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Development and transfer of technologies

Synthesis of views on elements for the terms of reference for the review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1 (c) and 5, of the Convention

Note by the secretariat*

Summary

This report presents a synthesis of information and views on elements for the terms of reference for the review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention specified in 12 submissions received from Parties. It also includes a summary of possible performance indicators as suggested by Parties.

* This document was submitted after the due date in order to include information that was not available earlier.

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decision 4/CP.13, paragraph 7, requested Parties to submit to the secretariat, by 15 February 2008, for synthesis and compilation, their views on elements for the terms of reference for the review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention, in accordance with decision 13/CP.3.[1]

B. Scope of the note

2. This document synthesizes the information on elements for the terms of reference for this review and assessment contained in 12 submissions received from 12 Parties,[2] representing the views of 45 Parties.[3] These Parties are: Argentina, Australia, Brazil, Canada, Indonesia, Japan, Philippines, Slovenia on behalf of the European Community (EC) and its member States, South Africa, Sri Lanka, the United States of America and Uzbekistan.

3. The synthesis could be used by the Subsidiary Body for Implementation (SBI) as input into its deliberations on the above-mentioned terms of reference.

C. Possible action by the Subsidiary Body for Implementation

4. The SBI will be invited, taking into consideration related work of other subsidiary bodies, to deliberate on and agree on the terms of reference for the review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention with a view to determining appropriate next steps.

D. Background

5. The review and assessment of the effectiveness of the implementation of Article 4, paragraph 5, of the Convention is linked to various reviews and other activities, recently completed or under way, including:

(a) The review of the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention (the technology transfer framework)[4] and assessment of the progress of work in various areas under each of its key themes conducted by the Expert Group on Technology Transfer (EGTT), in accordance with decision 6/CP.10. The results of this review and assessment, contained in document FCCC/SBSTA/2006/INF.4, led to the adoption by the COP, at its thirteenth session, of the set of actions for enhancing the implementation of the technology transfer framework;[5]

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[1] Decision 13/CP.3 states in paragraph 3 (c) that "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 of the Convention with respect to the development and transfer of technology".

[2] FCCC/SBI/2008/MISC.1 and Add.1.

[3] The submission by Slovenia on behalf of the European Community and its member States is supported by Croatia, Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Serbia, Ukraine and Turkey.

[4] Decision 4/CP.7, annex.

[5] Decision 3/CP.13, annex I.

(b) The development of a set of performance indicators by the EGTT that could be used by the SBI to regularly monitor and evaluate the effectiveness of the implementation of the technology transfer framework.[6] The EGTT should make the interim results of this work available to the subsidiary bodies for consideration at their thirtieth sessions, so that in its final report can be made available to the COP at its fifteenth session;

(c) The consideration of activities under the Bali Action Plan[7] regarding effective national/international action on mitigation of climate change, including 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;

(d) The annual report of the Global Environment Facility (GEF) to the COP that reviews the effectiveness of its technology transfer, capacity-building and greenhouse gas (GHG) mitigation activities;

(e) The fourth review of the financial mechanism by the COP, in particular the examination of relevant sources and means of financing for the development of endogenous technologies in developing countries.

6. The provisions of the Convention relevant to the review are shown in the box below.

Relevant provisions of the Convention

- Article 4, paragraph 1(c), of the Convention: All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors.

- Article 4, paragraph 5, of the Convention: The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

II. Summary of the submissions

A. General views on the review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention

7. Several submissions emphasized that the effective implementation of Article 4, paragraphs 1(c) and 5, of the Convention is important for meeting the overall objective of the Convention. A broad

[6] Decision 3/CP.13, annex II, paragraph 3 (c).
[7] Decision 1/CP.13, paragraph 1 (b) (ii).

portfolio of activities is required to effectively address climate change, including the widespread uptake of new and established technologies and the creation of appropriate enabling environments to facilitate this. The development and transfer of environmentally sound technologies (ESTs) remains central to achieving long-term reductions in global emissions and in mitigating the impacts of climate change and adapting to its adverse effects.

8. In its submission, Australia highlighted the increasing awareness of the importance of technology development, deployment and transfer, demonstrated by the growing volume of public- and private-sector resources being allocated at international and national levels.

9. Brazil strongly urged Parties to consider and discuss the review and assessment in the context of Article 4, paragraph 7, of the Convention and emphasized that dealing with climate change will require enhanced technological development, deployment and transfer, focusing on the widespread use by developing countries of new technologies. The provisions of decision 4/CP.13 require a coherent and comprehensive legal instrument for technology transfer and development under the Convention. Hence, a protocol to the Convention should be established to foster closer cooperation on this matter.

10. Canada observed that the development, deployment and transfer of ESTs for climate change mitigation and adaptation occurs through a multitude of mechanisms. Technologies and best practices flow from North to South (e.g. renewable energy technologies), from South to North (e.g. technologies to convert sugar cane into liquid fuels) and from South to South (e.g. coastal zone protection measures to prevent erosion). ESTs flow from government to government, from government to the private sector and between private-sector entities in different countries. For this reason, fully comprehensive reviews of technology flows among Parties to the Convention would be very difficult and resource intensive and could provide an incomplete or misleading analysis of activity. Given these constraints, Canada suggested that the review should focus on technology flows involving the public sector.

11. Japan pointed out that technology diffusion and transfer takes place in a variety of forms. For example, technology can be transferred through the export or import of goods, through firms in developed countries setting up factories or joint ventures in developing countries, or through technology licensing agreements between enterprises in developed countries and those in developing countries. The progress made in technology transfer differs among countries, sectors and technologies. For instance, there are certain technology areas where a significant amount of technology transfer from developed countries to developing countries has already been carried out through licensing on a commercial basis. Therefore, technology transfer should not be discussed in general terms, but on a country-by-country and sector-by-sector basis. There is a need to identify the technologies that should be deployed in a certain sector of a country, and to discuss how to promote the transfer of these technologies to that country.

12. In its submission, Sri Lanka suggested that special provisions be put in place to ensure that obsolete technologies from developed countries will not be transferred to developing countries as grants or loans. Appropriate technologies that could be harmonized with traditional knowledge and practices should be transferred to these countries. Furthermore, technology transfer should be supported by a set of programmes that leads to demonstration projects and capacity enhancement to ensure long-term sustainability.

13. South Africa took the view that the effectiveness of the review must be judged by the extent to which it helps to accelerate and advance technology transfer and development as agreed to in the Bali Action Plan. Putting emphasis on private-sector financing criteria concerning profit and economies of scale will slow the rate of transfer of technologies. The desired acceleration will require new financing and institutional mechanisms.

14. The United States linked the review and assessment with the work of the EGTT on the development of performance indicators to regularly monitor the effectiveness of the implementation of the Convention with regard to technology transfer and development.

B. Elements for the terms of reference

15. The following elements were synthesized, taking into account the required structure of the terms of reference for the review and assessment.

1. Objective of the work proposed

16. Some Parties identified specific objectives for the terms of reference. The United States indicated that the objective of the terms of reference must be to develop a balanced and robust set of indicators. Both the EC and Brazil suggested that the objective of the review and assessment, if it is to be undertaken in the near future, must be to provide input as appropriate into the Bali Action Plan. According to the EC, the Bali Action Plan will address, among other things, enhanced action on development and transfer of ESTs.

2. Scope of the work

17. According to South Africa, the review should focus on a number of specific elements. The Party suggested considering the following elements for the terms of reference:

(a) Analysis of the market penetration of clean technologies in developing countries, particularly the scale and rate of deployment of technologies;

(b) Analysis of the extent of deployment of adaptation technologies identified by developing country Parties in their technology needs assessments (TNAs);

(c) Quantification of the role and effectiveness of financing mechanisms under the Convention, such as the GEF and the Adaptation Fund, in supporting technology deployment in developing countries, and means for making the transfer of technology measurable, reportable and verifiable.

18. Uzbekistan identified a number of elements for consideration, stating that the scope of the review should be based on the key themes of the technology transfer framework adopted by decision 4/CP.7. The current status of implementation of TNAs and the involvement of stakeholders should be analysed, the activities conducted to mobilize capacities of the private sector to supplement finance sources for technology transfer should be examined and the level of research and development activities in developing countries should be reviewed.

19. Many Parties were of the view that the review and assessment should take place in a broader context to cover all technology transfer and related activities within and outside the Convention. The EC suggested that the secretariat prepare a progress report on international technology cooperation. The report should focus on activities undertaken in line with the key themes and sub-themes of the technology transfer framework.

20. Three Parties (Australia, Canada and United States) recommended that the scope of the work be broadened and due account taken of concurrent reviews of other relevant activities, mechanisms and frameworks under the Convention (e.g. the Nairobi work programme on impacts, vulnerability and adaptation to climate change, capacity-building, the EGTT assessment of gaps and barriers to financial resources for technology development and transfer, and the fourth review of the financial mechanism[8]).

[8] Decision 6/CP.13.

Canada suggested that the review be conducted within the broader context of a comprehensive review of the Convention as a whole, pursuant to Article 4, paragraph 2(d).

21. Canada and the United States observed that the basis for any review and assessment of the effectiveness of the implementation of Article 4, paragraphs 1(c) and 5, of the Convention should not be formulated in isolation from the work on performance indicators being considered by the EGTT referred to in paragraph 14 above. According to these Parties, these two processes have been agreed to by Parties, and must not produce duplicative and potentially conflicting outcomes. Brazil suggested that the discussion by Parties on the review and assessment should take into account Article 4, paragraph 7, of the Convention.

3. Possible activities

22. Parties suggested that the review and assessment could be based on the following activities:

(a) **Prepare an itemized progress report** on the status of international technology cooperation, including activities and good practice undertaken by Parties, the private sector and relevant international organizations to date, towards implementing Article 4, paragraphs 1(c) and 5. The report should focus on, inter alia, the themes and sub-themes of the technology transfer framework;

(b) **Organize an in-session workshop** to facilitate the data collection for the progress report referred to in paragraph 22 (a) above. The EC suggested convening an in-session workshop on the status of international technology cooperation at the third session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA). Parties to the Convention, as well as representatives of the research community, the business community, intergovernmental organizations (including the EGTT), international finance institutions and other third parties, should be invited to present at the workshop their views on the current status of international technology cooperation, including:

(i) Activities being carried out outside the UNFCCC process by Parties and other actors and processes on technology development and transfer actions;

(ii) Supporting activities, mechanisms and policy instruments for technology development and transfer, related to mitigation and adaptation in different sectors and in different regions (or groups of countries);

(c) **Compile the decisions made by the COP**. According to the Philippines, the elements for the terms of reference for the review are contained in the decisions taken by Parties at each session of the COP. The secretariat should compile these elements, inform Parties of any relevant reports and list the elements which will inform the review;

(d) **Use performance indicators** to conduct the review and assessment. Several Parties (Australia, Canada, Japan and United States) submitted a set of possible performance indicators that could serve as inputs into the work of the EGTT referred to in paragraph 5 (b) above. This information is summarized in the annex;

(e) **Request the EGTT to consider the submissions as one of multiple inputs** into the process of developing a set of performance indicators to recommend to the SBI. It was proposed that these submissions are an important initial step in the process of identifying potentially useful elements that the EGTT could use in this work. The elements

compiled and synthesized from the submissions should not, however, constitute the final list of indicators from which the terms of reference are drawn;

(f) **Establish a working group** to review the barriers in trade policies and agreements, including the lack of a special intellectual property rights (IPRs) regime for climate-friendly technologies and inappropriate use of trade-related financing policies of multilateral financial institutions, with special consideration being given to supporting positive sustainable development aims.

4. Linkages to related work

23. The United States proposed that the review take into account relevant work outside the UNFCCC process, including:

(a) The World Bank's Doing Business project, which provides objective measures of business regulations and their enforcement across 178 countries and selected cities at subnational and regional levels. Economies are ranked according to the degree to which the regulatory environment is conducive to the operation of business, based on a variety of indicators focused on the following topics: starting a business, dealing with licences, employing workers, registering property, securing credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business. The inclusion of infrastructure and transparency in Doing Business should be considered in 2009;

(b) The World Bank's Worldwide Governance Indicators project, which reports aggregate and individual governance indicators for 212 countries and territories over the period 1996–2006 for the following dimensions of governance: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption;

(c) *The 2008 Index of Economic Freedom*,[9] which examines the economies of 162 countries with reference to such factors as openness to the world, government limitations on economic activity, property rights and the rule of law.

5. Possible criteria for developing performance indicators

24. According to the submissions, the review process should be as inclusive as possible. Various indices and indicators developed by recognized sources should be taken into account. To promote balance and capture indicators that will enable the review and assessment of the role of enabling environments in enhancing or impeding the flow of technologies, these and other such indices should be considered.

25. The United States mentioned that the development of appropriate and useful indicators is a complex process that should not be rushed. A well-developed set of indicators will measure more than just simple outputs, such as the number of technologies transferred or funds invested. The indicators will need to provide an assessment of the multitude of conditions that enable and enhance sustainable technology transfer. Indicators should also facilitate the review and assessment of the outcomes and impacts of the technology transfer process, including the amount of GHGs avoided and/or sequestered.

26. To review and assess the effectiveness of the implementation of Article 4, paragraphs 1 (c) and 5, of the Convention, Indonesia suggested that the set of performance indicators to be developed by

[9] Holmes KR et al. 2008. *The 2008 Index of Economic Freedom*. Washington, DC and New York: Heritage Foundation and *The Wall Street Journal*.

the EGTT referred to in paragraph 5 (b) above should focus on implemented actions and specific environmental outcomes.

27. Canada indicated that the terms of reference for the review and the work of the EGTT on indicators must be coordinated to ensure consistency, so that the indicators developed can be used to guide the SBI in its deliberations on the terms of reference for the review. For the indicators to be relevant to the review, they should address the steps needed to integrate technology research, development, deployment and commercialization of the technologies, as well as import and export restrictions, local availability of replacement parts and installation and maintenance services. According to this Party the indicators of the broader national policy framework, such as policy levers available to governments to create incentives and appropriate enabling environments and build domestic technology absorptive capacity, are also instructive.

6. Timing

28. As mentioned in paragraph 5 (b) above, the EGTT is to develop a set of performance indicators which will be made available to the subsidiary bodies for consideration at their thirtieth sessions. The United States indicated that the timing and structure of the work programme for the review should take this into account to ensure efficiency and complementarities of effort and outcomes.

29. Canada suggested that the review of the effectiveness of the implementation of Article 4, paragraph 5, of the Convention, conducted by the SBI, be prepared after the thirtieth sessions of the subsidiary bodies, after which time the EGTT indicators will be completed for use by Parties.

30. Given the links to the Bali Action Plan, the EC suggested that a review and assessment should be undertaken at COP 14, with a view to informing the work of the AWG-LCA.

C. Recommendations for future activities on development and transfer of technologies

31. Argentina made several recommendations for future activities on the development and transfer of technologies, including:

(a) Creation of appropriate mechanisms to implement actions leading to technology development, deployment, diffusion and transfer and to enhance enabling activities such as technology information, capacity-building and innovative financing for both mitigation and adaptation technologies;

(b) Requesting the EGTT to further explore carbon market mechanisms that drive developed countries to finance the full incremental costs of technology application and deployment necessary for the implementation of GHG mitigation activities in developing countries, including the cost of several activities to enhance the enabling environments mentioned in decision 4/CP.13;

(c) Developing sectoral approaches that establish specific means and mechanisms tailored to sector needs, priorities and GHG contribution and offer a platform to scale up financing to the level needed to support the technology transfer required to meet the goals of the UNFCCC;

(d) Revitalizing the implementation of TNAs as a tool to highlight priority technology needs to reduce GHG emissions and, in particular, technology needs for adaptation to the adverse impacts of climate change in developing countries;

(e) Inviting United Nations agencies, international organizations and multilateral development banks to review and reformulate their development assistance. The goals

of such a process would include: promoting synergies with the UNFCCC, increasing financial flows that favour climate-friendly development, and coordinating trade mechanisms and economic instruments to support technology transfer for mitigation of and adaptation to climate change.

32. Brazil recommended that new approaches combining IPR protection and facilitating technology sharing be considered, bearing in mind the example set by decisions in other relevant international forums related to IPRs, such as the Doha Declaration on the TRIPS Agreement and Public Health.

33. Brazil also suggested that an appropriate protocol be established to foster closer cooperation on development and transfer of technologies between countries, in order to enable developing country Parties to implement the provisions of the Convention. The protocol should be comprehensive and effective and include, as a minimum, the following provisions:

(a) Reinforce North–South, South–South and North–South–South cooperation, including joint development;

(b) Promote the development, deployment and transfer of climate change related new technology among developing country Parties;

(c) Accelerate the transfer of existing ESTs and know-how to other Parties, in particular developing country Parties, to support action on mitigation and adaptation;

(d) Promote capacity-building and strengthen the development and autonomous use of technology in developing countries;

(e) Stimulate innovative approaches, including strengthening the public availability of government sponsored technologies;

(f) Increase the level of technological research carried out by contractors in developing countries.

Annex

Summary of possible performance indicators suggested by Parties

Technology development, deployment and transfer

(a) Identification by the recipient country of the **major environmentally sound technologies** (ESTs) needed (Japan);

(b) Degree to which **products and equipment featuring ESTs** have been introduced in developing countries (Japan);

(c) Distinction between **imported and domestic procurement** of such products and equipment in developing countries (Japan);

(d) Numbers, areas and monetary values of **domestic production, imports and exports of major products or equipment featuring ESTs** in developing countries (Japan);

(e) Level of **activities featuring major ESTs that developed countries have set up** in developing countries (e.g. installation of factories and/or research and development facilities, establishment of joint ventures and licensing of technologies) (Japan);

(f) Degree to which Parties are engaged in, and support, international **technology cooperation partnerships** and institutions (Australia);

(g) EST-related **patent registrations and licensing agreements** lodged and entered into by Parties (Australia);

(h) Number of **clean development mechanism related projects** undertaken by Parties and degree to which they are supported by bilateral or multilateral financing, including through the financial mechanism of the Convention and the clean development mechanism and joint implementation under the Kyoto Protocol (Australia).

Technology needs assessment

(a) Number of Parties that have completed, or updated, and submitted **national communications, comprehensive greenhouse gas (GHG) inventories, and updated technology needs assessments (TNAs)** (Australia);

(b) Degree to which TNAs, and the technology needs identified, are integrated into **national development strategies** and goals of Parties (Australia);

(c) Whether or not a country has submitted **national communication(s), prepared comprehensive GHG inventories** and/or identified **technology priorities** through a TNA (United States of America);

(d) Degree to which TNAs have been implemented and stakeholders have been involved (Uzbekistan and Indonesia).

Enabling environment

(a) **Conditions of the investment environment**, including regulatory infrastructure in developing countries (Japan);

(b) Degree of '**business friendliness**' of a particular country as indicated by trade associations, chambers of commerce, major companies, international

non-governmental organizations and other groups that would provide an indication of the willingness on the part of businesses to engage in EST project investment (Australia and United States); (c) Degree to which Parties have established **national and subnational systems of innovation**, including linkages to organizations, bodies or agreements that focus on international research, development and deployment (Australia); (d) Degree to which Parties have reduced **investment barriers**, including tariff and trade policies, within a given country, import restrictions and uniformity in the treatment of domestic and foreign suppliers, manufacturers, financial entities and other business activities (Australia); (e) Whether **actions to enhance enabling environments have been undertaken** to promote investment, to establish systems of innovation linked to international research organizations, to reduce trade and investment barriers and to facilitate local private-sector activities (Canada).
<u>Government and/or public-sector involvement</u> (a) Numbers, areas and monetary values of **technology transfer projects conducted by government-related institutions** (Japan); (b) Degree to which **key national policy and economic development agencies** are involved in the development and implementation of Parties' climate changes policies (Australia); (c) Degree to which Parties have established comprehensive **national and subnational policy frameworks** to support enhanced investment in clean development and ESTs (Australia and Canada); (d) Degree to which Parties have established independent and effective **legal systems** that allow for consistent and transparent application of laws relating to contracts, protection of intellectual property rights and responsible and consistent environmental protection (Australia and Canada); (e) Established national and **subnational systems of innovation**, including linkages to international organizations, bodies or agreements that focus on research, development and deployment (Australia); (f) Trends of **political and economic stability** within a given country, including any periods of social unrest, monetary stability, rate of inflation and real gross domestic product (United States); (g) Governance issues within a given country including **degree of political and economic freedom**, representative government, voting and open elections (United States); (h) **Regulatory atmosphere** within a given country, including predictability and stability of the legal system, consistent enforcement of contracts, clear and transparent policy with regard to the protection and enforcement of intellectual property rights, and responsible and consistent environmental policies (United States).

Capacity-building

(a) Availability of targeted **capacity-building** to promote the adoption of relevant and climate-friendly technologies in each Party (Australia);

(b) Numbers, areas and monetary value of **support from developed countries for capacity-building** in developing countries (Japan);

(c) Extent to which **targeted capacity-building** to promote the adoption of climate-friendly technologies is being made available to a given country and/or region (United States).

Information flow

(a) Extent to which **information on technologies** and related matters is being made available to a given country and/or region and how this information is being used (United States);

(b) **Availability and accessibility of information** that assists Parties to identify and develop relevant and appropriate EST needs and develop concrete investment proposals for projects that enable the development, deployment and transfer of ESTs (Australia);

(c) Diffusion of **information and training experiences** on technologies within a country or region and how it is being used (Canada);

(d) The level of progress made by the technology information centres involved in the pilot project on networking to define the barriers that may prevent other countries joining the pilot network in the future and the extent of application of options provided by the technology information clearing house (TT:CLEAR) by both users from developing countries and technical information providers (Uzbekistan).

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