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Technology Assessment in the Technology Mechanism: Suggestions on the Way Forward

Climate Action Network-International (CAN-International) is the world's largest network of civil society organizations, with more than 700 members in over 90 countries, working together to promote government action to address the climate crisis.

Now that the components of the UNFCCC Technology Mechanism – the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN) – have been established and will become fully operational this year, there are areas of their respective mandates that could benefit from further elaboration. Among these is the ways in which the TEC and CTCN could address Technology Assessment (TA), an area that will become increasingly crucial as the Technology Mechanism fulfills its mandate to facilitate and enable the actual development, transfer and deployment of environmentally sound technologies (ESTs) for countries, particularly developing and least developed countries and small island states, to address the impacts of climate change.

Para 61(a) of the Agreed Outcome on the Bali Action Plan adopted in Doha *Recommends the Advisory Board of the Climate Technology Centre and Network, in considering the programme of work of the Climate Technology Centre and Network, to take into account… Providing advice and support to developing country Parties, including capacity-building, in relation to conducting assessments of new and emerging technologies, in accordance with decision 1/CP.16, paragraphs 123(a)(i) and 128(e).*

While the Doha Decision made reference only to the possible role of the CTCN in providing advice, support and building capacity in conducting assessments of new and emerging technologies, we would like to stress that there is an important role to be played by the Technology Executive Committee (TEC) in undertaking activities related to TA. As part of its mandate to consider and recommend actions to promote technology development and transfer with the goal of accelerating action on mitigation and adaptation, the TEC has already identified TA as a focus area. In its Rolling Workplan for 2012-2013, adopted at its second meeting, the TEC has identified *possible guidance on technologies based on technology assessments* as an outcome that is expected to result from its work in *preparing an inventory of relevant technology briefs, technical reports and technical papers* beginning in 2013. So far, there have been initial exchanges of ideas on TA within the TEC at its fourth meeting held in Bangkok in September 2012, with members seeking clarity on the nature and extent of the TEC's involvement in TA and its value in the dissemination of ESTs.

As complementary components of the Technology Mechanism, the TEC should give policy

guidance on TA while the CTCN provides support, operational guidance and capacity building to developing countries on the conduct of TA.

The Need for Technology Assessment in the Technology Mechanism

It must be made clear at the outset that TA is not the same, and not necessarily part of, Technology Needs Assessment (TNA), which many governments have conducted with the guidance of the UNFCCC. These two concepts, however, should be seen as important dimensions of the technology transfer process.

TNA, in the climate change and development context, "prioritizes technologies, practices, and policy reforms that can be implemented in different sectors of a country to reduce greenhouse gas emissions and/or adapt to the impacts of climate change by enhancing resilience and/or contributing to sustainable development goals" (Gross, et al., 2004). Technology assessment, on the other hand, attempts to analyze and evaluate the impacts of applications of scientific-technical knowledge in modern society (Maarsen and Merz, 2006: 11). Applied in the context of climate change and development, TA involves the analysis and evaluation of (actual and potential) impacts of technology choices for climate change mitigation and adaptation to ensure that they contribute to sustainable development.

Technology assessment aims to address concerns about the unpredictability of technology impacts, and to address the lack of public trust that results from controversies over technologies. It is regarded as a response to the Collingridge Dilemma, which posits that the consequences of a technology cannot be predicted early in its life, and by the time unintended and/or undesirable consequences are discovered, the technology is already well-entrenched so that control is extremely difficult and change is expensive and time-consuming (Collingridge, 1980 in Nordman, 2010:5). In order to be effective, TA needs to be anticipatory, comprehensive, inclusive and oriented toward decision-making. There are a number of existing TA models (mainly in European states) that have adopted these principles in practice. Denmark's model provides a mechanism for citizens to identify technology issues for an independent multi-sectorial panel to assess and present the results back to the citizenry through consultations. The Science and Technology Options Assessment (STOA) of the European Parliament responds to requests for assessment from legislative committees. TA-SWISS Center for Technology Assessment conducts independent assessments that feed into policy-making in Switzerland.

In the context of ESTs needed to adapt to or mitigate climate change, there are currently no existing mechanisms at the intergovernmental level nor is there guidance for countries to assess the appropriateness, potential impacts and environmental integrity of such technologies. In fact, there is neither a clear definition nor standards for ESTs in the context of the UNFCCC. As the Technology Mechanisms facilitates and enables the timely and responsive development, transfer and deployment of ESTs, there is a need to guarantee that they are indeed environmentally sound and ensure that they do not cause more harm than the impacts of climate change itself. TA should be seen as a logical step for countries to take after they have identified their technology priorities and options through the TNA process. Potential solutions to technological challenges in climate adaptation and mitigation need to be evaluated before they are transferred and deployed in developing countries. Ideally, TA needs to be conducted at the technology design and development stage.

Arguments *not* to undertake technology assessments historically revolve around protestations that the assessments are premature – or, alternatively, too late – are too

costly, or not worth the potential delay in commercial deployment or risk to competitive advantage (ETC Group, 2012). However, there is reluctant recognition from many parties, and within the United Nations, that "business as usual" is not working. Governments would welcome a less disruptive process for introducing new technologies, learning from costly and politically troublesome controversies over nuclear energy, biofuels and genetically modified crops. In the absence of any TA mechanism to deal with the intergovernmental concerns and transboundary issues, the UN has had no structural alternative but to adopt moratoria related to new technologies since the beginning of the 21st century, namely, on GURTs (genetic use restriction technologies, or Terminator seeds) in 2000; on ocean fertilization in 2008; and a general moratorium on climate-related geoengineering in 2010, which was reaffirmed in 2012 – all under the aegis of the Convention on Biological Diversity (CBD).

The UNEP Foresight Report urges policy makers to "consider, for example, organizing a new international governance system which would produce, and potentially oversee, new international procedures to identify dangerous side effects of technologies and chemicals before they are produced" (UNEP, 2012). It suggests that such a governance system would be anticipatory, impartial, aware of the need to deal with the risks arising from interactions among multiple technologies developed for different purposes, universal, and it should ensure that individual countries and their corporate interests do not unilaterally make decisions that can have global impacts (UNEP, 2012). The report urges policymakers to work together with the scientific, environmental and other stakeholder communities to determine what a new governance system should look like.

Reinforcing the importance given by the UN to TA, Rio+20's outcome document, "The Future We Want," has reaffirmed the commitment of the international community in 1992 (embodied in Chapters 34 and 35 of Agenda 21) to strengthen the capacity of countries to pursue national and regional technology assessment initiatives. To operationalize this, the UN needs to develop the institutional capacities of countries to identify and monitor significant technologies, including an evaluation of the social, economic, cultural, health and environmental implications of technologies. Assessments must be completed before a new technology is deployed, released and transferred based on the Precautionary Principle. In order to minimize waste and risk, the monitoring process should accompany the development of the technology from science to shelf. In the context of climate change, the UNFCCC's Technology Mechanism could contribute significantly in delivering this UN commitment.

At the regional, national and local levels, governments and non-state actors must be encouraged and supported to establish TA platforms or mechanisms that will allow key sectors and potentially affected communities to directly participate in the evaluation of new and emerging technologies. Such platforms must be democratic, participatory, inclusive, comprehensive and proactive. Women, as key users and consumers of products of most emerging technologies, must be actively involved in TA processes, as well as indigenous and local communities, which are generally the least prepared to deal with unforeseen consequences of technologies and are virtually never consulted in the technology development process. The post-Rio+20 report of the UN Secretary-General to the UNGA on options for an international technology facilitation mechanism has recommended the establishment of an international network of technology assessment centres and/or national and global advisory groups on technology assessment and ethics as a key elements of such a global mechanism (UNGA, 2012:16).

Technology Assessment in the Technology Mechanism: Some Recommendations

CAN believes that the TEC and the CTCN have complementary roles to play in providing guidance and support to developing countries in undertaking technology assessment. The following are some recommendations on the responsibilities of the components of the Technology Mechanism in this area:

Technology Executive Committee**:**
Building on the many years of work of the UNFCCC in TNA to help countries identify their technology needs, the TEC can forge new paths in providing ***policy guidance*** to developing countries by supporting their efforts to assess the appropriateness and potential consequences of available technologies before these are actually developed, transferred or deployed. Specifically, the TEC should:

1. Provide policy guidance based on thorough deliberations and analyses of issues, developments and experiences in TA, to be published as Policy Briefs;
2. Request the Secretariat to:
    a. Map out/Survey existing TA models at the regional (e.g., European Parliament's Science and Technology Options Assessment or STOA) and national levels (e.g., TA-SWISS Centre for Technology Assessment, Teknologirådet-Danish Board of Technology, TAB-Office of Technology Assessment at the German Parliament, Rathenau Institute of The Netherlands, etc.)
    b. Develop information materials to guide countries, institutions and different sectors in conducting TA;

These actions by the TEC could complement the following actions by the CTCN.

Climate Technology Centre and Network:
In accordance with the Doha Decision and taking into account the recommendations from recent UN studies cited above, the Advisory Board of the CTCN should recognize the importance of TA and decide to include in the functions of the CTCN the provision of guidance and advice to developing countries on TA. CAN recommends the following areas of actions for the CTCN:

1. Share and disseminate lessons on TA from the experiences of different regions and countries in the form of publications;
2. Encourage and support the establishment of TA platforms at the regional, national and sub-national levels;
3. Facilitate linkage of regional, national and sub-national TA efforts with existing TA networks (e.g., Euro PTA);
4. Establish an international network of TA mechanisms at the regional, national and sub-national levels to facilitate information sharing, build capacities and enable responsive early-warning systems on the impacts of new and emerging technologies.

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