



ecbi policy report

Negotiating the Development and Transfer of Technologies for a Copenhagen Agreed Outcome: Issues for Consideration

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1. Scope of the briefing note

Successful climate policy involves a two-track approach: it must consider actions aimed at mitigating climate change (i.e. reducing greenhouse gas emissions and enhancing carbon sinks) and actions aimed at adapting to present and future climate change impacts. Mitigation and adaptation both require technological, institutional and behavioural initiatives, the economic and policy instruments to encourage such initiatives, and research and development to enhance their predictability, effectiveness and efficiency.

The development and transfer of technologies to support mitigation and adaptation are key issues in the negotiation of a new climate policy agreement, scheduled for adoption in Copenhagen in December 2009. Without repudiating the need for non-technological solutions to complement the contribution of technology to climate policy, this briefing note outlines a number of technology-related negotiation issues that are relevant to developing countries, in particular the least developed countries. These include some issues that are currently highly contested in the negotiations towards a Copenhagen Agreed Outcome.

2. Background

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) has found that with technologies that are currently available or expected to be commercialised within the coming decades, it would be possible to stabilise atmospheric greenhouse gas concentrations at a level close to what is needed to stay below the temperature target of 2°C. This assumes that appropriate and effective incentives are in place for the development, acquisition, deployment and diffusion of technologies and for addressing related barriers. The available technological options include:

- Renewable energy sources, including solar photovoltaic, solar thermal, wind, hydro, geothermal, tidal, ocean thermal, and biomass;
- Energy efficiency improvements, especially in building insulation and transportation;
- Nuclear energy;
- Carbon capture and storage.

Technology is important for adaptation as well: to support developing countries in preparing for and dealing with the impacts of climate change. Technologies for adaptation include soft technologies such as insurance schemes or crop-rotation patterns; hard technology such as irrigation systems, drought-resistant seeds and sea defences; as well as a combination of both, such as early-warning systems for floods and heatwaves.

The development and transfer of technology are crucial for supporting both mitigation and adaptation initiatives in developing countries. The United Nations Framework Convention on

Climate Change (UNFCCC) commits developed countries to engage in technology transfer with developing countries (Article 4.5):

‘The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly to developing countries, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organisations in a position to do so may also assist in facilitating the transfer of such technologies.’

In response to Article 4.5 and other commitments, ‘development and transfer of technologies’ has been a permanent agenda item for the COP and its Subsidiary Body for Scientific and Technological Advice (SBSTA) since their first sessions in 1995. Since 2007 the issue has also been on the agenda of the Subsidiary Body for Implementation (SBI) and, since 2008, on that of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA; see Section 5).

The negotiations to date have paid relatively little attention to the role of technology development and transfer for adaptation, which is particularly important for the vulnerable developing countries with low greenhouse gas emissions (e.g. the least developed countries and the small island developing states). In discussions on adaptation the emphasis has been on finance, while discussions on technology transfer have been predominantly about mitigation.

3. Differences between adaptation and mitigation technology transfer

The energy sector is the primary source of greenhouse gases worldwide. Clean energy-supply options have therefore emerged as the dominant focus for technology transfer for mitigation. Such options include renewable energy technologies (e.g. photovoltaic systems and wind turbines) and high-efficiency combustion technologies (e.g. natural gas combined-cycle systems). These types of technologies are modern to high technologies that tend to be capital-intensive and involve substantial up-front investment. Moreover, these technologies are mostly unavailable in developing countries. Their successful transfer from developed countries requires the removal of a range of barriers, which has been the reason for Parties to adopt the aforementioned framework for meaningful and effective actions to enhance the implementation of Article 4.5.

Understanding of how the framework applies to adaptation is still limited. As Parties have begun to raise the issue of technology for adaptation, there has been a tendency to assume that technology transfer for adaptation follows a similar pathway and has similar requirements as technology transfer for mitigation. As noted by the IPCC, however, mitigation and adaptation are two fundamentally different processes, and the approach to transferring technologies for adaptation should therefore differ from the approach taken for mitigation.

First, adaptation is not new in the sense that mitigation is new. Before climate change was identified as a human-induced problem, there was no perceived need to reduce greenhouse gas emissions. On the other hand, people have always needed to adapt to their local climatic conditions, including year-to-year weather variations and occasional extreme events. Initial

discussions on adaptation tended to make a distinction between ‘normal’ climate and climate change. Parties now recognise that for adaptation there is no basis for such a distinction, and that adaptation to climate change can start by addressing the ‘urgent and immediate needs’ related to climate variability and extremes (e.g. Decision 28/CP.7).

Second, technologies for adaptation are needed in most, if not all, socio-economic sectors (health, water, agriculture etc.). Each sector involves a different set of stakeholders, who need to address adaptation technology needs as well as institutional, economic and regulatory barriers that are often sector-specific.

Third, most technologies for adaptation are already available and in use in developing countries. Whether it is a seawall, a vaccination programme or a drip irrigation system, there are many examples within developing countries of successful implementation and operation of technologies for adaptation.

Fourth, suitable technologies for adaptation are often not as capital intensive as those for mitigation. Some technologies will be expensive (e.g. coastal defence infrastructure) but in many cases technologies will tend to be more amenable to small-scale intervention.

The combination of these differences shows that technology transfer for adaptation poses a different, possibly more complex, challenge than mitigation. Technology transfer for mitigation is fairly straightforward insofar as mitigation technologies have a clear and measurable objective (i.e. the reduction or avoidance of greenhouse gas emissions) and tend to target specific, well-studied sectors for which policies are typically defined at the national level. Adaptation is a more diffuse process with less well-defined objectives, involving a larger range of stakeholders, many of whom are at the local level. In addition, uncertainty surrounding the impacts of climate change, especially on a local scale, translates into uncertainty in the development of an adaptation strategy, including the identification of appropriate adaptation technologies. Finally, to a substantial degree technologies for adaptation already exist and are theoretically available in the developing countries where they are needed. In fact, much of the technology is already being used to some extent, for example to address weather extremes associated with climate variability.

In conclusion, a policy framework for technology transfer for adaptation must prioritise two elements that have been less relevant to technology transfer for mitigation: the removal of barriers to the accessibility of locally available technologies, and the need to strengthen local capacity to address adaptation needs and overcome barriers.

4. Developments to date

At COP-7 in 2001 Parties reached agreement on a ‘framework for meaningful and effective actions to enhance the implementation of Article 4.5’. This framework, adopted in Decision 4/CP.7, covers the following themes:

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

Decision 4/CP.7 also established an Expert Group on Technology Transfer (EGTT) to enhance the implementation of the framework and advance technology transfer activities under the UNFCCC, and to make recommendations to this end to SBSTA. The EGTT, reconstituted for another five years as part of Decision 3/CP.13 in 2007, now comprises 19 experts nominated by Parties. Decision 3/CP.13 provided the EGTT with new terms of reference and adopted a set of actions for consideration by the EGTT in formulating its future work programmes. References to adaptation are sparse in Decision 3/CP.13: it is mentioned only in relation to information sharing and capacity building, and there is a recommendation to include information on adaptation in an updated version of the handbook for conducting technology needs assessments.

In Decision 3/CP.13 Parties also decided that the EGTT shall have ‘particular regard to the need for adequate and timely financial support [for the development and transfer of technologies], and to the development of performance indicators for monitoring and evaluating effectiveness.’

In a second decision in 2007, Decision 4/CP.13, Parties requested the Global Environment Facility (GEF), as an operational entity of the financial mechanism under the UNFCCC, to elaborate ‘a strategic programme to scale up the level of investment for technology transfer to help developing countries address their needs for environmentally sound technologies.’ This programme was presented to the SBI in December 2008 and is now known as the ‘Poznań Strategic Programme on Technology Transfer’. It was welcomed by Parties as a step towards scaling up the level of investment in technology transfer in order to help developing countries address their needs for environmentally sound technologies.

The Poznań Strategic Programme on Technology Transfer consists of three funding windows:

- Technology needs assessments (TNAs);
- Piloting priority technology projects;
- Dissemination of successfully demonstrated technologies.

The programme, with a target level of funding of USD 50 million, will be implemented during the remainder of the current replenishment period of the GEF, that is, until June 2010. It is intended to complement other ongoing activities, including those under the GEF Trust Fund, the Special Climate Change Fund and the Least Developed Countries Fund.

5. The Bali Action Plan and the current negotiations

The Bali Action Plan launched ‘a comprehensive process to enable the full, effective and sustained implementation of the UNFCCC through long-term cooperative action, now, up to and beyond 2012.’ The process is intended to result in an agreed outcome at the fifteenth session of the Conference of the Parties to the UNFCCC (COP-15), which will take place in Copenhagen in December 2009. The Bali Action Plan sets out guidelines for negotiations on the four building blocks of global climate policy: mitigation, adaptation, technology development and transfer, and financing.

As stated in Paragraph 1(d) of the Bali Action Plan, Parties decided to address the following:

‘Enhanced action on technology development and transfer to support action on mitigation and adaptation, including, inter alia, consideration of:

- 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;
- Ways to accelerate deployment, diffusion and transfer of affordable environmentally sound technologies;
- Cooperation on research and development of current, new and innovative technology, including win-win solutions;
- The effectiveness of mechanisms and tools for technology cooperation in specific sectors.’

Negotiations towards a Copenhagen Agreed Outcome now take place within the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA). Since the adoption of the Bali Action Plan, Parties have had several opportunities to express their views on technology development and transfer, including through written submissions to the UNFCCC Secretariat, during the six sessions of the AWG-LCA to date, as well as during informal consultations. On the basis of these inputs the chair of the AWG-LCA presented a negotiation text at the fifth session of the AWG-LCA. Following discussion of the text and incorporating additional inputs from Parties, the chair presented a revised negotiation text directly after the sixth session of the AWG-LCA.¹

It is clear from the 199-page revised negotiation text that there is still much disagreement about many issues under discussion. The two major contentious issues for technology development and transfer are:

- The design, contents and institutional aspects of a global technology action plan and national technology roadmaps, including their relevance to the implementation of national appropriate mitigation actions (NAMAs) and national adaptation plans;
- The provision of financial support for enhanced technology action to support mitigation and adaptation.

5.1. Global technology action plan and national technology roadmaps

Parties agree that the intentions concerning technology that were laid down in the Bali Action Plan (cited above) require efforts on global, regional and national scales that result in large-scale and demonstrable technology transfer. However, there is no agreement on the level at which such efforts are to be initiated and coordinated. Many Parties propose detailed global and national action planning, linked to NAMAs and national adaptation plans.

The G77 and China suggest a global technology action plan to be elaborated by a new constituted body on technology. The mandate of this new body would cover a wide range of potential activities, including defining specific policies, eligibility activities and funding requirements for all technologies. The United States, Canada and Japan see no benefit in such

¹ The revised negotiation text can be downloaded at <http://unfccc.int/resource/docs/2009/awglca6/eng/inf01.pdf>. See http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/readers_guide_to_the_rnt.pdf for a readers' guide to the revised negotiation text.

global planning arrangements or other types of global action, but focus instead on national efforts (i.e. national technology roadmaps). The EU supports a global technology action plan and roadmaps with limited functions. The EU also supports enhanced action that builds on the existing framework for technology transfer, with a focus on capacity building and enabling environments for technology transfer.

5.2. Financial support for enhance technology action

Financing for climate policy is a different building block of the Bali Action Plan and therefore negotiated separately under the AWG-LCA. However, financing and technology are clearly related. Potential bottlenecks in the negotiations include whether or not a new funding scheme is required to support technology development and transfer, and whether public finance or private investment should be the primary source of financial support.

The G77 and China underline the need for sustainable and predictable financial support, and stress that a new multilateral technology fund should be created from public finance. The Annex I Parties, in particular the United States, Canada and Japan, advocate the strengthening of existing financial arrangements through bilateral and multilateral channels, and argue that the majority of financial resources should come from private sector investment. The EU is potentially open to the idea of a new international financial scheme, building on existing financing institutions to support specific action by developing countries, in particularly the least developed countries, on capacity building and enabling environments for technology transfer.

5.3. Other contentious issues

In addition to the two issues discussed above, there are several other, sometimes rather technical issues that are contentious in the negotiations on technology development and transfer. They include the following:

- *Measuring, reporting and verifying (MRV) technology cooperation:* This issue links with the broader question of the MRV system that needs to be created for the Copenhagen Agreed Outcome as a whole, including the related institutional relationships, the NAMAs, and financial support.
- *Intellectual property (IP) rights:* This issue involves a wide range of regulations under different multilateral agreements and treaties. It is unlikely that conclusions on this issue are reached in Copenhagen, although several innovative ideas and policy proposals have emerged on how to use the IP system to accelerate technology development and transfer.