



A Study of Barriers to Climate Change Technology Innovation and Its Transfer to Developing Countries

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ABSTRACT

This proposed study critically examined various approaches that have been suggested for facilitating access to climate change technology by developing countries, including compulsory licensing, patent pools, patent databases and structured voluntary licensing "mechanisms". These are non-solutions, or at best partial solutions, because they would not deliver adequate results.

In this regard, some of the suggested approaches could potentially be detrimental to developing countries. Most damaging, non-solutions divert finite resources from effective solutions. The study proposes a two-pronged strategy for developing countries to gain access to climate change technology, while forging a pathway for national and regional development. The first prong is a climate change technology innovation strategy (CCTIS). An innovation strategy should target the funding and infrastructure deficit that cripples research, development and commercialization by developing country actors in developing countries. International funding initiatives should support developing country-originated CCTIS.

Keyword : Climate Change, Technology, Innovation

Introduction

The present study focused on how climate technology innovation can be promoted and transferred to developing countries in the given United Nations Framework Convention on Climate Change (UNFCCC). The European Union (EU) has been a leader in global climate change policy making since the 1990s. It was the main force in the international arena pushing for the most stringent measures to mitigate climate change during the preparation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Therefore, it needs to be thoroughly investigated as to how EU can play a leading role in technology transfer to developing countries.

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.

Climate Change Technology and Developing Countries

Climate change presents a momentous challenge for developing countries. Water scarcity in arid

regions, island inundation, bacterial contamination and immunity deficit, food shortages, expensive energy and infrastructure collapse due to energy shortages are all foreseeable crises with catastrophic consequences for poor people. Developing countries need to employ climate change technologies in order to avert climate catastrophe.

This proposed study critically examined various approaches that have been suggested for facilitating access to climate change technology by developing countries, including compulsory licensing, patent pools, patent databases and structured voluntary licensing "mechanisms". These are non-solutions, or at best partial solutions, because they would not deliver adequate results. Most of these approaches are based on an outmoded model of patronizing relationships between technology owners (developed country parties) and passive recipients of technology transfer (developing country parties). In this regard, some of the suggested approaches could potentially be detrimental to developing countries. For example, in some cases patent pools may cover patents not legally valid in many developing countries, while requiring developing countries to contribute their own intellectual capital and/or pay royalties for the use of patents that they otherwise would not be legally required to pay. Patent information databases are compilations of public material that is already accessible to developing countries, while diverting funding opportunities to lucrative information technology (IT) contracts (to change the search parameters or organization of the data) to developed nation enterprises and experts. Proposals for structured voluntary licensing mechanisms entail royalties, and they place too much reliance on management by developed country professionals, international bureaucratic arrangements (of what must be an agile business process), expensive software, and packaged technology portfolios selected by developed country parties. Most damaging, non-solutions divert finite resources from effective solutions.

The study proposes a two-pronged strategy for developing countries to gain access to climate change technology, while forging a pathway for national and regional development. The first prong is a climate change technology innovation strategy (CCTIS). Developing countries should target climate change research in their universities and research institutions, strengthen innovation infrastructure to support their researchers, claim the economic value of their human capital as intellectual property (IP), and participate as owners in the growing global market for climate change technology. An innovation strategy should target the funding and infrastructure deficit that cripples research, development and commercialization by developing country actors in developing countries. International funding initiatives should support developing country-originated CCTIS.

This study also urges that international climate change discussions leading to Copenhagen and beyond present an opportunity to link climate change technology transfer with development of national innovation systems in order to achieve concrete results for developing countries. Theoretical and legalistic discussion concerning IP and technology in developing countries, without action and application, does not yield concrete results. Mythologies that have failed should not be repeated, such as the notion that enforcement of IP laws per se promotes innovation or that "technology transfer" can occur in a one-way flow.

Intellectual Property Rights as Technology Transfer Barriers

Technology transfer is to pass on technology or know-how from one party to another. There are many institutional factors affecting the technological transfer. Intellectual property rights (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.

Article 7, Art. 8.1 and Art. 66.2 of the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) obligate developed countries to offer positive incentives to their firms and institutions to transfer technologies to developing countries particularly least-developed countries (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

Using IPR Flexibilities to Effect Technology Transfer of ESTs

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.

In this regard, 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 refrain 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 there may be 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 study may suggest that 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.

What explains the EU's interest and leadership on climate change issues? Why is the EU prepared to embark and commit on a costly programme to combat climate change?

First, it is the widespread belief in Europe that the threat from climate change is serious. The Intergovernmental Panel on Climate Change's (IPCC's) Reports, the European Environment Agency (EEA) and other regional and national analyses have provided extensive evidence of the impact of climate change on Europe and other parts of the world. These scientific analyses together with widespread lobbying by environmental groups have led to a growing consensus on the threats of climate change and hence the need to take action to address the threats and risks associated with it. Hence there is a strong public support behind the EU's climate change activism.

Second, there is a strong perceived linkage between climate change, sustainable development and energy security. The linkage to energy security issues, given the high dependency of many EU member states on external energy supply, meant that the entire agenda of climate change and energy security took on a much more integrated approach within the Union together with a clear external dimension. According to the European Commission, the involvement of the EU in these sensitive issues should be deepened and made more concrete.

Third, the EU prefers to manage risks through institutionalisation and burden-sharing.

Fourth, the EU has a strong belief of itself as a normative power and desire to demonstrate global leadership. The conviction is gaining ground that the EU is not a conventional great power in waiting, but, as Ian Manners has suggested, a "normative power" that acts primarily through ideas and values, and not military or economic force. The notion of the EU as a qualitatively different, normative power can be also applied to the EU's role in international environmental politics.

Fifth, the EU has accepted the principle of common but differentiated responsibilities and acted on the belief that since developed countries are primarily responsible for the majority of the post-industrial revolution emissions and therefore the accumulation of GHG in the atmosphere, it should take the lead in combating climate change. The EU and its member states have demonstrated willingness in recent years to take on a greater share of the burdens associated with global environmental problems. The stated EU policy is to reduce EU-wide greenhouse gas emissions and to assist developing countries through aid and technical know-how to promote sustainable development. This is especially evident in their rhetoric and diplomatic manoeuvring regarding climate change, although it would be wrong to say that they have always embraced the notion or that they have done as much as many argue they ought to.

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