields);
- Support to education systems;
- Providing venture capital;
- Providing insurance against the risk of doing business in LDCs for technology-related firms;
- Building a technical training component into an aid project; and
- Sending skilled nationals to volunteer in a technical capacity in an LDC.

It also included activities that some have argued should be excluded from consideration, such as:

- Collaboration in scientific training, education and research that does not have a clear technology component;
- Technologies in the public domain (not covered by intellectual property rights);

¹⁰ Percentages do not add up to 100, since some policies targeted more than one category, e.g. a specific LDC as well as specific non-LDCs.

¹¹ WTO (2007), para. 3.

- Technical assistance in implementing an IP system;¹² and
- General activities intended to improve an LDC’s capacity to absorb technology.¹³

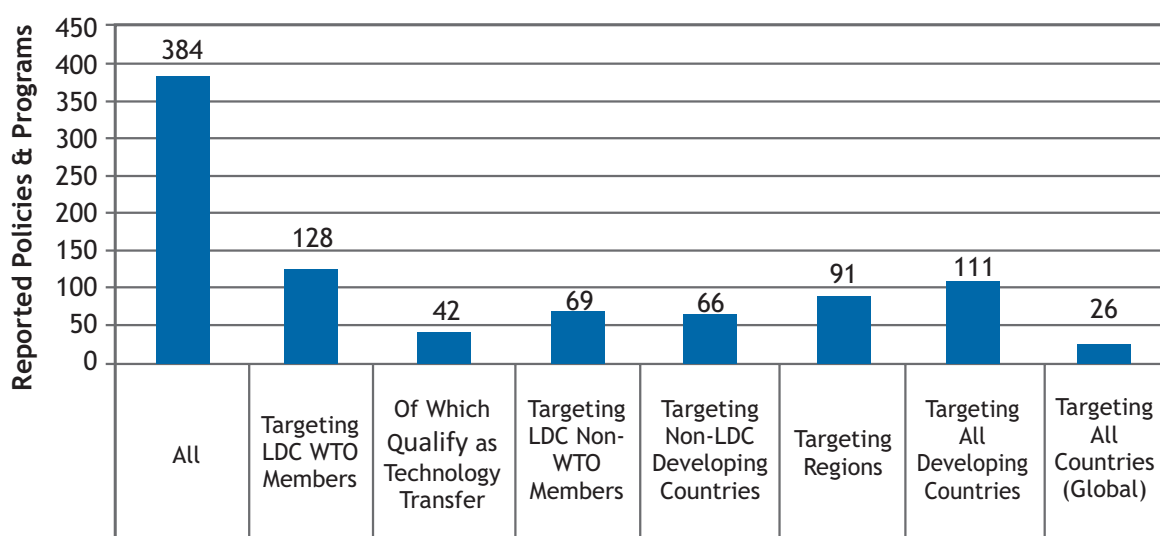
Had this analysis adopted a narrower definition, the proportion of reported activities deemed to fulfil the Article 66.2 obligations would have been even lower.

Despite adopting a broad definition, we found that many of the programmes or policies reported by developed countries were either not technical in nature or did not include a technology transfer component. Examples of activities that were not coded as technology transfer included “good governance” programmes, trade agreements, support for building a conducive

business environment, general budgetary support for regional (EU) or multilateral institutions (World Bank, UN agencies), and activities that did not specify any technological component nor arrangements for transfer (see Box 1 for further examples). Some programmes did qualify as technology transfer but did not target LDC Members.

Of the 128 programmes that specifically targeted LDC WTO Members, about one-third (42 programmes) qualified as technology transfer according to the definition we adopted. If we consider the full set of 384 programmes listed by the reporting developed countries, only 11% met the criteria of targeting an LDC WTO Member with a programme or policy that encourages technology transfer (see Figure 2).

Figure 2: Proportion of reported activities qualifying as incentives for technology transfer to LDC Members



2.4 Changes in reporting practices since 2008

There have been some discernible changes in developed country reporting practices since the initial 2008 analysis. A number of countries provided an improved level of detail or clarity on their activities. For example, Australia specified by LDC the amounts spent in the previous fiscal year for technical assistance (though the amounts did not necessarily pertain to technology transfer);¹⁴ New Zealand clearly specified which countries were targeted by their incentives, including whether they were LDC Members or not; in general, the US targeted its reports more

specifically to the LDCs; and the European Communities and their Member States clearly specified their definition of technology transfer and how their incentives fit within this definition.

However, there was no improvement in a number of areas. Many countries reported on programmes that were not specifically targeted toward LDCs, or on programmes that excluded LDC Members from eligibility altogether (see Box 1 for examples). As noted, a number of activities reported were not directly related to technology, nor did they provide for technology transfer. There were also

¹² Bangladesh has argued that activities under Article 67 (technical assistance) should not be reported together with those under Article 66.2 (technology transfer) (WTO, 2010b).

¹³ For further discussion, see Correa (2007), UNCTAD (2010), WTO (2010a) and WTO (2010b).

¹⁴ WTO (2008).

many reports of official development assistance (ODA) activities, without any indication that such activities had been increased to meet Article 66.2 obligations. In general, there was almost no evidence of *additionality* - that is, that new incentives had been put in place as a result of Article 66.2.¹⁵

From a purely legal perspective, whether incentives provided by developed countries must be additional to business-as-usual is subject to debate; the language of Article 66.2 is not clear in this regard, and no case at the WTO has clarified the issue. However, from a practical perspective, assessing additionality is important, for two key reasons. First, inducing technology transfer from the most industrialized countries to the LDCs may be particularly challenging, given the wide gaps in levels of economic development between them (Foray, 2009); additional incentives especially targeted to the LDCs are likely to be necessary to induce a sufficient level of transfer. Second, technology transfer is part of the bargain inherent in TRIPS. The implementation of IP protection and enforcement systems in LDCs requires significant human, financial and political resources. In addition, the provision of such rights may close off paths to technology acquisition and industrialization that many other countries followed (Chang, 2002). If technology transfer is intended to counterbalance the costs to LDCs of TRIPS implementation, it ought to be additional to pre-existing ODA-related activities. If Article 66.2 does not produce any additional technology transfer over business-as-usual, the rationale for the LDCs to invest considerable resources in implementing other parts of TRIPS is weak.

3. Building a Monitoring Mechanism to Operationalize TRIPS Article 66.2

The results of this analysis suggest that a more robust monitoring mechanism for Article 66.2 is required. The objectives of such a mechanism would be twofold: first, to improve our capacity to assess how well Article 66.2 is achieving its intended purpose, and second, to improve technology flows to LDCs as a result. The 2001 Doha Ministerial Declaration mandated the TRIPS Council to “put in place a mechanism for ensuring the monitoring and full implementation of the [Article 66.2] obligations” (WTO, 2001b). In subsequent TRIPS Council meetings, a number of LDC Members have asked for the creation of such a monitoring mechanism, but to date none has been established. When the TRIPS

Council created the current reporting mechanism in its 2003 Decision, it also specified that it “shall be subject to review, with a view to improving them, after three years by the Council in the light of the experience” (WTO, 2003). However, eight years later in 2011, no such review has taken place. This analysis suggests that not only is such a review long overdue, the existing *reporting* mechanism also clearly falls short of an effective monitoring system.

In order to improve the operation in practice of Article 66.2, the establishment of a Monitoring Mechanism Group (MMG) comprised of about 7-10 persons is proposed. The MMG could include individuals from WTO delegations (6-8 persons from LDCs, developing and developed country Members), with a few seats reserved for independent experts (e.g. 2-4 persons). Independent experts could be nominated by one or several WTO Members, and serve in a personal capacity. The involvement of independent experts is recommended for two reasons: first, to provide technical expertise on a rather complex topic; and second, to mitigate the risk of conflicts of interest and an overly politicized MMG. Nevertheless, the majority of group members could be drawn from WTO Member delegations in order to ensure that it is Member driven and responsive to country needs. The intention here is to suggest one possible configuration for the composition of the mechanism; the TRIPS Council would ultimately need to decide the precise composition and mandate of the monitoring mechanism, taking into account what could realistically be agreed upon by its Members.

The MMG would have two primary functions:

1. First, an *informational* function that would track the provision of incentives over time based on a uniform reporting format - that is, measuring outputs;
2. Second, an *evaluative* function that would assess how effectively the incentives were functioning to achieve the desired objective - that is, measuring outcomes.

The work of the MMG would be informed by input from governments, experts, non-governmental organizations, enterprises and institutions in both LDCs and developed countries, along with other concerned stakeholders. In particular, it would seek input from those with first-hand experience in transferring or receiving technology.

¹⁵ Only in one case did a country (Sweden) explicitly claim that there was a direct relationship between Article 66.2 and a particular programme (WTO, 2004: p. 61).

3.1 Informational function

The wide variation in developed country Article 66.2 reports makes it difficult to detect trends over time and to monitor implementation. As an essential first step, a uniform reporting format should be agreed upon that would make monitoring efforts both more feasible and meaningful. Next, it will be necessary to agree on which countries are obligated by Article 66.2 to provide incentives, and to clarify what types of incentives should qualify as fulfilling the obligation.

3.1.1 Uniform, digitized, searchable reporting format

Developed country reports should adhere to a single format that is consistent across Members and across years. To facilitate the use of submitted information, key data from the reports should be digitized into a database searchable by key criteria, such as which LDCs are eligible for a particular incentive. Ideally, the system should facilitate and streamline the reporting process, rather than adding any bureaucratic burdens. Many elements of a uniform reporting format were already agreed in the TRIPS Council's February 2003 Decision on Article 66.2 (see Annex 2); however, in practice most reporting countries do not provide all of the requested types of information in their reports. The MMG could establish an improved reporting format that would include the following elements, and monitor the extent to which reporting countries provided the requested data:

- i. *Target countries:* Reports should specify which LDCs are targeted or eligible beneficiaries of the incentives put in place, and whether or not they are WTO Members.
- ii. *Funding:* Funding for programmes should be disclosed, including any specific amounts disbursed as direct incentives to technology transferors. Where incentives are broad (beneficiaries are broader than WTO LDC Members, and/or activities extend beyond technology transfer), the amount specifically attributable to technology transfer to LDC WTO Members should be indicated, as feasible.

Some incentives may not involve funding, and reports should clearly specify such cases.

- iii. *Description of Incentives:* Reports should provide brief descriptions of the incentives put in place, including *start and end dates, the targeted fields of technology* (i.e. information technology, fertilizer, pharmaceuticals, etc.) and the modalities of transfer. While a wide range of incentives could qualify, each should clearly relate to an area of technology, and clearly provide for transfer. To illustrate: a programme description should not only state that Technology X was used in country Y, but rather describe how nationals of country Y were able to make use of Technology X. As the list of qualifying incentives mentioned below develops, it could be used to compare reported incentives against qualifying incentives.
- iv. *Additionality:* A description of how the incentive is additional to business-as-usual should be provided (e.g. an increased number, breadth or type of incentives put in place beyond existing aid or trade programmes, specifically targeting LDC WTO Members).

3.1.2 Clarifying the list of countries obligated under Article 66.2

Which countries are considered “developed” and therefore obligated by Article 66.2? While the UN provides a clear, regularly-updated list of countries classified as LDCs, the WTO does not formally classify countries as “developed”. As noted earlier, two potential approaches to defining “developed countries” are OECD membership (34 countries),¹⁶ or classification as a High-Income Country by the World Bank (69 countries).¹⁷ Alternatively, an ad hoc system could be devised in which countries self-select and opt in as “developed”, demonstrating their commitment to implementing TRIPS in a manner sensitive to the needs of the LDCs. Another approach could include all HICs (the most inclusive category) but allow Members to opt out of being considered developed countries. Countries that have already submitted reports could automatically

¹⁶ On the one hand, the OECD classification may be preferable since member countries generally have achieved a high level of industrialization and technological development, and arguably are well placed to supply technology to LDCs. In contrast, high per capita income does not necessarily correlate with high levels of technological development (e.g. some HICs are rich in natural or other resources but not necessarily technology producers).

¹⁷ On the other hand, the HICs classification may be preferable, since it includes an additional 38 countries (out of the 69 HICs, 31 are OECD members; three OECD members are upper-middle- (not high-) income countries: Chile, Mexico and Turkey), including some technology-rich non-OECD countries such as Singapore. In addition, enterprises and institutions in some HICs may have access to technology that would be of use to LDCs, even if these technologies did not originate in a particular HIC. Relying on HICs as a proxy for “developed” country would allow a more expansive interpretation of which countries are obligated to induce technology transfer under Article 66.2.

be considered developed, while additional countries - including some of the emerging economies with rapidly growing technological capacity - could be encouraged to come forward. Technology transfer between countries at more similar levels of industrialization (e.g. from middle-income countries to LDCs) may, in some cases, be more useful. There are pros and cons to each of these three options, in terms of the number of countries obligated, practical impact and political feasibility. Nevertheless, these three options merit further consideration in order to clarify which specific Members are bound by the Article 66.2 obligation.

3.1.3 Developing a positive and negative list of qualifying incentives for technology transfer

What incentives should qualify as fulfilling Article 66.2? There is no standard WTO or TRIPS definition of what comprises technology transfer, and efforts to reach international agreement on such definitions have long met with frustration. The unfinished negotiations (from the 1970s-80s) over an International Code of Conduct on the Transfer of Technology agreed upon the following definition of technology transfer: “the transfer of systematic knowledge for the manufacture of a product, for the application of a process or for the rendering of a service and does not extend to the transactions involving the mere sale or mere lease of goods” (Patel, Roffe & Yusuf, 2001). The World Intellectual Property Organization (WIPO) provides a broad definition of technology transfer as, “a series of processes for sharing ideas, knowledge, technology and skills with another individual or institution (e.g., a company, a university or a governmental body) and of acquisition by the other of such ideas, knowledge, technologies and skills” (WIPO, 2009). As noted above (see Section 2.3), more specific definitions are also possible, as demonstrated in New Zealand’s 2007 submission to the TRIPS Council.

However, even under more specific definitions, it is not readily apparent what types of incentives or activities ought to qualify as fulfilling Article 66.2 obligations, and which ones should not. One of the key problems of the lack of definitional clarity is that any activity can be stretched to qualify as technology transfer, such that a reporting country could make no policy changes but simply report a wide range of ongoing activities as meeting Article 66.2 obligations via definitional gymnastics. At the same time, an overly-specific definition is undesirable, as technology transfer can take place through multiple, diverse pathways.

Nevertheless, some consensus among WTO Members on which incentives promote meaningful technology transfer to LDCs would help bring much-needed coherence to the field, and could provide useful guidance to all Members. Given the persistent difficulty in agreeing on a specific, concrete definition, the most practical way forward may be to generate a positive and negative list of incentives that should and should not qualify as fulfilling Article 66.2 obligations. Such a list could be developed by the MMG. A sample draft positive and negative list, based on incentives included in the country reports, is provided in Box 1 as an illustration. Such a list should be precise, but flexible enough to encourage countries to experiment with creative, innovative approaches to inducing technology transfer. It should not be a fixed list, but rather, given the changing nature of technology and development, should be regularly updated based on practical experience. The development of the list should also provide an opportunity for reporting countries to make the case for why any incentives excluded from the list in fact ought to qualify. The use of positive and negative lists is not without precedent in trade law. Such lists are used, for instance, in the context of trade in services, to specify sectors eligible or excluded from services liberalization.

Box 1: Sample list of incentives that may or may not qualify under Article 66.2

Note: This list is based on incentives included in the country reports to the TRIPS Council. It is intended simply as an illustration and a starting point, recognizing that a much more intensive and extensive analytical process would be required than was feasible in the scope of this paper.

Examples of incentives likely to qualify:

1. *Business risk reduction:* “The start-up fund has actively supported SME activities in LDCs or countries in transition through more than 40 projects, such as mango processing in Burkina Faso or coffee processing in Zambia”. (WTO, 2008a: Switzerland)

Rationale: Funding allows small enterprises in LDC WTO Members to upgrade their technology in economically productive sectors.

2. *Technology in key area of human development (health, water):* “Bangladesh, Water and sanitation (public health), Arsenic mitigation in water; Arsenic free water harvesting technologies by Skad Consulting, Switzerland ; test kits by the Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland; Local adaptation of technologies with support from Skat Consulting and EAWAG. Research in Switzerland in collaboration with Bangladeshi partners, SwF 70,000”. (WTO, 2008a: Switzerland)

Rationale: Project not only provides access to a technology useful for meeting human needs for water and health, but also specifies local adaptation of technologies.

3. *Technology in key area of human and economic development (clean energy):* “Madagascar: Energy supply - wind energy. Equipment and training, under Swiss platform for renewable energy promotion (REPIC). SwF 50,000”. (WTO, 2008a: Switzerland)

Rationale: Provides access to technology and specifies training component.

4. *Encouraging joint ventures in technologically-relevant field with provision of training:* “Bording Data A/S in Denmark and TechnoVista Ltd. in Bangladesh have with support from the B2B Programme initiated collaboration and have established a Joint Venture called Bording Vista. The overall aim of the partnership is to set up a new software development company and take advantage of the capabilities of the partners in order to sustain and further develop a competitive position in the partners’ respective home markets and also new markets. Bording Vista’s goal is to employ both young and experienced IT professionals of Bangladesh, and train them in international standards, technologies and practices related to the ICT industry as well as to work within the newest and most promising software products to be the trendsetter for the ICT industry in Bangladesh”. (WTO, 2009: EC-Denmark)

Rationale: Provides training to local employees in international IT standards.

5. *Grants for training to facilitate technology transfer:* “Transfer of technological know-how from the Swedish companies to the companies in the South is often a prerequisite of successful cooperation. To encourage such transfer, Sida [Swedish International Development Cooperation Agency] can offer a write-off loan of SKr 500,000 to the Swedish company to finance education and training. The loan is written off as soon as the training is finalized”. (WTO, 2009: EC-Sweden)

Rationale: Provided the grant is applied to training of a technical nature, such grants can reduce the costs to firms of ensuring that technology is transferred to LDC individuals or entities.

Examples of incentives not likely to qualify:

1. *Labor migration policies without an explicit technology transfer component:* “enabling employers in the horticulture and viticulture industries to recruit seasonal workers from offshore”. (WTO, 2008: New Zeland)

Rationale: Technology transfer appears unlikely.

2. *Incentives that do not target or benefit LDC Members:* “Iberoeka: Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela”. (WTO, 2009: EC-Spain)

Rationale: Incentives should target and benefit LDC Members.

3. *Programmes intended to improve the business climate:* “...is engaged in the dispatching of experts to assist developing countries in the establishment of various rules and institutions necessary to create a business environment conducive to trade and investment”. (WTO, 2008c: Japan); or “provides policy advice to

governments on creating an environment friendly to foreign and domestic direct investment and the private sector”. (WTO, 2008b: New Zealand); or “Working with local counterparts, advisers from Australia and New Zealand (including the Australian Treasury) have assisted the Solomon Islands Government to introduce a new Foreign Investment Act and State Owned Enterprises Act; improve efficiency and equity in the tax system through a reduction in tax and duty exemptions; and facilitate increased competition in the aviation sector”. (WTO, 2008d: Australia)

Rationale: Link between incentive and technology transfer is too distant and tenuous.

4. *Trade agreements:* “US BITs establish a framework of reciprocal protections that include nondiscriminatory treatment, free transfer of investment-related funds, prompt, adequate, and effective compensation in the event of an expropriation, and transparency in governance”. (WTO, 2008e: US)

Rationale: Link between incentive and technology transfer is too distant and tenuous.

5. *General incentives for charitable activities:* US tax exemption for donations to non-profit organizations. (WTO, 2008e: US)

Rationale: Neither targeted to LDC Members, nor necessarily linked to technology, nor to technology transfer.

6. *Contributions to multilateral institutions or programmes such as the UN or World Bank:* “...provide advice and assistance to WHO for its “Roll-Back Malaria” programme. The programme aims at halving the world’s malaria burden by the year 2010”. (WTO, 2008a: Switzerland)

Rationale: Unlikely to be additional, not targeted to LDC Members, not necessarily linked to technology, nor to technology transfer.

Examples of incentives likely to generate considerable disagreement (further research & analysis, deliberation and decision by the MMG would be needed)

1. *Diffuse programmes intended to improve absorptive capacity,* such as support for primary education, scholarships for medical schools, vocational training.

Discussion: The EU has explicitly included “improve the absorption capacity of LDCs (capacity building)” within its definition of technology transfer. However, while increased absorptive capacity is undoubtedly a key enabler of technology transfer, it is unclear whether TRIPS Article 66.2 was intended to support such indirect activities, or rather, was intended to induce direct flows of technology to the LDCs.

2. *Scientific cooperation without a technology component:* “...malaria research facilities in Mali and Ghana and has trained local scientists and physicians to conduct malaria research from within endemic countries, including those in several LDCs in Africa”. (WTO, 2008e: US); or, “Democratic Republic of Congo: Nutrient cycling and methane production in Lake Kivu: Department of Limnology, Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland; Institut supérieur Pédagogique de Bukavu; SwF 326,430”. (WTO, 2008a: Switzerland)

Discussion: In the Least Developed Countries Report 2010, UNCTAD posits that there is an important conceptual distinction between science and technology, and that cooperation in scientific training and research should not count as technology transfer, unless there is a clear technological component to the collaboration. Others might argue that the line between science and technology is not clear, and that such cooperation projects often include technology transfer by virtue of the research training provided to local scientists.

3. *IP training*: “Trainees of this three-week course are employees at universities or research institutions involved in education on the IP system and those engaged in the dissemination of IPR at IP assistance organizations”. (WTO, 2008c: Japan)

Discussion: Bangladesh has argued in the TRIPS Council that there is an important distinction between the technical assistance provided by developed countries under TRIPS Article 67, and the obligations to encourage technology transfer under Article 66.2. Others have argued that the technical assistance that is sometimes provided to developing countries in the area of IP may actually hinder rather than encourage technology flows (Deere, 2008). On the other hand, enhanced capacity to make use of the information available in IP systems (e.g. information contained in patent applications) may help an LDC to develop technological capacity.

3.2 Evaluation function

It will be critical to regularly monitor the functioning of incentives to assess the extent to which they contribute meaningfully to the intended purpose of Article 66.2. However, the text of Article 66.2 does not specify what level of activity would satisfy its requirements, and there is no clear and objective way to set that yardstick. How many incentives are enough? How much technology transfer should occur? Do best efforts suffice, or must technology flows pass a certain threshold? How should such variables be measured? The lack of ready answers to these questions suggests that LDCs should play a central role in articulating needs and assessing performance. Developed countries should shape their incentives in response to these needs and assessments.

3.2.1 LDC technology priorities and needs assessments

LDCs should clearly identify priority areas in which they need improved access to technology. Such priorities could emphasize areas of particular importance to human development, such as medicines, food security, clean water, housing or energy. Alternatively, priorities could emphasize strategic sectors for industrial development where a country has an existing or potential comparative advantage, such as in fisheries, agriculture, textiles or information/communications technologies (Foray, 2009). In addition, governments may choose to prioritize areas in which IP protection may pose a particularly high barrier to technology access. Priorities will vary by country, and each LDC should specify the fields in which enhanced technology transfer is desired.

International organizations, non-governmental organizations, experts and others may provide technical assistance to LDC governments in identifying priorities

and needed technologies, as well as in assessing gaps and the functioning of existing incentives. Lessons could potentially be drawn from the experiences of Bangladesh, Rwanda, Uganda, Sierra Leone and Tanzania, which each carried out needs assessments for technical assistance in TRIPS implementation, often with support from international actors; these have been presented to the TRIPS Council (Abdel Latif, 2011).

LDCs should submit periodic reports to the TRIPS Council specifying their priorities and gap assessments with respect to technology transfer (there may be natural synergies with the above-mentioned technical assistance needs assessment processes). LDCs should also contribute to independent assessments of how well existing incentives from developed countries are functioning in generating relevant, sufficient and timely transfer of technology. These assessments can be used by the MMG to carry out a global evaluation of how well Article 66.2 is functioning, and to generate improved practices over time.

3.2.2 Best practices in implementing Article 66.2

Information and case studies are needed regarding best practices of countries that have successfully implemented incentives for technology transfer to LDC Members. Detailed examples of the success, near-success or failure of such incentives would provide useful information to guide future efforts by developed countries. Such research could also analyze the terms of transfer (e.g. the terms and conditions of licenses or joint-venture agreements) to assess how appropriate such terms were for meeting the overall objective of building technological capacity in the LDCs. For example, as part of the implementation of the WHO Global Strategy and Plan of Action on Public Health,

Innovation and Intellectual Property, a number of studies have recently been concluded on the local production of pharmaceuticals and relevant technology transfer (publications forthcoming in 2011). These studies offer a broad overview of the field, as well as detailed case studies of specific examples of successful technology transfer and ongoing challenges. This type of research could inform the development of the positive/negative lists suggested above.

3.2.3 Technology transfer in other international agreements

Analysis of the implementation of technology transfer obligations in other treaties may contribute to efforts to improve the functioning of TRIPS Article 66.2. For example, the obligations under the United Nations Framework Convention on Climate Change (UNFCCC) on technology transfer are more clearly worded than those in TRIPS. The treaty stipulates that developed country Parties (Annex II countries, defined as OECD members as of 1992)¹⁸ shall not only promote and facilitate but also finance the transfer of environmental technologies to developing countries (Article 4.5):

The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention.¹⁹

Similarly, improved knowledge regarding experiences in attempting to operationalize TRIPS Article 66.2 may be useful for informing efforts and discussions in other international forums, including those debating, negotiating, implementing and/or amending similar provisions in other international agreements.

3.2.4 Compliance

The MMG should seek to improve the quality and user-friendliness of the information provided by reporting countries, and to evaluate the effectiveness of provided incentives. The MMG would not and could not assess

developed country compliance with Article 66.2, a function reserved for the WTO Dispute Settlement Body (DSB). It may become necessary to assess compliance formally if, even after the establishment of the MMG, it becomes clear that developed countries are not putting in place effective incentives and technology is not flowing to LDC Members.

Legal analysis may be required regarding available remedies for inadequate compliance with Article 66.2. One possibility is that the DSB could authorize an LDC to suspend obligations/concessions within TRIPS or in another WTO Agreement in retaliation for non-compliance with Article 66.2 by developed countries. (Some LDCs have already implemented TRIPS to some extent and could change their laws to 'de-implement' TRIPS in this circumstance; others may be using the full transition period until 2013, and could cross-retaliate in another sector.) On two occasions, the DSB has authorized a developing country to suspend some TRIPS obligations in retaliation for non-compliance by a developed country Member with other WTO obligations (see *Dispute DS 27: Ecuador/European Communities with respect to bananas in 2000*; and *Dispute DS267: Brazil/US with respect to cotton in 2009*). However, no LDC has ever brought a TRIPS-related complaint to the DSB.²⁰

Further analysis is required on how non-compliance might be determined, and what effective remedies might be available. If an LDC decides to proceed with such a complaint to the WTO DSB, legal assistance with the case may also be needed.

4. Conclusions

This updated analysis of developed country reports has found little evidence that TRIPS Article 66.2 has resulted in significant additional incentives beyond business-as-usual for transferring technology to LDC Members. It also concludes that the existing reporting system does not function as an effective monitoring mechanism, and should be reviewed by the TRIPS Council, as required by its 2003 Decision. In order to operationalize Article 66.2 more effectively, the TRIPS Council should establish an effective monitoring system, the broad outlines of which have been sketched in this policy brief. While

18 See UNFCCC Parties and Observers at: http://unfccc.int/parties_and_observers/items/2704.php.

19 Article 4.5, UNFCCC. The article continues: "In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies".

20 For further details, see: on the Ecuador-EC dispute: http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds27_e.htm; on the Brazil-US dispute: http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds267_e.htm.

the precise composition and mandate of the monitoring mechanism would need to be decided by the TRIPS Council, we suggest that the mechanism be tasked with carrying out informational and evaluative functions, as follows:

a) Informational:

- i. Establish a uniform, simplified reporting format, with information entered into a digitized, searchable database for use by LDC Members and their enterprises and institutions.
- ii. Specify which countries are obligated to report.
- iii. Provide a regularly-updated list of which incentives should and should not qualify as fulfilling Article 66.2 obligations.

b) Evaluative:

- i. Solicit reports from LDC Members on their technology transfer priorities and needs. Assist in the preparation of such reports, as requested. Assess how well the supply of technologies from developed countries meets demand articulated by the LDCs.
- ii. Assess how well existing incentives function in practice through research, analysis and case studies.
- iii. Learn from experiences implementing technology transfer obligations in other international agreements, and contribute to global debates

on how to improve the functioning of such instruments.

In practice, a uniform reporting format, and more precise understanding about which incentives should and should not qualify, could pave the way for improved reporting from developed countries, a more thorough assessment of how well Article 66.2 is achieving its intended purpose and improved technology flows to LDCs.

Ultimately, as the main intended beneficiaries of Article 66.2, the LDCs have a key role to play in steering the process of establishing an effective monitoring system. This policy brief aims to provide some data, analysis and suggestions that could contribute towards the articulation of LDC views and positions in this process.

Knowledge and technology are playing an increasingly important role in addressing global development challenges, yet gaps in technological capacity and access between rich and poor countries remain vast. Developing countries and LDCs have pressed for enhanced technology transfer in a variety of forums, such as the WTO, WIPO (in the context of the Development Agenda) and in multilateral environmental agreements such as the UNFCCC. At the same time, promises and commitments by developed countries in this area have played a critical role in helping to reach international agreement on difficult issues such as climate change. The credibility of such promises and commitments is essential. Building an effective global system for genuine, meaningful technology transfer is therefore in the interests of all countries, and the case of TRIPS Article 66.2 is a compelling place to begin.

Annex 1: Sample Format for Reporting

Note: Many of these categories were included in the TRIPS Council February 2003 Decision establishing the reporting mechanism (see Annex 2). However, in practice most developed countries do not provide this breadth or depth of information in their reports.

1. Country;
2. Reporting year;
3. Targeted LDC Member(s);
4. Enterprises or institutions eligible for incentive in developed country;
5. Enterprises or institutions eligible for incentive in LDC(s);
6. Incentive programme or project name;
7. Total funding amount:
 - a. Amount allocated/attributable to inducing technology transfer to WTO LDC Members, per year;
8. Description of incentive:
 - a. An overview of the incentives regime put in place to fulfil the obligations of Article 66.2, including any specific legislative, policy and regulatory framework;
 - b. Identification of the type of incentive and the government agency or other entity making it available;
 - c. Year start/year ended;
 - d. Targeted fields of technology: the type of technology that has been transferred by these enterprises and institutions and the terms on which it has been transferred;
 - e. Mode of technology transfer (e.g. on-site training, university course, licensing, information sharing);
 - f. Output:
 - i. Which entities or institutions made use of the incentive?
 - g. Outcomes/impact:
 - i. Which entities/individuals received technology transfer?
 - ii. What evidence is available that technology was successfully transferred?
9. Contact information.

Annex 2: Decision of the Council for TRIPS of 19 February 2003

20 February 2003 (IP/C/28)

Council for Trade-Related Aspects of Intellectual Property Rights

IMPLEMENTATION OF ARTICLE 66.2 OF THE TRIPS AGREEMENT

Decision of the Council for TRIPS of 19 February 2003

The Council for Trade-Related Aspects of Intellectual Property Rights (the “Council for TRIPS”),

Having regard to Article 66.2 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (the “TRIPS Agreement”);

Having regard to the instructions of the Ministerial Conference to the Council for TRIPS contained in paragraph 11.2 of the Decision on Implementation-Related Issues and Concerns (WT/MIN(01)/17), adopted on 14 November 2001;

With a view to putting in place a mechanism for ensuring the monitoring and full implementation of the obligations in Article 66.2, as called for by that Decision;

With a view further to establishing arrangements for annual reports by developed country Members and their annual review by the Council for TRIPS, as also called for by that Decision;

Decides as follows:

1. Developed country Members shall submit annually reports on actions taken or planned in pursuance of their commitments under Article 66.2. To this end, they shall provide new detailed reports every third year and, in the intervening years, provide updates to their most recent reports. These reports shall be submitted prior to the last Council meeting scheduled for the year in question.
2. The submissions shall be reviewed by the Council at its end of year meeting each year. The review meetings shall provide Members an opportunity to pose questions in relation to the information submitted and request additional information, discuss the effectiveness of the incentives provided in promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base and consider any points relating to the operation of the reporting procedure established by the Decision.
3. The reports on the implementation of Article 66.2 shall, subject to the protection of business confidential information, provide, *inter alia*, the following information:
 - (a) an overview of the incentives regime put in place to fulfil the obligations of Article 66.2, including any specific legislative, policy and regulatory framework;
 - (b) identification of the type of incentive and the government agency or other entity making it available;
 - (c) eligible enterprises and other institutions in the territory of the Member providing the incentives; and
 - (d) any information available on the functioning in practice of these incentives, such as:
 - statistical and/or other information on the use of the incentives in question by the eligible enterprises and institutions;
 - the type of technology that has been transferred by these enterprises and institutions and the terms on which it has been transferred;

- the mode of technology transfer;
 - least-developed countries to which these enterprises and institutions have transferred technology and the extent to which the incentives are specific to least-developed countries; and
 - any additional information available that would help assess the effects of the measures in promoting and encouraging technology transfer to least developed country Members in order to enable them to create a sound and viable technological base.
4. These arrangements shall be subject to review, with a view to improving them, after three years by the Council in the light of the experience.

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