

**ACCELERATING CLIMATE-RELEVANT
TECHNOLOGY INNOVATION AND TRANSFER TO
DEVELOPING COUNTRIES:
USING TRIPS FLEXIBILITIES UNDER THE
UNFCCC**

SYNOPSIS

This Analytical Note examines flexibilities in the Agreement on Trade-Related Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO) and possible technology transfer approaches under the UN Framework Convention on Climate Change (UNFCCC) as among the possible modalities that developing countries can use to obtain access to and affect transfers of climate-relevant technologies. It looks at the possibilities and challenges that need to be addressed in this regard.

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EXECUTIVE SUMMARY

Transfer of environmentally sound technologies (EST) is an essential component of the global action necessary to address mitigation and adaptation aspects of climate change through the development, diffusion and innovation of ESTs in developing countries. Technology transfer is a treaty commitment that developed country Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have bound themselves to comply with fully and effectively. However, the UNFCCC Expert Group on Technology Transfer (EGTT) has pointed out that to date, the UNFCCC's technology transfer-related provisions have not yet been reflected in concrete, practical, results-oriented actions in specific sectors and programs.. This clearly indicates that developed country Parties have not fully and effectively complied with their treaty commitments under the UNFCCC relating to technology transfer. In this context, paragraph 1 (b) (ii) and 1 (d) of the Bali Action Plan adopted at COP 13 in Bali in December 2007 calls for nationally appropriate actions by developing countries on mitigation and adaptation to be supported by technology in a measurable, reportable and verifiable manner, and for enhanced action on technology development and transfer to support the same.

Technology transfer is to pass on technology or know-how from one party to another. There are many institutional factors affecting the technological transfer. IPRs are considered to be a major factor particularly in cases where technology is patented. The vast majority of patents and scientific journals are concentrated in developed countries, with very little or no activity in most developing countries. Core technologies are mainly imported from developed countries. In the absence of home-grown, endogenous ESTs, developing countries would be compelled to purchase, license, or otherwise acquire ESTs which are patented and produced generally in developed countries. There are an increasing number of patents on climate related technologies. This poses serious concerns about the adverse effect of patents on climate related technology transfer.

TRIPS Art. 7, Art. 8.1 and Art. 66.2 obligate developed countries to offer positive incentives to their firms and institutions to transfer technologies to developing countries particularly LDCs. However, the fact that little technology transfer has been taking place under TRIPS suggests that unless there is a new approach with respect to the role of IPRs vis-à-vis technology transfer, IPRs directly or indirectly provides a "freezing" effect on effective transfers of climate-related ESTs from developed to developing countries. Since most of the ESTs are available in developed countries, IPRs held over these technologies by firms in developed countries can impede the ability of developing countries to have meaningful and affordable access to ESTs through refusals to license, "ever-greening" of patents, increasing patent litigation, and impediments to follow-on innovation.

Therefore, there is strong justification for government policy intervention to ensure that IPRs do not impede developing countries' access to affordable climate-relevant ESTs through the effective use by developing countries of the flexibilities available to them under the TRIPS Agreement and enhancing the technology transfer mechanism in the UNFCCC in order to ensure that developed country Parties of the UNFCCC fully and effectively comply with their technology transfer obligations under the UNFCCC.

Under the TRIPS Agreement, there are flexibilities available to developing countries in order to promote their development policy objectives (including effective adaptation to climate change). These flexibilities include, but are not limited to compulsory licensing, parallel importation, exemptions to patentability, exceptions to patent rights and competition policy. In addition to these, national IP laws may also contain flexibilities on which the TRIPS Agreement is silent, like grounds for revocation of patents. However, the extent to which these flexibilities can be used for facilitating transfer of ESTs is debatable because of the possibility of narrow or liberal interpretations of these flexibilities.

Thus, the paper suggests that the work of the UNFCCC's Subsidiary Body on Implementation (SBI) in reviewing and assessing the implementation of UNFCCC Art. 4.5 could also include looking at the extent to which current mechanisms and policy approaches, including financing mechanisms, are actually effective in terms of promoting and supporting actual, on-the-ground, development and transfers of technology in implementation of Art. 4.5, the specific needs and concerns of developing country parties listed in Art. 4.8 arising from the adverse effects of climate change and/or the impact of the implementation of response measures, and those of LDCs were given full consideration (with respect to UNFCCC Art. 4.8) and taken fully into account, with respect to UNFCCC Art. 4.9. Furthermore, the SBI should consider the information required to be provided by developed Parties under UNFCCC Art. 12.3 (national communications) with respect to "details of measures taken in accordance with Article 4, paragraphs ... 5."

Additionally, with respect to the review and assessment of the implementation by developed countries of existing technology transfer commitments under the UNFCCC, the SBI could also consider difficulties faced by developing countries in obtaining ESTs from developing countries, suggest how to ensure that the ESTs and associated know-how which are transferred could be adapted to the economic, environmental, social, and other unique conditions extant in the recipient developing country, make recommendations on ensuring that IPRs do not form a barrier to the transfer of climate-relevant ESTs and know-how to developing countries under the UNFCCC, consider national experiences showing either positive or negative examples of the implementation of their UNFCCC technology transfer commitments by developed countries, and recommendations on national measures that may be undertaken by developed countries in order to promote the transfer of climate-relevant ESTs and know-how to developing countries under the UNFCCC.

A more flexible approach to IPRs should be undertaken in the context of the UNFCCC, in accordance with the submissions of developing countries to the AWG-LCA in respect of technology transfer under the Bali Action Plan. Thus, the COP can encourage developed countries to relax the application of IPR regimes in respect of patented ESTs. Another possible approach could be for developed country Parties to declare that among the practical steps that they will take steps to implement their commitments under UNFCCC Art. 4.5 and related provisions is to restrain from launching dispute settlement proceedings under the WTO against developing country Parties for alleged violations of TRIPS Agreement provisions arising from actions taken by developing country Parties under the UNFCCC to access climate-relevant ESTs.

While this paper has focused on the possibilities that may exist for developing countries in the context of the TRIPS regime under the UNFCCC regime with respect to making operational and effective technology transfer, these are only supplemental to efforts that need to be made within and among developing countries themselves to develop and use their own endogenous technologies to support climate adaptation and mitigation.

A more strategic approach to climate technology development and innovation needs to be undertaken in developing countries, essentially in order to lay the endogenous technological foundation for long-term sustainable and low-carbon development. This approach should emphasize South-South cooperation leading towards technological self-reliance and non-dependence by the South with respect to climate technologies.

Moreover, the paper suggests that given the shortfalls in the implementation of the UNFCCC's technology transfer provisions by developed countries, and in light of paragraphs 1(b)(ii) and 1(d) of the BAP pointing to technology transfer of climate-related ESTs to developing countries as an essential and integral component in enhancing the full and effective implementation of the UNFCCC, establishing a strong, adequately funded, transparent and participatory mechanism for technology transfer operating under the authority of, and accountable to, the UNFCCC COP would be essential.

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I. INTRODUCTION

1. An essential component of global action to address climate change is the continuous innovation and rapid diffusion of climate-related environmentally sound technologies (EST) across the globe. The innovation process can be featured as a set of activities, e.g., invention, adoption, diffusion, and learning by doing, etc. As current low carbon innovation has not adequately met the climate change challenge and the world has witnessed a slow transfer of technology, accelerating innovation and transfer of new technology poses a unique public policy challenge to achieve low carbon and climate resilient development.

2. The climate-related technologies have various intellectual property (IP) issues, some have low level IP issues, but most involve patented technologies. As developed countries have not fulfilled the technology transfer commitments under the UNFCCC, how to overcome the IP as a barrier to the technology transfer is a challenge for developing countries.

3. Under the TRIPS Agreement, there are some flexibilities which are available to developing countries in order to promote their development policy objectives (including effective adaptation to climate change). These flexibilities include, but are not limited to compulsory licensing, parallel importation, exemptions to patentability, exceptions to patent rights and competition policy. In addition to these, national IP laws may also contain flexibilities on which the TRIPS Agreement is silent, like grounds for revocation of patents. However, the extent to which these flexibilities can be used for facilitating transfer of ESTs is debatable because of the possibility of narrow or liberal interpretations of these flexibilities.

II. HIGHLIGHT OF GOVERNMENT OBLIGATION ON TECHNOLOGY TRANSFER IN THE CONTEXT OF CLIMATE CHANGE

4. Technology transfer is to pass-on technology or know-how from one party to another. This transfer of technology does not imply merely the transfer of hardware to the developing countries. Rather, it also includes the transfer of know-how and the right to use and further develop, innovate and adapt these technologies to fit developing country needs and circumstances so as to also support the development of endogenous technologies and skills in developing countries. There are three distinct components of technology that can be transferred:

- physical assets, such as plants, machinery, and equipment;

- information, both technical and commercial, relating to process know-how, choice of technology, engineering design and plant construction, organization and operating methods, quality control, and market characteristics; and
- human skills, especially those possessed by specialized professionals and engineers. The acquisition and absorption of foreign technologies, and their further development, are complex processes that demand significant knowledge and efforts on the part of those that acquire them.¹

5. Indeed, the Intergovernmental Panel on Climate Change (IPCC) defines technology transfer as “a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, non-governmental organizations (NGOs) and research/education institutions”. Hence, a central aspect of technology transfer is to support the building of local capacity to innovate and manufacture technologies which can be diffused into the local economy.

6. There are two channels of technology transfer, one is via private arrangement, and the other is government commitment. In terms of the former one, technology transfer is conducted by purchase, investment, or royalty agreements for cooperation. In terms of the latter, technology transfer shall be enforced by the government based on the international agreement.

7. In the context of climate change, technology transfer is a treaty commitment that developed country Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have bound themselves to comply with fully and effectively. UNFCCC Art. 4.5 states that such Parties “shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly to developing countries to enable them to implement the provisions of the Convention”. Additionally, Art. 4.1 (c) of the UNFCCC refers to the commitment of all Parties “to promote and cooperate in the development, applications and diffusion, including transfer of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of GHGs not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors.”

8. However, the UNFCCC does not limit the commitment by developed country Parties for the transfer of ESTs and know-how to developing countries on these two articles alone. UNFCCC Art. 4.8, in its heading (chapeau) covering the list of vulnerabilities of developing country Parties, states that all “Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures...” UNFCCC Art. 4.9 states that “The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.”

¹ K. Madhava Sarma, Technology Transfer Mechanism for Climate Change, 2008

9. Furthermore, UNFCCC Art. 4.7 conditions the extent to which developing country Parties will effectively implement their UNFCCC commitments on the “the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology” taking fully into account “that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.” In essence, UNFCCC Art. 4.7 lays out the balanced framework of commitments under which both developed and developing country Parties are to cooperate with each other in order to combat climate change under the UNFCCC.

10. The UNFCCC’s Conference of the Parties (COP) has, in various sessions, discussed the issue of the implementation of UNFCCC Art. 4.5, with various decisions coming out that laid down specific actions to be undertaken by Parties, the secretariat, and the subsidiary bodies. Of particular importance is Decision 4/CP.7² which established a framework for “meaningful and effective actions to enhance the implementation” of UNFCCC Art. 4.5 “by increasing and improving the transfer of and access to environmentally sound technologies (ESTs) and know-how.” The decision’s annex identified five themes around which such “meaningful and effective actions” would be undertaken. These are on:

- Technology needs and needs assessments;
- Technology information;
- Enabling environments;
- Capacity building; and
- Mechanisms for technology transfer

11. Other important decisions of the COP relating to technology transfer that are useful to take note of because they provide additional normative guidelines for the implementation of technology transfer under the UNFCCC are as follows:³

- **Decision 6/CP.11** - Development and transfer of technologies
- **Decision 10/CP.8** - Development and transfer of technologies
- **Decision 4/CP.7** - Development and transfer of technologies (includes the Framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention)
- **Decision 1/CP.6** - Implementation of the Buenos Aires Plan of Action
- **Decision 9/CP.5** - Development and transfer of technologies: Status of the consultative process
- **Decision 4/CP.4** - Development and transfer of technologies (includes the establishment of a consultative process on technology transfer)
- **Decision 9/CP.3** - Development and transfer of technologies
- **Decision 7/CP.2** - Development and transfer of technologies
- **Decision 13/CP.1** - Transfer of technology

12. In its 2007 report, the UNFCCC Expert Group on Technology Transfer (EGTT) concluded that discussions relating to technology transfer in the UNFCCC “should evolve

² See <http://unfccc.int/resource/docs/cop7/13a01.pdf#page=22> for the text of this decision.

³ See http://unfccc.int/cooperation_and_support/technology/items/3035.php.

to a more practical, results-oriented actions in specific sectors and programs”.⁴ The EGTT in effect implied that to date, the UNFCCC’s technology transfer-related provisions really have not yet been implemented by developed country Parties.

13. The Bali Action Plan⁵ adopted by UNFCCC Parties at COP 13 in Bali, Indonesia, last December 2007 reflects the importance of technology transfer in two ways:

- Paragraph 1(b)(ii) states that enhanced national/international action on mitigation of climate change would include, inter alia, consideration of “nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner”; and
- Paragraph 1(d) states that “enhanced action on technology development and transfer to support action on mitigation and adaptation, including, inter alia, consideration of:

- “(i) Effective mechanisms and enhanced means for the removal of obstacles to, and provision of financial and other incentives for, scaling up of the development and transfer of technology to developing country Parties in order to promote access to affordable environmentally sound technologies;
- “(ii) Ways to accelerate deployment, diffusion and transfer of affordable environmentally sound technologies;
- “(iii) Cooperation on research and development of current, new and innovative technology, including win-win solutions;
- “(iv) The effectiveness of mechanisms and tools for technology cooperation in specific sectors.”

14. In essence, paragraph 1(b)(ii) points out that the provision by developed countries of, inter alia, the technology (as well as financing and capacity-building) needed by developing countries to support and enable them to undertake nationally appropriate mitigation actions have to be “measurable, reportable and verifiable” (MRV), in compliance with developed countries’ obligations under the UNFCCC to transfer technology. Paragraph 1(d) further complements this by pushing for more effective and enhanced modalities for technology transfer to be agreed upon and implemented as part of the negotiated outcomes of the Bali Action Plan.

15. Identification of climate-related technologies is an important step toward the effective technology transfer. For example, on energy supply side, they include:

- carbon capture and storage (CCS) fossil fuel power generation
- nuclear power plants
- onshore and off shore wind

⁴ See UNFCCC, Expert Group on Technology Transfer: Five Years of Work (2007), p. 12, at http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/egtt_en_070523.pdf

⁵ See Decision 1/CP.13, at <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3>.

- biomass integrated-gasification combined cycle and co-combustion
- photovoltaic systems
- concentrating solar power
- coal: integrated-gasification combined cycle
- coal: ultra-supercritical
- second generation biofuels

On energy demand side, they include:

- energy efficiency in buildings and appliances
- heat pumps
- solar space and water heating
- energy efficiency in transport
- electric and plug-in vehicles
- H2 fuel cell vehicles
- CCS in industry, H2 and fuel transformation
- industrial motor systems

16. There are various types of barriers to technology transfer, ranging from market barriers to financial, legal, informational, regulatory and policy barriers, human resources constraints, infrastructural, organizational and institutional problems, as well as socio-cultural and political factors. Among the identified technologies, most involve various intellectual property (IP) issues. Except some technologies that have low level IP issues, most technologies involve patent.

17. In the High-level Conference on Climate Change: Technology Development and Technology Transfer organized by the UN Department of Economic and Social Affairs and the Chinese government in Beijing, Nov 2008, the following obstacles to technology transfer were highlighted:⁶

- License fees are too high, and constitute additional conditions for technology transfer.
- Insufficient transfer of know-how and technology for manufacturing key components.
- No substantial technology transfer through the Clean Development Mechanism.
- Technology owners have no will for technology transfer.
- Concerns about intellectual property rights and monopoly control over climate-relevant technologies.
- International climate policies are excessively market-based.

⁶ “Status of technology transfer, obstacles to technology transfer and best practices” a report presented at The Beijing High-level Conference on Climate Change: Technology Development and Technology Transfer, organized by the UN Department of Economic and Social Affairs and the Chinese government, Beijing, Nov 2008.

III. ADDRESSING INTELLECTUAL PROPERTY RIGHTS BARRIERS TO THE TRANSFER OF CLIMATE-RELATED TECHNOLOGIES TO DEVELOPING COUNTRIES

18. In this context, it is important to identify the barriers to effective technology transfer of climate-related ESTs to developing countries, in particular those that pertain to the relationship between intellectual property rights (IPRs) over such ESTs.

19. IPRs are considered to be major factor in the debate related to technology transfer, particularly in cases where technology is patented. In this context, IPRs influence the international policy environment needed to facilitate development, transfer and diffusion of ESTs in developing countries and LDCs. However, international co-operation on technology transfer has been largely limited to voluntary actions.⁷

20. At present the global frontier in technology invention and innovation is dominated by the developed world. The vast majority of patents and scientific journals are concentrated in developed countries, with very little or no activity in most developing countries. Core technologies are mainly imported from developed countries. China estimates that over 85% of patents in many of its core high tech economic sectors are owned by developed country companies⁸.

21. IPRs assume greater significance in the light of the efforts by the G8 countries to engage major emerging economies like China and India to commit to a global target to reduce emissions by 50 per cent by 2050.⁹ If this target is made binding for the big developing countries, it would imply that emissions of developing countries should peak in the next 20-30 years. Such a binding target would create an immediate demand among developing countries for ESTs that can be used to allow them to meet such targets. In the absence of home-grown, endogenous ESTs, developing countries would be compelled to purchase, license, or otherwise acquire ESTs which are patented and produced generally in developed countries. This makes it all the more necessary to secure the effective transfer of low-carbon technologies to developing countries by eliminating all the barriers to such transfer on an urgent basis.

22. IPRs create a proprietary interest in non-excludable, non-rival goods (that is, the invention) by giving rights of exclusive use, manufacture, and sale to the owner of an invention, and by providing legal recourse against infringement of this right (that is, unauthorized use, manufacture, or sale).¹⁰ From the perspective of an optimal IP regime, the goal of IP systems is to strike a balance between private profitability and public-interest concerns. However, *excludability is the essence of IPRs*, which enables IP right holders to exclude others from using their protected invention unless the same is used under a license from the patent holder. But this does not obligate the right holder to issue licenses and transfer the protected knowledge to other firms. Thus, the right holder has

⁷ Mukul Sanwal, "Leadership in the Climate Change Negotiations", *South Bulletin: Reflections and Foresights*, South Centre, 1 November 2008, p.2.

⁸ Shane Tomlinson *et al.*, *Innovation and Technology Transfer: Framework for a Global Climate Deal*, E3G and Chatham House, 2008, p.56

⁹ ICTSD, "G8 Adopts Climate Change Goal for 2050", *Natural Resources*, vol.8, no.13, 11 July 2008, available at <http://ictsd.net/i/news/biores/12755/> (visited 15 January 2009).

¹⁰ Cameron Hutchison, Does TRIPS facilitate or impede climate change technology transfer into developing countries? *University of Ottawa law & Technology Journal* __ full citation?

discretion with respect to transfer of knowledge and technology over which it has monopoly control due to IPRs. Consequently, inventors can sell such patented technologies at a price higher than the marginal cost, which is socially less than optimal due to the deadweight loss and impediments for dynamic innovation for the recipient country. In essence, IPRs tend to enhance the private profitability goal of IP systems over the goal of ensuring that IPRs promote public interest concerns.

23. The problem inherent in climate change technology transfer markets is that owners of new technical information under the protection of intellectual property rights are granted market power to acquire lead times, increase prices and charge royalties.

24. There are an increasing number of patents on climate related technologies. Recent studies conducted by the European Patent Office have noted the increasing number and scope of patent claims in wind energy and biofuel technologies.¹¹ This poses serious concerns about the adverse effect of patents on climate related technology transfer.

A. The TRIPS Agreement and Technology Transfer

25. As a key pillar of international protection for IPRs, the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) adopts a market-based approach to transfer of technology. That is, it depends on market mechanisms like licensing and foreign direct investment (FDI), on the presumption that such mechanisms would allow embedded technologies to be transferred automatically.

26. While attempting to ensure minimum standards of protection of the interests of IP right holders, the TRIPS Agreement recognizes "... the underlying public policy objectives of national systems for the protection of intellectual property, including developmental and technological objectives".¹² TRIPS Art. 7 states that the transfer and dissemination of technology is a fundamental objective of the global IPR system:

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.

27. TRIPS Art. 8.1 also states clearly that in formulating their laws and regulations, WTO Members may take measures necessary to promote the public interest in sectors of vital importance for their socio-economic and technological development, if those measures are consistent with the provisions of the TRIPS Agreement. Moreover, TRIPS Art. 8.2 specifically states that "... appropriate measures ... may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which

¹¹ See e.g. <http://www.epo.org/topics/innovation-and-economy/emerging-technologies/article-10.html> and <http://www.epo.org/topics/innovation-and-economy/emerging-technologies/article-7.html>.

¹² Agreement on Trade Related Aspects of Intellectual Property Rights, 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, LEGAL INSTRUMENTS – RESULTS OF THE URUGUAY ROUND vol.31, 33 I.L.M. 81 (1994), Preamble.

unreasonably restrain trade or adversely affect the international transfer of technology” if those measures are consistent with the provisions of the TRIPS Agreement.

28. TRIPS Art. 66.2 explicitly obligates developed countries to offer positive incentives to their firms and institutions to transfer technologies to LDCs:

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 (emphasis added).

29. These provisions amplify the policy recognition in the Preamble of the TRIPS Agreement that developmental and technological objectives should be underlie public policy objectives of national systems of IP protection. But, in themselves, these TRIPS provisions do not provide an automatic route for technology transfer and dissemination through licensing and market mechanisms. In fact, most of the provisions of TRIPS offer little direct assurance that there will be a rise in international technology transfer to developing countries.

30. While acknowledging the need for a balance between rights and obligations, the TRIPS Agreement itself gives no guidance on how to achieve this balance and has considerably reduced the policy space available to States to address this while focusing on forms of IP protection that has been most useful for innovators in the developed countries. Moreover, developed countries have been seeking to limit the flexibilities that are still available to States under TRIPS through the adoption of TRIPS Plus standards.¹³ The fundamental assumption of the TRIPS regime is that adequate standards of IP protection will encourage innovation of knowledge, and the transfer and dissemination of the same through licensing and market mechanisms. Indeed, this assumption prevails even in the case of public policy exceptions contained in the TRIPS Agreement where the same are limited by requirements of consistency with the other provisions of the Agreement and other limiting conditions to the policy options available under specific Articles of the Agreement.

31. The fact that little technology transfer has been taking place under TRIPS, despite TRIPS Arts. 7, 8.1, 8.2, and 66.2, suggests that unless there a new approach with respect to the role of IPRs vis-à-vis technology transfer, IPRs directly or indirectly provide a “freezing” effect on effective transfers of climate-related ESTs from developed to developing countries. One way of doing this is to emphasize the flexibilities in the TRIPS Agreement and broadening their scope through a WTO Ministerial Declaration on TRIPS and Climate Change to ensure climate-relevant ESTs are effectively and efficiently diffused and shared through technology transfer by removing the IP-imposed barriers to such transfers. This would complement any new modalities or mechanisms for operationalizing technology transfers under the UNFCCC.

B. The Impact of IPRs on Climate-Related EST Transfers

¹³ Amit Gupta, “Patent Rights on Pharmaceutical Products and Affordable Drugs: Can TRIPS Provide a Solution?”, *Buffalo Intellectual Property Law Journal*, 2004, vol.2, p.132.

32. Developed countries and many scholars contend that IPRs are not a barrier to transfer of technology to developing countries. Rather, they argue that strong IPR protection and their effective enforcement in developing countries creates a facilitative environment for transfer of technology to the developing countries. Moreover, it is also argued that the IP system also encourages domestic institutions to make greater investments in R&D and further develop new and improved technologies in various sectors.

33. IPR advocates further argue that a central reason for protecting IPRs is that they facilitate international technology transfer, because without adequate protection against leakage and misappropriation of new technical information firms which hold the technology and related know-how will be unwilling to transfer the same in open technology markets. They suggest that a strong IPR regime can encourage technology holding firms in other countries to apply for patents in the technology-needing country, which can be taken as a signal of the firm's willingness to deploy that technology in the recipient country. Secondly, adequate disclosures in the patent application can be accessed by local firms and other firms worldwide to improve their own technologies.¹⁴

34. However, an UNDP study on transfer of low carbon technologies to developing countries points out that it is questionable whether technology transfer under stringent IPR regimes in developing countries can have long term benefits for the recipient developing country because recipient firms in these countries may be less likely to gain access to the underlying knowledge that is necessary to develop technological capacity within the recipient country, and thus it can retard the recipient country's long-term ability to absorb and innovate on the basis of new low carbon technologies, which is critical for their sustainable development.¹⁵ Moreover, the study also points out that access to key patents by developing country firms in itself is not sufficient for effective technology transfer because full use of the patent is likely to require access to a variety of related information sources that are not sufficiently disclosed or fully explained in the patent itself.

35. Another study also points out that the informative effects of patent grants through disclosure do not necessarily amount to enhancing technological capacity for developing countries because of several reasons.¹⁶ The information disclosed may be very minimal and insufficient to enable competing firms to learn much from the same, use of the accessed information is conditioned by terms of licensing agreements by the patent holder, in multiple claim patents information disclosed is likely to be so provided that competitors cannot reproduce all aspects of the claims, patent specifications may not transfer actual know-how and by the time firms in developing countries may learn the same the technology may have become obsolete or further updated.

¹⁴ Keith E. Maskus, *Encouraging International Technology Transfer*, UNCTAD-ICTSD Project on IPRs and Sustainable Development, Issue Paper No.7, May 2004, p.23

¹⁵ Jim Watson *et al.*, *Technology and Carbon Mitigation in Developing Countries: Are Cleaner Coal Technologies a Viable Option?*, in Human Development Report 2007/2008, Fighting Climate Change: Human Solidarity in a Divided World, Human Development Report Office, UNDP, Occasional Paper, 2007/16, p.6

¹⁶ Carlos M. Correa, "Technology Transfer under International Intellectual Property Standards", in Keith E. Maskus and Jerome H. Reichman (eds), *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime*, Cambridge University Press, 2005, pp. 239-40

36. It has been pointed out in a study by the Sussex Energy Group that developing country firms do not seem to have access to the most cutting edge technologies, and where they have had access to cutting edge technologies, there are doubts about the extent to which they have had access to the know-how underlying those technologies.¹⁷

37. Since most of the ESTs are available in developed countries, IPRs held over these technologies by firms in developed countries can impede the ability of developing countries to have meaningful and affordable access to ESTs through:

- High royalty fees;
- Refusals to license;
- “ever-greening” of patents;
- Increasing patent litigation; and
- Impediments to innovation.

1. High royalty fees

38. IPRs prohibit access to new technologies by enabling firms that own patented technologies to keep prices prohibitively high.¹⁸ If a firm in a developing country wishes to make use of a patented EST, it will have to pay a significant amount of royalty and licensing fees to the firm which holds a patent over the technology. Hence, access by developing countries to the ESTs available in the developed countries is hindered by their limited capacity to pay the large amount of royalty and licensing fees required. It is an increasingly serious barrier to the flow of technology transfer, and undermines the fulfillment of the technology transfer obligations of developed countries under the UNFCCC.

39. While strong patent laws may provide the legal security and mechanism for such licensing to occur, the larger issue is the extent to which firms within developing countries can afford to purchase expensive patented technologies.¹⁹ Some statistics (year 2000) point to the fact that out of the total revenue generated from the environmental industry in the world, a major share of total revenue from the environmental industry was generated in the US, Western Europe, and Japan (85 per cent) with shares of 38 per cent, 30 per cent and 17 per cent respectively. Asia (excluding Japan) generated only 5 per cent of revenue, while Latin America, the Middle East and Africa generated 2.4 per cent, 1 per cent and 1 per cent respectively.

40. Royalties and license fees are perhaps the most direct available measure of international earnings on IPRs. As technology importers, all developing countries are net

¹⁷ David Ockwell, *Intellectual Property Rights and Low Carbon Technology Transfer to Developing Countries – A Review of the Evidence to Date*, UK-India Collaboration to Overcome Barriers to the Transfer of Low Carbon Energy Technology: Phase 2, Sussex Energy Group, UK, TERI, India, Institute of Development Studies, UK, April 2008, p.5

¹⁸ *Id.*, p. 3.

¹⁹ IPCC, *Issues in Technology Transfer*, *supra*, p. 24. Further at pp. 124–125, the IPCC emphasizes the limited importance of stronger IPR protection in the absence of stronger legal institutions more generally in developing countries.

payers of royalties and license fees. For almost all developing countries, the net payments of royalty and license fees have risen markedly over the last decade. In contrast, for example, the United States remains the largest recipient of such fees. The United Kingdom is also a net recipient, signaling a net export of technologies and product designs.²⁰

2. Refusal to license

41. Even if a developing country firm wishes to pay the large royalty and licensing fees in order to access the technology, the patent holder may still refuse to license out the technology. Patents have been used to block environment-related technology transfer as firms may choose to withhold technological information from particular countries for reasons of competitiveness. The specter of anticompetitive deployment of patents and patent pools in order to discourage local firms from learning technologies through imitation and reverse engineering surely looms large in the context of weak competition enforcement in most developing economies.

42. Prominent examples of refusal to license ESTs to firms in developing countries can be found in the case of access to technologies necessary for mitigating depletion of the ozone layer of the atmosphere through the emission of ozone depleting substances under the Montreal Protocol. Under the Montreal Protocol, developed countries were required to take every practicable step to ensure the transfer of necessary ESTs to the developing countries.²¹ However, because of the fear of competition, firms from developed countries holding patents over these technologies refused to license them to firms in some developing countries.

43. According to South Korean firms and R&D institutions, there were cases where both private firms and public institutions of developed countries refused to license such ESTs like HFC-134a, fuel cell and Integrated Gasification Combined Cycle (IGCC).²² The refusal to export non-ozone depleting substances to Korea forced local firms to invest twelve-million dollars over a six-year period to develop their own technology.²³

44. Indian firms were also refused licenses on patented technologies for substitutes of ozone depleting substances, in order to prevent emergence of competitors.²⁴ Those

²⁰ Keith E. Maskus, "The role of intellectual property rights in encouraging foreign direct investment and technology transfer", *Duke Journal of Comparative and International Law* Vol 9: (1998), pp. 109-161.

²¹ Cameron Hutchison, "Does TRIPS facilitate or impede climate change technology transfer into developing countries?", *University of Ottawa law & Technology Journal*, 2006, vol.3, p.527

²² IPCC, *Issues in Technology, supra*, p. 99.

²³ See Chung, "Transfer of Environmentally Sound Technology," *supra*, p. 52. See also Korean Trade Promotion Agency, "Case Study 4: The Republic of Korea and the Montreal Protocol" in Veena Jha & Ulrich Hoffmann, eds., *Achieving Objectives of Multilateral Environmental Agreements: a package of trade measures and positive measures* (United Nations Conference on Trade and Development UNCTAD/ITCD/ TED/6), p.62, available at http://www.unctad.org/en/docs/itcdted6_en.pdf: "In the opinion of Korean firms, the exorbitant high royalties are an expression of a lack of intention to transfer the alternative technology on the part of technology owners."

²⁴ Martin Khor, *IPRs, Technology Transfer and Climate Change*, Third World Network, p.5, available at <http://www.climatedialogue.info/Khor.pdf> visited 16 January 2009

technologies were closely held by a small group of transnational companies, which were virtually operating as a cartel to control production.

45. Licenses tend to be issued by patent holders where they feel that transfer of technology will not lead to a loss of competitive advantage. For example, though the US ethanol industry was willing to transfer technology related to pre-treatment techniques for cellulosic ethanol since there were no concerns about competition from China. However, the US ethanol industry would not share its latest biological enzyme technology advancements because it has a clear competitive advantage in this area.²⁵

46. Leading firms in developing countries like Goldwind (China) and Suzlon (India) have secured access to wind technology by license purchases, but it has been pointed out that these licenses were acquired from second-tier developed country firms who have less to lose in terms of competition and more to gain in terms of license fees. Leading firms in developed countries have been reluctant to license their technologies to potential developing country competitors.²⁶

3. Ever-greening of patents for climate-relevant ESTs

47. Although basic technologies concerning renewable energies (viz. wind, solar etc.) tend to be off patent, new technologies are increasingly being patented. A recent report states that patents in the bio-fuel sector dominated renewable energy in 2007, and the trend is continuing. Over the last six years, a total of 2,796 bio-fuel related patents were published in the US, with the number increasing by over 150 percent in each of the past two years. In 2007, the number of bio-fuel patents (1,045) was more than the combined total of solar power (555) and wind power (282) patents published in that year. This shows that even if basic technologies concerning renewable energies (such as wind, solar etc.) are off-patent, IPRs in new ESTs are likely to be still patented.

48. Moreover, there is a possibility that improvements over unpatented basic technologies can be patented, thereby preventing competing firms from accessing the improved technology. Patenting of improvements over existing ESTs can lead to “ever-greening” of patents and allow firms holding patents to effectively extend their monopolies beyond the initial monopoly period granted by the first patent.

49. An example of this can be found in the pharmaceutical sector where pharmaceutical companies have attempted to obtain patents for incremental modifications of their existing patented molecules and thereby seeking to extend their patent monopoly. This has thwarted the introduction of cheaper generic versions of these medicines after the expiry of the initial patent in many developing countries, and thus has led to problems of access to affordable medicines. Ever-greening of patents over climate-related ESTs can lead to similar problems of access to such ESTs for developing countries.

²⁵ Chris Deal, *Climate Change Technology Transfer: Opportunities for the Developing World*, Washington Internships for Students of Engineering, 22 August 2007, p.18, available at <http://www.wise-intern.org/journal/2007/ChrisDealFinal.pdf> visited 16 January 2009

²⁶ Ockwell, *supra*, p. 6.

4. Increasing litigations on infringement of patents over ESTs

50. There have been a rise in the number of litigations on infringements on patents over ESTs. This has been most prevalent in the wind technology sector.

51. In the US, General Electric (GE) and other firms have successfully used patent infringement litigation to block foreign access to the US market. For instance, on the complaint by Kenetech Windpower alleging that a European company's (Enercon) wind turbines infringed its patents for controlling alternative current (AC) power output, the US International Trade Commission (ITC) excluded Enercon's variable speed wind turbines from entering the US market until 2010. The Federal Circuit Court upheld this decision of the ITC in the case *Enercon vs ITC*. In *Southwest Windpower vs Aeromax*, an Arizona court issued an injunction preventing the sale of Aeromax's wind turbines which were alleged to be infringing patents held by Southwest Windpower. In *Paice v. Toyota*, Paice claimed that Toyota's (a Japanese car maker) hybrid vehicles included a drive train similar to one covered by its patents. A Texas court held that Toyota infringed Paice's patent, but denied an injunction and allowed Toyota to continue selling its hybrid cars for a royalty payment of \$25 for each car sold during the life of the patent. The case was affirmed on appeal. In March 2008, GE filed a complaint with the ITC against Mitsubishi alleging that Mitsubishi's wind turbine infringed GE's patent on wind turbine technology.²⁷

52. These examples give rise to issues of concern for developing country firms. For instance, it is often argued that some developing country firms (like Suzlon from India) have been successful in accessing technology through strategic acquisitions of firms in developed countries. But most of these firms are second-tier firms and the actual use of the technology accessed through such acquisition of second-tier firms in developed countries may be hindered through patent litigations which are on the rise in developed countries. This could create further disincentives by raising the costs of such acquisitions from developing country firms.

53. Moreover, firms from developed countries could also use patent litigation to block competitors in developing countries from accessing or using their patented technologies. For instance, the top ten assignees of wind motor technology in China are firms from developed countries with GE owning more than 200 patents on wind motor technology after its acquisition of Enron.²⁸ GE has not only used patent litigations to block the entry of foreign competitors into the US market, but after acquiring Enron, it has also indulged in patent litigation in China as well.

5. Impediments to follow-on innovation

²⁷ "The Greening of Patent Litigation", *Energy Daily: The Power of Earth and Beyond*, Washington DC (SPX), 17 April 2008, available at http://www.energy-daily.com/reports/The_Greening_Of_Patent_Litigation_999.html visited 17 January 2009

²⁸ Duan Liping, *Analysis of the Technical Competitive Strategy of main Competitors in the Field of Wind Power*, Institute of Scientific and Technical Information of China, Beijing, available at www.bjstinfo.com.cn/iticti08/upload/attachments/200811031717870.ppt visited 11 January 2009

54. There is also a possibility that the privatization of public-interest technologies could in many cases erect competitive barriers, raise transaction costs and produce significant anti-commons effects, which tend to reduce the supply of public goods related to innovation as such.²⁹

55. In most cases, any benefit of strong patent laws accruing to local innovators in developing countries is overwhelmingly outweighed by the high cost of importing patented technologies from developed countries. Overly protective IPR regimes may inhibit follow-on innovations, thus slowing down technological development and innovation leading to the creation of endogenous technologies and know-how, particularly in developing countries.³⁰

IV. OPERATIONALIZING TECHNOLOGY TRANSFER OF CLIMATE-RELEVANT ESTS

56. Markets for exchanging technologies are inherently subject to failure due to appropriability problems, spillovers, asymmetric information, and market power resulting from IPRs. Thus, there is strong justification for government policy intervention to ensure that IPRs do not impede developing countries' access to affordable climate-relevant ESTs. These interventions can take place through:

- (i) effective use by developing countries of the flexibilities available to them under the TRIPS Agreement; and
- (ii) enhancing the technology transfer mechanism in the UNFCCC in order to ensure that developed country Parties of the UNFCCC fully and effectively comply with their technology transfer obligations under the UNFCCC.

A. Using TRIPS Flexibilities to Promote Transfer of Climate-Relevant ESTs

57. Under the TRIPS Agreement, there are some flexibilities which are available to developing countries in order to promote their development policy objectives (including effective adaptation to climate change). These flexibilities include, but are not limited to:

- compulsory licensing;
- parallel importation;
- exemptions to patentability;
- exceptions to patent rights; and
- competition policy.

58. In addition to these, national IP laws may also contain flexibilities on which the TRIPS Agreement is silent, like grounds for revocation of patents.

²⁹ Chung, *supra*

³⁰ World Bank, *World Development Report 1998–99: Knowledge for Development* (1999), pp. 34–35 [World Bank, *World Development Report*], available at <http://www.worldbank.org/wdr/wdr98/contents.htm>

59. The potential contribution of TRIPS flexibilities to enhancing climate change-related transfer of ESTs to developing countries could be significant to accessing climate-relevant ESTs. However, such TRIPS flexibilities are not, in themselves, wide-ranging, and there are many considerations that also need to be taken into account by developing countries when seeking to use these flexibilities.

1. Compulsory licensing and technology transfer

60. Compulsory license (CL) is an authorization granted by a government to a party other than the holder of a patent on an invention to use that invention without the consent of the patent holder. Though the TRIPS Agreement does not specify the term “compulsory license”, such measures are allowed under TRIPS Art. 31.³¹ TRIPS Art. 31 regulates the procedures and conditions governing “Other Use without Authorization of the Right Holder”. However, it should be noted that this TRIPS provision does not lay down the grounds upon which such licenses may be granted. It only specifies certain procedures and describes certain terms that compulsory licenses should embody. Thus, countries may autonomously determine the situations in which such measures can be taken. It should further be noted that **the grant of CL is not limited to issues of public health. Hence, CL may also be granted with respect to ESTs.**

61. Compulsory licenses have historically been used extensively in many developed countries to strike a balance between interests of right holders and the public interest. For example, the United States is one of the foremost users of CL for environmental purposes. It has several statutory programs for compulsory licensing. These include the provisions under the US Clean Air Act (CAA), the special program for compulsory licensing of civilian atomic energy patents, the US Black Lung Act, and the March-in Rights under the Bayh-Dole Act. The US makes extensive use of compulsory licensing as a remedy to anticompetitive practices (e.g. recent US government compulsory license for Microsoft protocols) and for government procurement, not to mention statutory compulsory licensing provisions in US law for data on agriculture, plant breeders’ rights and copyright.

62. There is a perceived economic and social reasoning underlying the grant and enforcement of compulsory licenses. The economic reason is based on the abuse of monopoly concepts that go to the roots of legal monopoly derived through patents. The social aspect of compulsory license revolves around access to patented knowledge thereby emphasizing that “public interest in having technical knowledge more immediately accessible should take precedence over other patent interest”.

63. It would be interesting to note how technology transfer mechanisms work through compulsory licensing in the US, especially under the CAA. Often, a party attempting to comply with a standard of the CAA may be unable to meet the standard without resort to a patented technology. Thus, Section 308 of the CAA provides a mechanism by which a non-complying party may obtain a patent license where it has been unsuccessful in its attempts to obtain a license on its own. Under CAA section 308, the United States may

³¹ The text of TRIPS Art. 31 can be found here: http://www.wto.org/english/docs_e/legal_e/27-trips_04c_e.htm

require the owner of the patented technology to grant the non-complying party a patent license in exchange for a reasonable royalty if the patented technology is necessary to meet the requirements in certain sections of the CAA.³²

64. Courts in the US have approved considerable numbers of compulsory licensing requests for ESTs. One of the very interesting CL cases involved the Toyota-Paice patent decision. In August 2006, a court in the US granted Toyota a compulsory license on three Paice patents which involved a hybrid electric vehicle improvement, for a royalty of \$25 per automobile (E3G).

65. It should be noted that in a developed country like the US, legislators have found the need for expediting technology transfer through the use of CL in case of patents on environmental goods. With the environmental and developmental challenges that face developing countries in the context of climate change, the public interest argument for using CL to expedite and operationalize the transfer of climate-relevant ESTs to developing countries is even more acute and relevant.

66. Environmental goods aside, compulsory licenses have also been used in many cases to facilitate access to medicines. For example, in 2001, Canada issued a CL over Bayer patents on ciprofloxacin for allowing generic manufacturing to build up a stockpile of the drug against an attack of certain strains of anthrax. In 2005 the Canadian Access to Medicines Regime (CAMR) was created to allow Canadian manufacturers to export medicines to countries lacking manufacturing capacity by issuing compulsory licenses. In Italy, compulsory licenses have been issued for Merck patents on antibiotics that use the active ingredient imipenem cilastina when Merck refused to license its rights on imipenem cilastina. Similarly, a CL was also issued against Glaxo when it refused to grant a license to an Italian company for the manufacture of sumatripan sulphate, an active ingredient in migraine medicines.

67. Developing countries have also issued CL for ensuring access to medicines. In 2004, Indonesia issued a CL for manufacturing generic versions of two HIV-AIDS drugs – lamivudine and nevirapine. Malaysia also issued CL to import anti-retroviral drugs from Indian generic manufacturers. In 2006, Thailand issued a CL to import and locally produce efavirenz till 2011. In 2007, it issued CL for patents on the AIDS drug Kaletra and the heart disease drug Plavix. In many cases, the threat of issuing a CL has made patent holding firms issue voluntary licenses on their patented products. For instance, in 2005 China successfully used the threat of compulsory licenses to obtain voluntary licenses for manufacturing generic versions of Tamiflu used for treating avian influenza.

68. Thus, from the examples of use of compulsory licenses for access to medicines it may appear that CL may also be a very useful tool for developing countries to ensure access to climate-relevant ESTs. Indeed, the TRIPS Agreement does not exhaustively list all the grounds on which a CL can be issued. Developing countries can in fact and in law determine the grounds on which CL can be issued.

69. Article 68 of the Brazilian patent law authorizes the government to issue a CL if the patented invention is not worked in the territory of Brazil, i.e. if it is not manufactured

³² Mandatory Patent Licenses Under Section 308 of the Clean Air Act, USEPA, <http://www.epa.gov>.

locally. The US had challenged this provision in the WTO alleging that it is not compliant with TRIPS because under TRIPS Art. 27.1, WTO Members are obliged to provide patent protection in all fields of technology without discrimination as to whether patents are imported or locally produced. Eventually this dispute was settled bilaterally through an agreement between the US and Brazil under which Brazil agreed to issue an advance notice when it intended to issue a CL.³³ Though this question was not decided by the WTO, it has been pointed out that local working is a valid ground of issuing CL under Article 5A of the Paris Convention.

70. Indeed, the patent laws in many countries have local working requirements that can be used as a valid ground for issuing CL for ESTs. Moreover, CL can be used in situations of refusal to deal or anti-competitive practices as in the case of access to medicines.

71. However, though CL has been useful for facilitating access to medicines through generic manufacturing and importation, in the context of access to ESTs, there might be instances in which CL could be an essentially limited option for developing countries, in particular for those whose local firms are not technically capable of using the patented technology. These possible limitations also need to be noted.

72. This is because a CL only gives local manufacturers the right to use the patented technology, it does not oblige the patent holder to transfer technical know-how necessary to use it. This know-how is largely not disclosed through patent specifications because most of the know-how is actually developed after the application is filed. However, some US cases may be instructive in this regard where a transfer of know-how was required as part of CL or settlement decree.³⁴

73. Another problem with CL is that they can be revoked once the market imbalance is redressed through the working of the CL. Thus, a CL holding firm stands to lose out for efficiently working the technology, and does not have a long-term possibility of recovering its investments. This may also deter firms from using CL, in addition to threats of litigation from patent holders as well as its limited ability to compete with the patent holder which has a dominant position in the market.³⁵

74. In this regard, TRIPS Art. 8.2 may be of some use for developing countries. It needs to be noted that this provision recognizes three situations where appropriate measures may be taken by countries against right holders. These are abuse of IPRs, restrictive business practices and activities preventing international transfer of technology. These three situations may stand independently of the others. For instance, where a CL has been issued but the patent holder does not transfer the necessary know-how which cannot be accessed by the CL holder through the patent disclosure, the authority issuing the CL may order the right holder to transfer the know-how under TRIPS Art. 8.2. And in cases where transfer of climate change related technology may be impacted by lack of transfer of know-how by patent holders in their licensing agreements, this provision may be used by environmental and sectoral regulators (like energy regulators) to take measures against such activity.

³³ James P. Love, "Recent Examples of the Use of Compulsory Licenses on Patents", KEI Research Note 2, Knowledge Ecology International, March 2007.

³⁴ Correa, *supra*, pp. 247-8

³⁵ *Id.*, pp. 247-9

75. Moreover, under TRIPS Art. 31(f), a CL can be issued essentially for supply of the domestic market of the Member authorizing the use of CL. Thus, States cannot grant a CL to serve export markets. This is why, to facilitate access to essential medicines in countries which do not have a local manufacturing facility, the WTO had to adopt a decision on Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health which stated that countries may waive the requirement of TRIPS Art. 31(f) with respect to the grant by it of a compulsory licence to the extent necessary for the purposes of production of a pharmaceutical product and its export to an eligible importing Member. However, to be eligible the importing State must have insufficient or no manufacturing capacities in the pharmaceutical sector for the product in question, it must have issued or be intending to issue a CL under TRIPS Art. 31, and specify the name and exact quantity of the product required. Correspondingly, the exporting country can issue a CL only for the product and the quantity specified by the eligible importing country, and the products to be exported under the CL must be clearly identified as such in its packaging and labeling information. However, this waiver is only applicable for pharmaceutical products and cannot be used for issuing CL for exporting ESTs.

76. Therefore, issuing CL for climate-relevant ESTs is a possible option for developing countries in order for them to access such ESTs that they deem important for them to meet their climate mitigation and adaptation requirements consistent with their development priorities. As TRIPS Art. 31 stands now, developing countries can use such flexibility to authorize the grant of CLs for such ESTs. However, the limitations described above in relation to the use of CLs must also be taken into account in assessing the extent to which CLs may in fact be useful for transferring not just the hardware but also the software, the know-how, associated with such ESTs.

77. To enhance the utility of CLs under the TRIPS Agreement for developing countries in relation to the access to and transfer of climate-relevant ESTs, it would be desirable that a system of waiver of limitations on CL for climate-relevant ESTs be developed to facilitate transfer of ESTs to developing countries by allowing States to issue CL to competitors to serve export markets.³⁶ A precedent for this has already been established in the WTO when it amended TRIPS Art. 31 by adding TRIPS Art. 31 bis to create a permanent waiver of the domestic market restriction for certain pharmaceuticals and open up the possibility of regional markets for these products. This waiver under TRIPS Art. 31 bis could theoretically be extended to ESTs, particularly in light of the Declaration on TRIPS & Public Health's pronouncement that "[e]ach Member has the right to grant compulsory licences and the freedom to determine the grounds upon which such licences are granted".³⁷

2. Parallel importation

³⁶ Hutchison, *supra*, p. 536

³⁷ Matthew Littleton, *The TRIPS Agreement and the Transfer of Climate-Change-Related Technologies to Developing Countries*, DESA Working Paper No.71, October 2008, pp.10-11

78. Parallel importation refers to a situation where a third party may import a foreign manufactured product put in the foreign market by the patent holder or its licensee, without the authorization of the patent holder. This is based on the principle that the patent holder has been remunerated for its invention through the first sale of the product in the foreign market, and the patent gets exhausted due to this fact. Thus, local manufacturers or sellers of that product can re-sale the same to a third party in another country without the patent holder's authorization.

79. The rationale is that any further continuance of the patent monopoly and control of the patent holder over the resale of the patented product would unreasonably restrain trade and competition. Parallel importation is an useful tool for accessing the patented product at less cost by importing it from a country where the patent holder has exhausted its patent and the product is available at affordable price. Generally, patent holders sell products at differential prices in different markets. Therefore, parallel importation allows consumers in the parallel importing country to gain access to the product without affecting the right of the patent holder in the country where the product is first sold.

80. TRIPS Art. 6 states that the issue of exhaustion of rights shall not be a matter of dispute settlement. Therefore, the TRIPS Agreement seems to leave countries free to allow parallel importation of products on the basis of a policy of exhaustion of patents. However, in spite of this apparently broad latitude that is available to developing countries, there is legal and economic controversy regarding the applicability of the doctrine of international exhaustion of patents under TRIPS.

81. If the doctrine of exhaustion is applied universally, it may discourage differential pricing by patent holders. Secondly, a universal exhaustion doctrine may come into conflict with the exclusive right of importation guaranteed to right-holders under TRIPS Art. 28 of TRIPS read with TRIPS Art. 27.1.³⁸ Some scholars have suggested that the doctrine of exhaustion be applied on a regional basis, as has been done by the EU for pharmaceutical products. Hence, developing countries could arguably apply such doctrine in order to effect parallel importation of climate-relevant ESTs.

3. Exemptions to patentability

82. Patentability refers to the boundaries established in relation to what invention that offers a new technical solution to a problem may be patented. Prior to the TRIPS Agreement, countries had freedom to exclude inventions of certain types or in certain areas of technology from patentability, based on their development priorities and strategies. Later, TRIPS Art. 27.1 required WTO Members to grant patents to all types of inventions in *all* fields of technology, as long as these inventions meet certain basic criteria. However, policy space remains in relation to the scope of patentability in each country since the TRIPS Agreement does not define the patentability criteria, i.e., novelty, inventive step and industrial applicability. Thus, countries may define these criteria under their national laws differently for different fields of technology in accordance with their developmental and scientific and technological objectives.

³⁸ Gupta, *supra*, pp.139-40.

83. Under TRIPS Art. 27.1, WTO Members are prohibited from discriminating in the granting of patents between different fields of technology. However, it has been pointed out by the WTO dispute settlement panel in the *Canada-Generic Pharmaceuticals* case that “discrimination” is not the same as “differentiation,” such that different patents over different products or technologies could hence be differently treated. Thus, it is possible to provide different standards of patentability for ESTs and accord exceptional treatment to such patents.

84. Moreover, TRIPS Art. 27 does not define the threshold of novelty, inventive step and industrial application, and countries may define these criteria differentially for ESTs with the objective of facilitating access to ESTs. In this context, the submissions made by India before the WTO’s Committee on Trade and Environment may be instructive, e.g. the reduction in the terms of protection for the IPR. For example, while the term of protection for a patent under TRIPS Art. 33 is a minimum period of 20 years from the date of filing, India suggested that countries may be allowed, through a suitable provision in the TRIPS Agreement, to reduce this to a much shorter term of protection so as to allow free access to patented ESTs within a shorter period in order to deal rapidly with environmental problems. This allows the necessary incentive to potential owners of IP to generate ESTs, while allowing users of such ESTs competitive access within a reasonable period.

4. Exceptions to patent rights

85. The TRIPS Agreement recognizes that the rights of a patent owner to prevent third parties from exploiting the patented product are not absolute. TRIPS Art. 30 states that WTO Members may provide “limited exceptions” to these rights, which implies that countries may, under certain conditions, automatically allow the use of the patented invention by a third party without consent of the patent holder. However, these exceptions should not conflict unreasonably with the normal working of the patent or unreasonably prejudice the legitimate interests of the patent holder by taking into account the legitimate interests of third parties.

86. In the pharmaceutical sector, a prominent example of this exception is the “Bolar” exception or the early working exception, which allows generic manufacturers to obtain necessary regulatory approvals for marketing generic versions of patented medicines during the term of the patent so as to ensure a ready availability of the generic medicine in the market as soon as the patent expires.³⁹ Moreover, under this provision the patented knowledge may be used in conducting research for inventing around the initial invention, improving upon the invention or for evaluating the invention and determining if it works.⁴⁰

87. A possible interpretation of TRIPS Art. 30, which may be very relevant for facilitating transfer of ESTs, is that under this provision, a country may authorize the export of certain inventions by third parties without the consent of the patent holder. This

³⁹ *Id.*, p.141.

⁴⁰ Sisule F. Musungu, *et al.*, *Utilizing TRIPS Flexibilities for Public Health Protection through South-South Regional Frameworks* (South Centre, April 2004) p.17.

would be a procedure that is independent of and separate from the provisions of TRIPS Art. which governs compulsory licensing procedures. That is, exportation of a technology under TRIPS Art. 30 need not comply with the requirements for issuance of a CL under TRIPS Art. 31. For example, a country that has technological capacity in ESTs in its private sector may use TRIPS Art. 30 to authorize competing firms to manufacture certain patented technologies for export to developing countries where there is a need for such technology and a lack of capability to develop the same at affordable cost to meet the supply needs of all. In case of patented ESTs that are not patented in developing countries, this will be particularly useful because the importing country will not have to issue a CL for the same. Indeed, such an interpretation will be consistent with the spirit of co-operation on climate change and technology transfer under the UNFCCC and the Rio Declaration.

88. However, a restrictive interpretation of TRIPS Art. 30 by the WTO panel in the *Canada-Generics* case has failed to recognize this policy option available to countries to facilitate co-operation in the public interest. The panel held that the “limited exception” under TRIPS Art. 30 must be understood as a narrow exception allowing only a small diminution of the rights on question, “normal exploitation” of the patent would mean a brief period of exclusivity after the patent has expired, and in balancing the interests of patent holders and third parties, priority would be accorded to the interests of right-holders.⁴¹

89. According to some authors, it is unlikely that these criteria under TRIPS Art. 30 as interpreted by the WTO panel would be met in the case of a climate-relevant EST, unless the “legitimate interests of third parties” in mitigating or adapting to climate change are given tremendous weight.⁴² This restrictive interpretation does not allow for a pro-development reading of TRIPS Art. 30 which could construe that actions of the patent holder such as refusal to deal or supply know-how in case of ESTs cannot be justified as normal exploitation of the patent. Therefore, there is a need for clarifying the scope of TRIPS Art. 30 with regard to ESTs so as to broaden the scope of using TRIPS Art. 30 for facilitating climate-relevant EST transfers to developing countries.

5. Competition policy

90. TRIPS Art. 8.2 provides a basis for ensuring that IPRs do not enable right holders to indulge in anti-competitive behaviour. It recognizes that WTO Members may need to take appropriate measures to prevent the abuse of IPRs by right holders *or* activities which unreasonably restrain trade or adversely affects international transfer of technology. Therefore, even if the IPR holder does not actually abuse the IPR, the impact of its activities on competition or international transfer of technology may be a basis for action against the right holder by competition regulators in accordance with their competition policy.

91. Thus, in situations of refusal to deal, in addition to using compulsory licenses, national competition authorities can take appropriate measures against the IPR holder to

⁴¹ Gupta, *supra*, pp.142-3.

⁴² Littleton, *supra*, p.10.

redress the competition distorting effects of its activities. As pointed out earlier, such action can be taken in terms of TRIPS Art. 8.2 even if there is abuse of IPRs as such.

92. However, two related factors may limit this flexibility that is available to developing countries. TRIPS Art. 8.2 requires that the measures taken under the article must be consistent with other provisions of the TRIPS Agreement. This brings in TRIPS Art. 40 which restricts such measures only to licensing agreements which have an anti-competitive effect. Thus, in situations where the IPR holder makes the technology available to a developing country firm through joint ventures, authorities may not be able to take necessary measures to redress the situation. Moreover, redressal measures may not be taken where there is no competition distorting effect, even if there is a development retarding effect. There is no clarity on whether such joint venture agreements or practices which may have adverse effects on development objectives without being anti-competitive can be targeted by virtue of TRIPS Art. 8.2.

6. WTO Declaration on TRIPS and Climate Change

93. Though the TRIPS Agreement offers some flexibilities to enable WTO Members to take necessary measures for facilitating transfer and diffusion of ESTs to developing countries, these flexibilities could be constrained by procedural conditionalities and other limitations including the requirement of consistency with the other provisions of the TRIPS Agreement. In many cases the extent to which these flexibilities can be applied for transfer of ESTs is not clear with possibilities of broad as well as narrow interpretations of the provisions. Therefore, developing countries may be wary of using these flexibilities.

94. To encourage and promote the use of TRIPS flexibilities by developing countries, and to assure developing countries that their use of such flexibilities will not result in them being brought to WTO dispute settlement proceedings by developed countries, a WTO ministerial declaration would be needed to so that these TRIPS flexibilities are used in a manner consistent with the provisions and objectives of the TRIPS Agreement, the WTO Agreement, and the UNFCCC.

95. WTO Members should consider issuing a Declaration on TRIPS and Climate Change similar to the Declaration on TRIPS and Public Health which reaffirmed the right of developing countries by stating that the TRIPS Agreement does not and should not prevent members from taking measures to protect public health.⁴³ Accordingly, while reiterating WTO Member's commitment to the TRIPS Agreement, it was also affirmed that the TRIPS Agreement can and should be interpreted and implemented in a manner supportive of WTO Members' right to protect public health and, in particular, to promote access to medicines for all. In this connection, the right of WTO Members to use, to the full, the provisions in the TRIPS Agreement which provide flexibility for this purpose, was reaffirmed. Further, the Doha TRIPS and Public Health Declaration stated that WTO Members have the right to determine the grounds for compulsory license under the

⁴³ Such a declaration can be issued by the WTO's highest decision-making body, the Ministerial Conference, when it is in session. Outside of the sessions of the Ministerial Conference, the General Council of the WTO meeting in Geneva could also adopt and issue the declaration.

TRIPS Agreement. In particular, paragraph 6 of the declaration laid special emphasis to the concept of technology transfer under TRIPS Art. 66.2.

96. Taking the WTO's TRIPS and Public Health Declaration as a template, it might be useful to establish the linkage between climate change and technology transfer under a new WTO Declaration on TRIPS and Climate Change. Some have argued that such a declaration may not be useful for facilitating access to technology for developing countries because, unlike in the case of pharmaceuticals, effective royalties on climate-relevant EST patents are likely to be small. Therefore, it is argued that weakening IP in favour of developing country markets in this sector can create disincentives for private sector research.⁴⁴

97. However, such an argument ignores the situations where patent holders of ESTs have denied transfer and diffusion of ESTs through refusals to deal. While existing provisions of the TRIPS Agreement does provide flexibilities to safeguard the public interest including protection of health and environment, these flexibilities are constrained by various conditionalities in the TRIPS Agreement like the need to establish consistency of exceptional public interest actions with other provisions of the TRIPS Agreement (Article 8), limitation upon measures governments can take to restrain anti-competitive practices (Article 40 limits such measures to licensing practices and not other means of transferring technology like joint venture agreements, etc. and it also allows action against restrictive business practices only where it has an anti-competitive effect and not on grounds of anti-development effects), limitations on the use of compulsory licenses (for allowing CL to serve export markets, limitations on the duration of CL, etc.). Therefore, it is necessary to have a Declaration on TRIPS and Climate Change in order to broaden the scope of TRIPS flexibilities so that the same may be used for facilitating transfer of ESTs.

98. Such a declaration needs to specifically address the following:

- Clarify the scope of TRIPS Art. 8.2 so as to allow countries to take measures not only for abuse of IPRs or anti-competitive behaviour by right-holders, but also for such actions which though not violative of the right-holders obligations essentially retards international technology transfer. Such a clarification should ensure that the scope of TRIPS Art. 8.2 is not restricted through a narrow understanding of the consistency requirement. Rather, it should promote a pro-development understanding of the consistency test. This will enable competition and sectoral regulators to take effective measures against situations of refusal to deal as well as refusal to transfer know-how of ESTs by the patent holder.
- The declaration may clarify that countries can apply a differential standard of patentability for ESTs, and may also allow exceptions to the term of patentability for ESTs.
- The declaration should enable a broader understanding of TRIPS Art. 30 which can enable developed countries and other countries where ESTs are patented to authorize third parties to export certain ESTs to those developing countries and

⁴⁴ John H. Barton, *Mitigating Climate Change through Technology Transfer: Addressing the Needs of Developing Countries*, Energy, Environment and Development Programme: Programme Paper 08/02, October 2008, Chatham House, p.9

LDCs which do not have the capacity to develop such technology internally, without issuing compulsory licenses under TRIPS Art. 31.

- The TRIPS provisions on compulsory licensing should also be clarified on the basis of the understanding that most developing countries do not have the industrial capacity to use the CL system. Therefore, limitations on the CL system should be waived beyond the paragraph 6 system under the Doha Declaration on TRIPS and Public Health.
- The declaration should also state that countries have the full freedom to set their own standards of applicability of the doctrine of exhaustion of rights in the case of ESTs.
- TRIPS Art. 39 requires protection of protection of undisclosed information or trade secrets. Such information is very relevant for ESTs because before their deployment the health, safety and efficacy of the EST needs to be ascertained. Even if patents are transferred, the absence of this data may make it practically difficult to use them, presenting a further obstacle for many developing countries. However, it recognizes that governments may circulate such data where they are necessary for protecting the public interest, if appropriate measures are taken to protect the data against unfair commercial use. In advancing a “TRIPS-plus” agenda in various forums such as the World Intellectual Property Organization (WIPO) and other organizations, many developed countries have been seeking stringent standards of protection of test data which will thwart the emergence of competing firms through easy access to the available knowledge contained in such data. The declaration needs to clarify that TRIPS Art. 39 should not prevent access to necessary know-how for using ESTs by firms in developing countries.
- The declaration should clearly state that countries have the full freedom to set their own legal standards for revocation of patents, on which the TRIPS Agreement is silent. Revocation may be used as a measure where effective international transfer of technology is retarded by actions of the patent holder. This should be in accordance with a pro-development understanding of TRIPS Art. 8.2.
- WTO Members should refrain from bringing to WTO dispute settlement any developing country seeking to maximize the use of TRIPS flexibilities for the purpose of enhancing transfers of needed ESTs in order to pursue the sustainable development objective of the WTO and the objective (including the ultimate objective) of the UNFCCC.

99. A WTO Declaration on TRIPS and Climate Change will help in clarifying the extent to which the TRIPS flexibilities can be used by developing countries to ensure access to ESTs. A clear policy statement from the highest decision making body of the WTO that countries can take the necessary measures to address the public need of transfer and diffusion of technology will embolden governments to use these flexibilities.

100. This may also encourage forward movement on exploring alternative systems of encouraging innovation on climate friendly technologies. For instance, the World Business Council for Sustainable Development (WBCSD) had taken an initiative known as Eco-Patent Commons which enables open access to selected patents and permits for

the creation of new ESTs.⁴⁵ However, participation in this project is voluntary and after the first six months of its work, there has been very little participation by firms in this project. Some scholars have also suggested an international agreement on Access to Basic Science and Technology (ABST) modeled on the Multilateral System (MLS) under the International Treaty on Plant Genetic Resources which requires that new materials developed with the resources and materials transferred to the MLS must be shared.⁴⁶ While these propositions are debatable, forward movement on any alternative thinking must be preceded by cementing the broad scope of TRIPS flexibilities through a Declaration on TRIPS and Climate Change.

B. Enhancing Technology Transfer Mechanisms for Climate-Relevant ESTs in the UNFCCC

101. In addition to the use of TRIPS flexibilities as described above in order to address some of the problems relating to the effective transfer of climate-related ESTs from developed to developing countries, it is also much more important to put more operational teeth to the technology transfer provisions of the UNFCCC itself.

102. Given the nature of the UNFCCC as the primary multilateral vehicle for global cooperation on climate change issues, and the binding nature of its provisions, its technology transfer provisions has to be fully implemented by developed country Parties.

103. But to date, as has been pointed out above, the UNFCCC's technology transfer provisions have not yet been reflected in concrete, practical, results-oriented actions in specific sectors and programs. This clearly indicates that, to date, developed country Parties have not fully and effectively complied with their treaty commitments under the UNFCCC relating to technology transfer.

1. Operationalization through the work of the UNFCCC Subsidiary Body for Implementation (SBI)

104. Decision 13/CP.3⁴⁷ provided for a division of labour between the UNFCCC's Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA). With respect to issues relating to the development and transfer of technology, paragraph 3(c) and (d) of Decision 13/CP.3 provide as follows:

“(c) The Subsidiary Body for Implementation will, with inputs from the Subsidiary Body for Scientific and Technological Advice as appropriate, have responsibilities for assisting the Conference of the Parties **in the assessment and review of the effective implementation**

⁴⁵ K.R. Srinivas, *Sink or Swim: Eco-patent Commons and the Transfer of Environmentally Sustainable Technologies*, available at <http://ictsd.net/i/news/bioresreview/12098/>, last visited on 17 January 2009.

⁴⁶ John H. Barton and Keith E. Maskus, “Economic Perspectives on a Multilateral Agreement on Open Access to Basic Science and Technology” in Simon J. Evenett and Bernard M. Hoekman (eds), *Economic Development & Multilateral Trade Cooperation*, Palgrave Macmillan and the World Bank, 2006, pp.349-68; Littleton, *supra* note 34, p.5.

⁴⁷ For the text of decision 13/CP.3, please see <http://unfccc.int/resource/docs/cop3/07a01.pdf#page=44>

of the Convention with respect to the development and transfer of technology.” (emphasis added)

“(d) As stipulated in the Convention, and as decided by the Conference of the Parties in decision 6/CP.1, the Subsidiary Body for Scientific and Technological Advice will have responsibility for providing advice on all scientific, technological and methodological aspects of the development and transfer of technology.”

105. In short, while the SBSTA provides advice to the COP with respect to measuring the extent to which technology transfer under the Convention is occurring, the SBI assists the COP in assessing and reviewing the extent to which developed Parties have put or are putting in place concrete actions and policy approaches that effectively and meaningfully implement UNFCCC Art. 4.5.

106. In this context, the work of the SBI in reviewing and assessing the implementation of UNFCCC Art. 4.5 could also include looking at the extent to which, inter alia:

- current mechanisms and policy approaches, including financing mechanisms, are actually effective in terms of promoting and supporting actual, on-the-ground, development and transfers of technology in implementation of Art. 4.5;
- technologies that are developed and/or transferred in implementation of Art. 4.5 are adapted or appropriate to the national environmental, social, and economic contexts of the recipient developing country Party. This could include an identification of the opportunities for and barriers to (including market and policy conditions) such development and transfer of nationally- or locally-appropriate technologies;
- the specific needs and concerns of developing country Parties listed in Art. 4.8 arising from the adverse effects of climate change and/or the impact of the implementation of response measures, and those of least-developed countries were given full consideration (with respect to UNFCCC Art. 4.8) and taken fully into account, with respect to UNFCCC Art. 4.9.

107. Furthermore, in addition to establishing measurable review and assessment parameters with respect to the elements drawn from decision 4/CP.7⁴⁸, the SBI should consider the information required to be provided by developed Parties under UNFCCC Art. 12.3 (national communications) with respect to “details of measures taken in accordance with Article 4, paragraphs ... 5.” The work of the expert review teams reviewing Annex I national communications is crucial for this purpose, and should be taken into account in the review and assessment of the effectiveness of the implementation of UNFCCC Art. 4.5.

⁴⁸ For the text of this decision, and in particular the Annex to this decision which contains the elements, see <http://unfccc.int/resource/docs/cop7/13a01.pdf#page=22>.

108. Additionally, with respect to the review and assessment of the implementation by developed countries of existing technology transfer commitments under the UNFCCC, the SBI could also consider:

- the challenges and difficulties that developing countries face in obtaining from developed countries (especially the private sector of the latter) the appropriate climate-friendly ESTs that they need for both mitigation and adaptation;
- suggestions on how to ensure that the ESTs and associated know-how which are transferred could be adapted to the economic, environmental, social, and other unique conditions extant in the recipient developing country;
- recommendations on ensuring that IPRs do not form a barrier to the transfer of climate-relevant ESTs and know-how to developing countries under the UNFCCC;
- national experiences showing either positive or negative examples of the implementation of their UNFCCC technology transfer commitments by developed countries;
- recommendations on national measures that may be undertaken by developed countries in order to promote the transfer of climate-relevant ESTs and know-how to developing countries under the UNFCCC.

2. Enhancing technology transfer under the Bali Action Plan

109. Developing countries have also identified key concerns relating to technology transfer under the UNFCCC in the context of the negotiations currently taking place in the AWG-LCA with respect to paragraph 1(d) of the BAP. These include, inter alia, concerns about the general principles that mechanisms for technology transfer under the UNFCCC need to reflect, the kinds of institutional arrangements that would be needed to make technology transfer effective, addressing IPR issues, and financing for technology transfer.⁴⁹

110. In particular with respect to the IPR-technology transfer issues, various developing countries in their submissions to the AWG-LCA have suggested that:⁵⁰

- appropriate mechanisms be developed to promote actions leading to technology development, deployment, diffusion, and transfer (Argentina);
- a suitable IPR regime for accessing technologies owned by the private sector in developed countries be created (India);
- an IPR sharing arrangement for joint development of ESTs be developed (China);
- criteria on compulsory licensing for patented ESTs; joint technological or patent pools to disseminate technologies to developing countries at low cost; and limited-time patents and the provision of incentives (tax exemption, subsidies,

⁴⁹ See FCCC/AWGLCA/2008/16/Rev.1, paras. 127-134.

⁵⁰ See id., para. 129

etc.) for the owner of technology for differential pricing be considered (China, Pakistan, Bolivia, India);

- new approaches that combine IPR protection and facilitate technology sharing, bearing in mind the example set by decisions in other relevant international forums relating to IPRs, such as the WTO Doha Declaration on the TRIPS Agreement and Public Health (Brazil);
- mechanisms to ensure protection of IPR and guarantee access to and use of technologies by avoiding over-protectionism be developed (Ghana);
- government licensing of publicly funded technologies that offer global benefits by addressing climate change be considered (Indonesia); and
- the public domain for publicly funded technologies; and exemptions for climate-friendly technologies be expanded (Bolivia).

111. In essence, what these developing country proposals all suggest is that the importance of technology transfer of climate-relevant ESTs to meeting the challenge of climate change adaptation and mitigation in developing countries requires that a more flexible approach to IPRs be undertaken in the context of the UNFCCC. The monopoly power granted to IPR holders under current IPR regimes is seen as a major barrier in the full and effective implementation of technology transfer to developing countries under the UNFCCC.

112. This could mean, for example, that policy decisions are taken by the COP to encourage UNFCCC Parties, especially those developed country Parties granting patents over existing or new climate-relevant ESTs, the relaxation of the application of existing IPR regimes insofar as these apply to the transfer of climate-relevant ESTs under the UNFCCC to developing countries.

113. Another possible approach could be for developed country Parties to declare that among the practical steps that they will take to implement their commitments under UNFCCC Art. 4.5 and related provisions is to restrain from launching dispute settlement proceedings under the WTO against developing country Parties for alleged violations of TRIPS Agreement provisions arising from actions taken by developing country Parties under the UNFCCC to access climate-relevant ESTs. Developed country Parties could also commit unilaterally to work with their private sector patent holders of climate-relevant ESTs to foster and promote effective technology transfer and the development and innovation of endogenous ESTs in developing countries in collaboration with research and development institutions in the latter.

114. In October 2008, developing Parties to the UNFCCC through Antigua and Barbuda on behalf of the Group of 77 and China (G-77 and China) submitted a proposal for establishing a Technology Mechanism under the UNFCCC for realizing both paragraphs 1(b)(ii) and 1(d) of the Bali Action Plan.⁵¹ This mechanism is intended to “address all aspects of cooperation on technology research, development, diffusion and transfer in accordance with Articles 4.1(c), 4.3, 4.5 and other relevant articles of the

⁵¹ See FCCC/AWGLCA/2008.MISC.5, pp. 6-9.

Convention, in order to enable mitigation and adaptation under the relevant paragraphs of decision 1/CP.13.”

115. The G-77 and China technology mechanism proposal states that the mechanism will operate under the authority and guidance of the COP and be accountable to it. It sets out some guiding criteria; suggests the creation of an executive body to enable enhanced actions on technology development and transfer to support mitigation and adaptation actions; proposes the establishment of a multilateral climate technology fund financed by assessed contributions from developed countries and which would cover technology transfer-related financial requirements; promotes a technology action plan; and lists eligible activities that can be supported by the mechanism.

116. Given the shortfalls in the implementation of the UNFCCC’s technology transfer provisions by developed countries, and in light of paragraphs 1(b)(ii) and 1(d) of the BAP pointing to technology transfer of climate-related ESTs to developing countries as an essential and integral component in enhancing the full and effective implementation of the UNFCCC, establishing a strong, adequately funded, transparent and participatory mechanism for technology transfer operating under the authority of, and accountable to, the UNFCCC COP would be essential.

117. The mechanism should be comprehensive in coverage so as to be able to address all stages of the technology development cycle (including research and development, demonstration, deployment, diffusion, and endogenous innovation). It should be designed in such a way that it enhances developed country compliance with the provisions of UNFCCC Arts. 4.3 and 4.5 on technology transfer. The transfer modalities must be focused on direct, concrete, and on-the-ground approaches that will actually result in technology transfer taking place. It should also ensure the technology transferred under its modalities are appropriate and adapted to, or may be adapted to, the unique environmental and developmental conditions of the recipient country. The mechanism should also be able to encourage and promote further innovation and development of the transferred technology in the recipient country.

118. Such a mechanism would also be the most cost-effective and efficient way of ensuring that the needed technology is in fact made accessible to developing countries consistent with the objective of the UNFCCC. Finally, such a mechanism would make it easier to measure, report and verify, consistent with paragraph 1(b)(ii) of the BAP, the transfer of technology from developed to developing countries to support and enable the latter in undertaking nationally appropriate mitigation actions in the context of sustainable development.

V. GOING BEYOND TRIPS AND THE UNFCCC: CLIMATE TECHNOLOGY DEVELOPMENT AND INNOVATION IN DEVELOPING COUNTRIES

119. While this paper has focused on the possibilities that may exist for developing countries in the context of the TRIPS regime and the UNFCCC regime with respect to making operational and effective technology transfer, it should be stressed that technology transfer has to be seen in a much broader development context – one which prioritizes endogenous and self-reliant technology development, innovation and

adaptation appropriate to the unique development conditions facing each developing country.

120. Maximizing TRIPS flexibilities in order to acquire relevant technologies to use and adapt is one policy tool which developing countries can use. If the UNFCCC's technology transfer regime is made effective and operational, that will also help. However, these are supplemental only to efforts that need to be made within and among developing countries themselves to develop and use their own endogenous technologies to support climate adaptation and mitigation.

121. A more strategic approach to climate technology development and innovation needs to be undertaken in developing countries, essentially in order to lay the endogenous technological foundation for long-term sustainable and low-carbon development.

122. While many climate technologies will be developed in developed countries, and developing countries could learn a lot from such technologies, caution must be employed to ensure that a technology dependency relationship with developed country providers for such technologies is not created. There will also be many climate technologies that are available from, or may be developed in, developing countries which, in fact, might be more appropriate for other developing countries given that many developing countries (especially those in the same region) share many developmental, climatic and ecological characteristics in common.

123. The focus of such a strategic development-oriented approach towards climate technology cooperation, sharing, research and development, must be on enhancing South-South self-reliance and cooperation in achieving the South's long-term sustainable development objectives. In this regard, developing countries could, inter alia:

- increase domestic and South-South investments in endogenous technology innovation adaptation, research and development, and diffusion, regardless of whether external financing for such research and development is forthcoming from external partners;
- increase existing levels of South-South cooperation, on both a regional (e.g. Africa, Latin America, Asia) and inter-regional level, on joint climate technology cooperation, sharing, research and development, and diffusion;
- work together at the international political and technical levels to ensure that initiatives by developed countries to enhance and put in place "TRIPS-plus" or "TRIPS-plus-plus" IP policy regimes that bind developing countries through international policy-shaping forums such as various international organizations (e.g. the World Intellectual Property Organization, World Customs Organization, WTO, Universal Postal Union, International Telecommunications Union, etc.), bilateral and multilateral trade and investment agreements or economic partnerships, and standard-setting organizations, do not succeed;
- establish South-South modalities for jointly financing and supporting endogenous technology and skills development and upgrading, including for the acquisition, innovation and adaptation of relevant climate technologies from both developed

and other developing countries to make them suitable to domestic conditions and requirements;

- strengthen South-South regional and inter-regional integration initiatives and mechanisms as the fundamental policy and institutional framework that can allow domestic development and climate policy, including on climate technology sharing and cooperation, to be effectively developed and implemented under conditions that are mutually and strategically consistent with regional neighbours and other developing countries. This could lead to greater South-South economic self-reliance and independence.

VI. CONCLUSION

124. Climate change is a global problem in need of a global solution, which is possible through with international agreement involving both developed and developing countries. The current problems faced by developing countries in climate change-related technology transfer are marred by high costs of available technologies, which are compounded by the granting and maintenance of monopoly rights for the technology creators through IPRs.

125. In making technology transfer fully operational and effective in the pursuit of the objective (including the ultimate objective) of the UNFCCC, there must be willingness to explore and innovate in terms of both policy approaches and operational modalities relating to the transfer of climate-relevant ESTs to developing countries in various policy regimes. The two most important ones with respect to the IPR-technology transfer linkage are the TRIPS regime and the UNFCCC regime.

126. In this regard, the policy flexibilities that may be available to developing countries in the TRIPS Agreement should be fully utilized in order to accelerate technology transfer of climate-relevant ESTs, not least through compulsory licensing, parallel importation, exemptions to patentability, exceptions to patent rights, and competition policy. Additionally, political will should be generated within the WTO, but outside of the context of the WTO's on-going (but currently stalled) Doha Development Agenda trade negotiations, for the WTO – through its General Council or its Ministerial Conference – to adopt a Declaration on TRIPS and Climate Change. Such a declaration would send a political and normative signal to all WTO Members that the TRIPS Agreement should not be used to effectively block any needed transfers of climate-relevant ESTs to those developing countries that may need them.

127. Technology transfer discussions in the UNFCCC should now go beyond the discussion of concepts. Such discussions should focus on the establishment of a mechanism and operational modalities within such a mechanism to ensure the cost-effective, efficient, direct, concrete, and on-the-ground transfer of needed climate-relevant ESTs from developed to developing countries in accordance with the provisions of the UNFCCC. Such mechanism should be under the authority and guidance of the COP, and its governance must be accountable to the COP. It should enable and encourage further innovation and development of the transferred technology in developing countries, and ensure that such technologies are appropriate and adapted to developing country conditions.

READERSHIP SURVEY QUESTIONNAIRE
South Centre Analytical Note

**EFFECTING CLIMATE-RELEVANT TECHNOLOGY TRANSFER TO DEVELOPING COUNTRIES:
USING TRIPS FLEXIBILITIES AND THE UNFCCC**

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