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Development and transfer of technologies

**Recommendations of the Expert Group on Technology Transfer for
enhancing the implementation of the framework for meaningful
and effective actions to enhance the implementation
of Article 4, paragraph 5, of the Convention**

Note by the Chair of the Expert Group on Technology Transfer

Summary

This document presents the results of assessments by the Expert Group on Technology Transfer (EGTT) of progress in the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention and of identification of gaps and barriers to technology transfer. It also recommends actions for enhancing the implementation of this framework, as requested by decision 6/CP.10.

The Subsidiary Body for Scientific and Technological Advice may wish to consider the information contained in this document, in particular the recommendations for enhancing the above-mentioned framework presented in the annex, with the aim to recommending a draft decision on this matter for adoption by the Conference of the Parties at its twelfth session.

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Annex

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decision 6/CP.10, requested the Expert Group on Technology Transfer (EGTT) to make recommendations for enhancing the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention prior to the twenty-fourth session of the Subsidiary Body for Scientific and Technological Advice (SBSTA). The SBSTA, at its twenty-second session, agreed on terms of reference (ToR) to guide the EGTT in preparing these recommendations.¹ In accordance with decision 4/CP.7, the EGTT will be reviewed by the COP at its twelfth session.

2. The framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention, adopted by decision 4/CP.7,² identified a set of activities for implementation under five key themes: technology needs and needs assessments, technology information, enabling environments, capacity-building, and mechanisms for technology transfer (see box).

Definitions of the key themes of the technology transfer framework

Technology needs and needs assessments are a set of country-driven activities that identify and determine the mitigation and adaptation technology priorities of Parties other than developed country Parties, and other developed Parties not included in Annex II to the Convention, particularly developing country Parties. They involve different stakeholders in a consultative process to identify the barriers to technology transfer and measures to address these barriers through sectoral analyses. These activities may address soft and hard technologies, such as mitigation and adaptation technologies, identify regulatory options and develop fiscal and financial incentives and capacity-building.

The technology information component of the framework defines the means, including hardware, software and networking, to facilitate the flow of information between the different stakeholders to enhance the development and transfer of environmentally sound technologies (ESTs). This technology information component of the framework could provide information on technical parameters, economic and environmental aspects of ESTs and the identified technology needs of Parties not included in Annex II to the Convention, particularly developing country Parties, as well as information on the availability of ESTs from developed countries and opportunities for technology transfer.

The enabling environments component of the framework focuses on government actions, such as fair trade policies, removal of technical, legal and administrative barriers to technology transfer, sound economic policy, regulatory frameworks and transparency, all of which create an environment conducive to private and public sector technology transfer.

Within the context of enhancing the implementation of Article 4, paragraph 5, of the Convention, **capacity-building** is a process which seeks to build, develop, strengthen, enhance and improve existing scientific and technical skills, capabilities and institutions in Parties other than developed country Parties, and other developed Parties not included in Annex II to the Convention, particularly developing country Parties, to enable them to assess, adapt, manage and develop ESTs.

Mechanisms for technology transfer are to facilitate the support of financial, institutional and methodological activities: (a) to enhance the coordination of the full range of stakeholders in different countries and regions; (b) to engage them in cooperative efforts to accelerate the development and diffusion, including transfer, of ESTs, know-how and practices to and between Parties other than developed country Parties and other developed Parties not included in Annex II to the Convention, particularly developing country Parties, through technology cooperation and partnerships (public/public, private/public and private/private); and (c) to facilitate the development of projects and programmes to support such ends.

¹ FCCC/SBSTA/2005/4, annex II.

² FCCC/CP/2001/13/Add.1, annex to decision 4/CP.7.

B. Response of the Expert Group on Technology Transfer

3. In response to decision 6/CP.10, the EGTT, at its eighth meeting, in November 2005 in Montreal, Canada, discussed and agreed on its approach in preparing its recommendations for enhancing the implementation of the technology transfer framework. The group initiated its discussion on the progress of work in various areas under each key theme of the framework, taking into account information provided by the secretariat. To further advance this work, the EGTT, with the assistance of the secretariat, convened a special working session on 9–11 March 2006 in Brussels, Belgium. To ensure continuity of the discussions, the group agreed to invite experts who were members of the EGTT in 2005 to participate in this working session.

4. During this working session, the group had discussions on various topics as requested in the ToR. The group agreed to structure its recommendations following the items listed in the ToR. It requested the secretariat to prepare a draft document based on the outcomes of its discussions that took place in Montreal and in Brussels for its consideration. The EGTT, at its ninth meeting, held on 11–13 May 2006 in Bonn, finalized its recommendations as contained in this document.

5. The group expressed its appreciation to the Government of Belgium for hosting its special working session in Brussels, and to the European Commission for providing financial support for the organization of this working session.

C. Possible action by the Subsidiary Body for Scientific and Technological Advice

6. The SBSTA may wish to consider the information contained in this document, in particular the recommendations presented in the annex, with the aim to recommending a draft decision on this matter for adoption by the COP at its twelfth session.

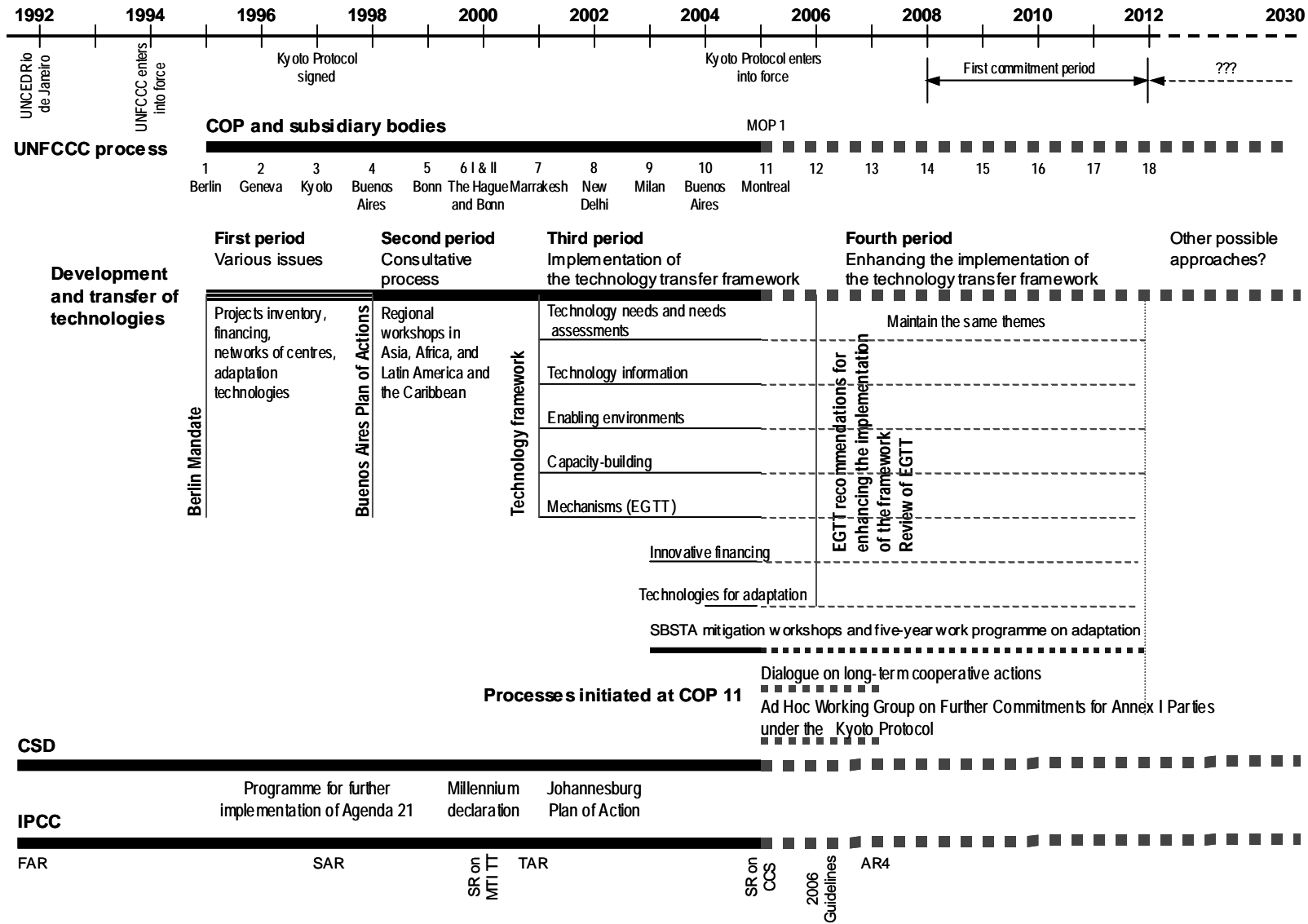
II. Background

7. At each session of the COP, Parties have taken decisions to promote the development and transfer of environmentally sound technologies (ESTs). The evolution of the issue over time is illustrated in the figure 1, which shows current areas of activities under the technology transfer framework as well as key related activities as mandated by the COP at its eleventh session. **Three main periods** can be identified:

- (a) COP 1 up to COP 4: the **Berlin Mandate** and work on technology transfer (decision 13/CP.1);
- (b) COP 4 up to COP 7: the **Buenos Aires Plan of Action** and the consultative process on technology transfer (decision 4/CP.4);
- (c) COP 7 up to COP 12: the **Marrakesh Accords** and implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention, referred to hereinafter as the **technology transfer framework**, contained in the annex to decision 4/CP.7.

8. The COP, by its decision 6/CP.10, agreed on a process to review the progress made and the effectiveness of the implementation of the technology transfer framework. The EGTT was requested to provide recommendations for enhancing the implementation, including the possible revision of key themes of this framework.

Figure 1: Development and transfer of technologies: major milestones



Notes:
 FAR – First Assessment Report
 SAR – Second Assessment Report
 TAR – Third Assessment Report
 AR4 –Fourth Assessment Report
 SR on MTI TT – Special Report on Methodological and Technological Issues in Technology Transfer;
 SR CCS – Special Report on Carbon Dioxide Capture and Storage
 CSD – Commission on Sustainable Development
 IPCC – Intergovernmental Panel on Climate Change

9. The COP, by its decision 6/CP.11, requested the SBSTA, when considering, at its twenty-fifth session, future work for enhancing the implementation of the technology transfer framework, to take into account recommendations of the EGTT on this matter, existing technology-based international cooperative activities undertaken between Parties, and submissions of Parties relating to the review of the future role of the EGTT, due by 4 August 2006. A **fourth period** could start **after the reviews of the framework and of the EGTT** are completed.

10. The seminar of governmental experts held in conjunction with the twenty-second sessions of the subsidiary bodies, highlighted the need for the development and transfer of climate friendly technologies as an essential element for an appropriate response to climate change. The COP, by its decision 1/CP.11, decided to establish two parallel processes: the Dialogue on long-term cooperative actions on climate change by enhancing implementation of the Convention (Dialogue), and the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG). Both processes consider in their deliberations, to be concluded by COP 13, ways to realize the full potential of technologies.

11. The main provisions of the Convention on the development and transfer of technologies are contained in **Article 4, paragraph 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 technologies³ 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.

III. Results of the assessments by the Expert Group on Technology Transfer

A. Items A and B of the terms of reference: progress and effectiveness in the implementation of the framework, and identification of gaps and barriers and suggestions for ways and means to better facilitate and advance its implementation

12. Since the adoption of the Marrakesh Accords, work on the **development and transfer of technologies** under the UNFCCC process has been focused on the implementation of activities identified under each key theme of the technology transfer framework. Recent activities have included work relating to technologies for adaptation to climate change, innovative financing for the development and transfer of technologies, including innovative options to implement the results of technology needs assessments (TNAs), compilation and synthesis of completed TNAs, and establishment of a pilot technology information network between the UNFCCC technology information clearing house (TT:CLEAR) and national/regional technology centres in developed and developing countries.

13. Much of the work to date has provided understanding of technology transfer at the conceptual and/or general level. More recently, this has been complemented by work at a practical/technology-specific level. Examples of practical activities include work on technologies for adaptation to climate change and on innovative financing, which has provided experience on how to engage the private sector. A guide for country experts on how to prepare bankable project proposals based on technology needs identified in TNAs is being developed. An overview of completed activities under each key theme of the framework is presented in table 1.

³ ESTs under Article 4, paragraph 5, of the Convention include technologies conducive to mitigation of, and adaptation to, climate change. (Footnote not in the original.)

Table 1. Overview of completed activities under each key theme of the technology transfer framework

Key theme of the framework	Outcomes
Technology needs and needs assessments	Report of the expert meeting on methodologies for technology needs assessments held in Seoul, Republic of Korea, 23–25 April 2002 (FCCC/SBSTA/2002/INF.7)
	UNFCCC/UNDP/CTI workshop on technology needs assessment and technology information for the Caribbean region, Port of Spain, Trinidad and Tobago, 20–21 October 2003
	<i>Conducting Technology Needs Assessments for Climate Change</i> (handbook) (UNDP, 2004)
	Technology needs assessment studies for 23 countries < http://ttclear.unfccc.int/ttclear/jsp/ >
	Synthesis report on technology needs identified by Parties not included in Annex I to the Convention (FCCC/SBSTA/2006/INF.1)
Technology information	Submissions from Parties on technology information systems (FCCC/SBSTA/2002/MISC.12)
	Report of the technology information expert workshop held in Beijing, China, 18–19 April 2002 (FCCC/SBSTA/2002/INF.6)
	Questionnaire for the survey on the assessment of the effectiveness of the use of the technology information clearing house (TT:CLEAR) (FCCC/SBSTA/2003/INF.12)
	Results of the survey on the effectiveness of the use of the UNFCCC technology information clearing house (TT:CLEAR) (FCCC/SBSTA/2004/INF.8 and Add.1)
	Resource implications for maintaining and further developing the UNFCCC technology information clearing house (TT:CLEAR) (FCCC/SBSTA/2004/10)
	Needs, logistical implications and institutional arrangements associated with networking international technology clearing houses and networks of regional and national technology centres (informal paper EGTT/2004/3)
	Networking TT:CLEAR with technology information centres in developing countries. Scope of work (informal paper EGTT/2005/3)
	Initial report on the pilot project on networking between the UNFCCC technology information clearing house (TT:CLEAR) and regional national technology information centres (FCCC/SBSTA/2005/INF.9)
	Enabling environments
Technical paper on enabling environments for technology transfer (FCCC/TP/2003/2)	
Summary of the senior-level round-table discussion on enabling environments for technology transfer (FCCC/SBSTA/2004/2)	
Cooperation with business and industry NGOs for the organization of the side event “Technology transfer and the UNFCCC: practical approaches for responding to developing country priorities” at COP 10	
Overview of intellectual property rights practices and other issues associated with publicly funded activities (informal paper for EGTT 7)	
Capacity-building	Technical paper on capacity-building in the development and transfer of technologies (FCCC/TP/2003/1)
Mechanisms for technology transfer	Cooperation with other expert groups under the Convention (CGE and LEG) (meeting of the chairs of expert groups with the chairs of the subsidiary bodies in conjunction with subsidiary body sessions)
	Cooperation with other conventions (Dialogue with the secretariat of the Convention on Biological Diversity)
Cross-cutting activities	
	Report on the UNFCCC workshop on innovative options for financing the development and transfer of technologies, held in Montreal, Canada, 27–29 September 2004 (FCCC/SBSTA/2004/11)

Key theme of the framework	Outcomes
	Report on the UNFCCC workshop on innovative options for financing the results of the technology needs assessments, held in Bonn, Germany, 2021 October 2005 (FCCC/SBSTA/2006/3)
	Technical paper on innovative options for financing the development and transfer of technologies (SBSTA 25)
	Practitioners' guide for financing the development and transfer of technologies (SBSTA 25)
	Scoping paper on the basic concepts of adaptation-relevant technologies (informal paper for EGTT 5)
	Report on the seminar on the development and transfer of technologies for adaptation to climate change, held in Tobago, Trinidad and Tobago, 14–16 June 2005 (FCCC/SBSTA/2005/8)
	Technical paper on applications of environmentally sound technologies for adaptation to climate change (FCCC/TP/2006/2)
Other documents	Annual report of the Expert Group on Technology Transfer (FCCC/SBSTA/2002/9)
	Report of the Expert Group on Technology Transfer for 2003 (FCCC/SBSTA/2003/12)
	Report of the Expert Group on Technology Transfer for 2004 (FCCC/SBSTA/2004/INF.17)
	Annual report of the Expert Group on Technology Transfer for 2005 (FCCC/SBSTA/2005/INF.10)

14. Since Parties reached agreement on the technology transfer framework at COP 7 in Marrakesh, many technologies have been highlighted for international cooperation, including hydrogen technology, carbon dioxide capture and storage, renewables, advanced (clean) fossil fuel technologies and civilian nuclear power. Several initiatives and partnerships were established as forums for cooperation between Parties on these technologies and for policy dialogue – canvassing policy issues such as best practice climate and energy policies, barriers to technology deployment, standards and performance measures. Some of these initiatives also provided for potential financing mechanisms for these technologies.

15. Climate friendly technologies were recognized as a crucial element for addressing the climate change challenge by the Gleneagles Plan of Action of the Group of Eight (G8), the Asia and Pacific Partnership on Clean Development and Climate Change,⁴ EU–China Partnership and others. It is encouraging to see that the G8 process is cognisant of the work on technology transfer under the Convention and that the work of the EGTT and TT:CLEAR were noted in the climate change plan of action of the G8.

1. Technology needs and needs assessments

Progress and effectiveness in implementation

16. Since COP 7, developing country Parties have been assessing their technology needs in the areas of climate change mitigation and adaptation through an analysis that takes account of their development plans and strategies. Through its interim financing for capacity-building in priority areas – enabling activities phase II (also known as “top-ups”) – the Global Environment Facility (GEF) provided funding to 94 Parties not included in Annex I to the Convention (non-Annex I Parties) to enable them to conduct TNAs. Of these 94 Parties, 80 are being supported by the United Nations Development Programme (UNDP) and 14 by the United Nations Environment Programme (UNEP). Twenty-three TNA reports are already available and another two are expected to be completed by the end of 2006.⁵

⁴ Recently established by Australia, China, India, Japan, Republic of Korea and United States of America.

⁵ <<http://ttclear.unfccc.int/ttclear/jsp/index.jsp/mainFrame=../html/TNAStudies.html>>.

17. As requested by the SBSTA at its twenty-first session, the secretariat prepared a synthesis report on technology needs identified by non-Annex I Parties based on the TNAs available and on the technology needs identified by non-Annex I Parties in their national communications. This report was made available for consideration by the SBSTA at its twenty-fourth session.⁶

18. To assist Parties in undertaking TNAs, UNDP, in collaboration with Climate Technology Initiative (CTI), the EGTT and the secretariat, developed a simplified, user-friendly handbook entitled *Conducting Technology Needs Assessments for Climate Change* (hereinafter referred to as the TNA handbook), which provides guidance on identification of needs for technologies for mitigation of, and adaptation to, climate change. The most recent version of this handbook was made available to Parties in 2004.

19. CTI, in collaboration with UNDP, UNEP and the secretariat, organized three regional workshops⁷ to field-test and to further improve the TNA handbook. The workshops provided an opportunity for country experts to discuss regional concerns and priorities in assessing technology needs, and to further assist Parties in conducting TNAs. CTI also provided technical support to Bolivia, Ghana, Malawi and South Africa to carry out TNAs.

20. TNAs are centrepieces of the work on technology transfer and reflect the concept of a country driven approach to this process. They are pivotal in bringing together the relevant stakeholders at the national level to identify technology needs and developing a plan of action for meeting those needs. It is generally accepted by Parties, in particular those undertaking TNAs, that identification of needs is a continuous process needing continuing support, and that the outcomes of the process need to be shared and made available to all Parties and relevant stakeholders within and outside the countries.

21. Although there are some difficulties in measuring the effectiveness of identifying technology needs, because some Parties are at different stages of conducting this process, the TNA synthesis report provides useful insight into the types of challenges, barriers and opportunities that may exist for technology transfer. When definitive outcomes become available and are compiled in a report, it could be useful to organize a forum to allow Parties to conduct regional workshops (on development of TNAs) in order to share lessons learned and success stories, to identify common priority technology needs by sectors, by regions and levels of economic development, to discuss the portfolio of projects, and to develop and disseminate training materials and good practices for conducting TNAs.

Identification of gaps and barriers

22. The TNA handbook proved to be useful in assisting countries to conduct TNAs, but it has limitations in terms of giving specific guidance on reporting and of providing examples for each step of the process, and needs some improvements. For example, the methods for conducting TNAs for technologies for adaptation are not sufficiently developed to guide Parties on how to report their technology needs and on the possibilities for integration with other processes. The handbook also provides limited guidance on developing projects based on the needs identified, but it will be complemented by a practitioners' guide on how to prepare project proposals.

23. With regard to the funding of projects identified in TNAs, early involvement of potential investors in the stakeholder consultation process would be beneficial. The above-mentioned TNA synthesis report (see paragraph 17) showed that, although stakeholder consultations were conducted by most Parties, stakeholders had limited involvement in the final steps of the process, such as identification of capacity-building needs, and development of implementation plans and next steps.

⁶ FCCC/SBSTA/2006/INF.1.

⁷ In September 2002 in Beijing, China, for the Asia and the Pacific region; in December 2002 in Dakar, Senegal, for the Africa region; and in October 2003 in Trinidad, Trinidad and Tobago, for the Latin America and the Caribbean region.

24. According to the technology transfer framework, the purpose of TNAs is to assist in identifying and analysing priority technology needs, which can form the basis for a portfolio of EST projects and programmes to facilitate the transfer of, and access to, the ESTs and know-how in the implementation of Article 4, paragraph 5, of the Convention. Based on lessons learned from the synthesis report, the full potential of the TNAs is not being realized. TNAs could benefit from a broader definition focusing on assessing the needs and the challenges to tackle, and then identifying the technologies to address them. The lack of adequate human, technical and financial resources for conducting TNAs was identified in most TNA reports as an important barrier to assessing technology needs. To overcome this barrier, additional resources and capacity-building are needed to enable non-Annex I Parties to conduct, finalize and/or update their TNAs, as appropriate.

25. Another identified barrier relates to the fact that the TNAs were seen as a stand-alone process. The TNA process would be more effective if it followed an integrated and dynamic approach leading to mainstreaming with relevant national development activities, inside or outside the Convention, that identify technology needs.

26. Lack of sufficient outreach is another barrier for TNAs. Better communication of the benefits Parties would accrue from conducting TNAs, and improved outreach, including through making the results of the TNAs available on TT:CLEAR and establishing a network of technology practitioners and financial experts, are needed to strengthen countries' participation in the TNA process. Enhanced outreach activities, and requirements to make available the results of TNAs conducted as stand-alone studies or integrated as part of national communications, may result in improved quality and completeness of these studies.

2. Technology information

Progress and effectiveness in the implementation

27. The need to improve the flow of, access to and quality of the information relating to the development and transfer of ESTs under Article 4, paragraph 5, of the Convention and to contribute to a more efficient use of the available resources by seeking synergy with other ongoing efforts, has been recognized since COP 1. The TNA synthesis report also identified that access to information and awareness-raising is the second most frequently identified category of barriers to technology transfer.

28. The secretariat implemented its pilot project on the establishment of a technology information system, later renamed the technology information clearing house, in September 2001. During the testing period only the 600 registered users could access TT:CLEAR. Following a request under this theme of the framework, the secretariat organized an expert workshop in Beijing, China, in April 2002,⁸ on technology information in order to review the feedback from Parties on testing TT:CLEAR, and to further define user needs for information, criteria for information quality control, technical specifications of the system and submissions from Parties.⁹

29. The above-mentioned submissions from Parties, the conclusions and recommendations of the workshop on technology information, and the testing of TT:CLEAR resulted in feedback and guidance for improving the system. Because the number of users registered during the testing period was considered inadequate to draw conclusions with regard to the usefulness of the system, the SBSTA, at its eighteenth session, requested the secretariat to conduct a survey to assess the effectiveness of the use of TT:CLEAR, including identification of users' needs for information on climate friendly technologies, and of information gaps and ways to bridge them.¹⁰

⁸ FCCC/SBSTA/2002/INF.6.

⁹ Submissions from Parties on TT:CLEAR are contained in document FCCC/SBSTA/2002/MISC.12.

¹⁰ The results of the survey are contained in document FCCC/SBSTA/2003/INF.12.

30. The testing of the system was completed by the eighteenth session of the SBSTA in June 2003 and the system was opened to public access.

31. At present, TT:CLEAR acts as a gateway to technology information that enables users, including practitioners and private sector users, to find information on technology transfer projects and programmes; on case studies of successful technology transfer; ESTs and sources of know-how; on organizations and experts; methods, models, and tools to assess mitigation and adaptation options and strategies; on relevant Internet sites for technology transfer; and on ongoing work of the Parties and the EGTT, relating to issues under negotiation, documents and meetings, and the implementation of the technology framework.

32. A pilot information sharing network between TT:CLEAR and national and regional technology centres was established to test the feasibility of exchanging information on climate friendly technologies and to provide a clear understanding of the technical and cost implications of strengthening such technology centres in developing countries through enhancing their capabilities to access and exchange information on climate friendly technologies. The network includes TT:CLEAR, the UNEP Sustainable Alternatives Network (SANet), the Clean Energy Portal (CEP), Canada, and the Climate Technology Cooperation Gateway of the United States of America (US-CTC Gateway).

33. Three new technology centres in developing countries are working with the UNFCCC secretariat to link their websites to the pilot network. These centres are the International Technology Trader Centre (ITTC) of Tsinghua University, China;¹¹ the Caribbean Community Climate Change Centre;¹² the Tunisia International Centre for Environmental Technologies (CITET) and the Sahara Sahel Observatory (OSS), Tunisia.¹³ Three other centres, one in Africa, one in Latin America and the Caribbean and one in Asia and the Pacific, may join this activity, resources permitting.

34. Future work on technology information could focus on increasing the number of users and maintaining and further enhancing TT:CLEAR, as well as on developing the above-mentioned pilot network for sharing technology information.

Identification of gaps and barriers

35. The survey conducted to assess the effectiveness of the use of TT:CLEAR identified barriers that need to be addressed to increase the use of the clearing house by users in developing countries and by technology practitioners. The recommendations of the survey are being pursued, including extending the pilot network of regional/national technology centres and translating information on TT:CLEAR into other languages. Key areas that could be addressed in the future include: increasing the availability of data; sustaining commitment for participation in the network of technology centres; and providing adequate and predictable resources for this activity.

36. The provision of information on TT:CLEAR and within the network of technology centres, including at local and regional levels, could be improved by involving the private sector more closely in these activities to enhance access to information on technologies. A better integration of TT:CEAR with other information clearing houses, better networking with existing activities, and a closer working relationship between TT:CLEAR and information providers, would enhance the access to technology information.

37. TT:CLEAR and the network of technology centres could continue to build on inventories of mitigation technologies and technologies for adaptation within the existing clearing-house mechanisms

¹¹ <<http://www.ittc.com.cn/english/index.htm>>.

¹² <<http://www.caribbeanclimate.org/ym/default.htm>>.

¹³ <<http://www.citet.nat.tn/masc/?INSTANCE=CITET&SETLANGUAGE=EN>>.

and could draw on experiences from the Convention on Biological Diversity (CBD) Clearing House Mechanism.¹⁴

38. Lack of awareness about TT:CLEAR and about the technology information network was also identified as an important barrier to information dissemination. To address this barrier, work on the outreach aspects of TT:CLEAR could be strengthened, through the preparation and distribution of additional outreach materials that would be able to address the needs of a broader set of target audiences or users. There may also be a need to improve the content of, and access to, TT:CLEAR in order to attract more users.

3. Enabling environments for technology transfer

Progress and effectiveness in implementation

39. A definitive assessment of the progress made in the implementation of the means of creating enabling environments for technology transfer identified in the definition of this theme of the framework is difficult, due to a lack of information on institutional/regulatory activities specifically undertaken by governments for implementing this theme.

40. The EGTT, within its field of competence, the secretariat and relevant stakeholders undertook extensive work in implementing this theme of the framework. Barriers to technology transfer and opportunities to remove them were addressed through several means, including a technical paper prepared by the secretariat on enabling environments for the development and transfer of technologies,¹⁵ a workshop on enabling environments, held in Ghent, Belgium, in 2003, and a senior-level round-table discussion held at COP 9.¹⁶ The round-table discussion was organized in collaboration with the EGTT, relevant intergovernmental organizations (IGOs) and business and industry non-governmental organizations (NGOs). The technical paper, workshop, and the round-table discussions resulted in a better understanding of the definition and means to enhance enabling environments to support technology transfer. The technical paper on enabling environments for the development and transfer of technologies was well received by the Parties and has also been used as a resource by academic institutions outside the UNFCCC process.

41. Based on a recommendation by the EGTT, the SBSTA, at its eighteenth session, encouraged business and industry NGOs, and relevant international organizations, to organize, in consultation with the EGTT and the secretariat, sector-specific workshops and other activities relevant to enabling environments for the development and transfer of technologies, for the purpose of exchanging experiences and lessons learned, and to make available to the secretariat information on the outcome of those activities. The business and industry NGOs organized an event on this subject at COP 10.

42. At its subsequent sessions, the SBSTA requested the EGTT to work on establishing a better understanding of the issues relating to publicly owned technologies and those in the public domain. Based on its deliberation on this topic, the EGTT prepared an informal paper on this subject.¹⁷ The SBSTA agreed to organize a side event at its twenty-fourth session, with the view to generating better understanding on issues surrounding this topic.

¹⁴ This mechanism promotes and facilitates technical and scientific cooperation, has developed a global mechanism for exchanging information, and develops human and technical capacity for networking.

¹⁵ FCCC/TP/2003/2.

¹⁶ The reports on the outcomes of the workshop and on the round-table discussion are contained in documents FCCC/SBSTA/2003/INF.4 and FCCC/SBSTA/2004/2, respectively.

¹⁷ <<http://ttclear.unfccc.int/ttclear/html/egttDocuments/Documents07.html>>.

Identification of gaps and barriers

43. The EGTT members identified gaps in the implementation of suggested means of creating enabling environments for technology transfer identified in the theme on enabling environments of the technology transfer framework.

44. A major barrier to the creation of enabling environments remains the lack of integration or implementation of climate change initiatives into policymaking at the national level. Other barriers identified included:

- (a) Weak interaction among different departments within governments and between governments and the private sector;
- (b) Limited private sector investment due to the absence of robust risk shields caused by inadequate policy and market framework conditions for the development and transfer of technologies;
- (c) Insufficient public grants and difficulties faced by developing countries in accessing risk capital and flexible loans from international financial institutions (IFIs) to support technology transfer projects;
- (d) The absence of a clear policy framework encouraging the establishment of public-private financing mechanisms that can support the development, transfer and deployment of ESTs by offering, inter alia, improved risk sharing options that can mobilize increased private sector capital and that can increase access by developing country project and business developers.

45. The ways and means to address these identified barriers include integrating the objective of technology transfer into national policies (including, for example, environmental and research and development policies) of Parties and reporting regularly, as appropriate, on progress of these activities through those means available under the Convention.

46. The EGTT recognized that this key theme of the technology transfer framework needs the most attention for enhancing the implementation of the framework. To enhance the implementation, concrete and measurable follow-up activities need to be initiated by Parties.

4. Capacity-building for technology transfer

Progress and effectiveness in implementation

47. The EGTT views capacity-building as a cross-cutting activity. Hence the implementation of activities identified in this key theme have been integrated and undertaken in other thematic areas as well. Activities undertaken that contribute to enhancing activities in this thematic area are highlighted below.

48. The expert meeting on methodologies for technology needs assessments held in 2002 in Seoul, Republic of Korea, provided a platform for experts from Parties to exchange views, experiences and lessons learned in conducting TNAs. The workshop on the enabling environments for technology transfer held in 2003 in Ghent, Belgium, also offered an opportunity for representatives of Parties, relevant international organizations and the private sector to discuss and generate common understanding on actions required by all relevant stakeholders for promoting enabling environments for technology transfer.

49. The secretariat, in collaboration with the EGTT, organized two workshops on innovative options for financing the development and transfer of technology. The first workshop,¹⁸ held in September 2004

¹⁸ The report of this workshop is contained in document FCCC/SBSTA/2004/11.

in Montreal, Canada, provided a forum for interactive dialogue between representatives of Parties and private sector financing experts and generated common understanding on financing concepts, information needs, the opportunities and the added value of engaging private sector investment in technology transfer projects. The follow-up workshop¹⁹ on this issue, held in October 2005 in Bonn, Germany, provided an opportunity for consultation and feedback to project developers in developing countries and countries with economies in transition on ways to prepare good project proposals that could attract investors.

50. On technologies for adaptation, the seminar held in June 2005 in Trinidad and Tobago provided opportunities for representatives of Parties, international organizations, and the private sector to create better understanding on concepts, needs and lessons learned on the application of specific technologies for adaptation to climate change through presentations of case studies from various countries.

51. To strengthen capacity for technology transfer, the CTI, in collaboration with the secretariat, organized regional workshops relating to technology needs assessments and technology information. The CTI/joint industry seminars organized on specific technologies and sectors also contributed to building capacity for technology transfer.

52. The secretariat, in collaboration with the EGTT, prepared a technical paper on capacity-building in the development and transfer of technologies.²⁰ The paper provided information on case studies and key lessons learned on human, institutional and information capacity-building activities, and acknowledged the need to further analyse trends, gaps and overlaps in the implementation of different capacity-building activities.

53. Several training workshops have been organized under the Subsidiary Body for Implementation (SBI) as part of its activities for the implementation of the capacity-building framework also adopted as part of the Marrakesh Accords in 2001. In 2004 the SBI also completed its comprehensive review of the implementation of the capacity-building frameworks, and noted that the above-mentioned technical paper contributed to that review.

Identification of gaps and barriers

54. The group identified major gaps in the implementation of capacity-building activities identified in the technology transfer framework.

55. In many cases, it is difficult to retain the expertise and knowledge developed over time by experts or countries' representatives who participate in workshops, seminars, or training programmes organized under the UNFCCC. For continuity, there is a need for the national focal points and/or workshop participants to find ways to pass on knowledge and capacities in a systematic manner to the team undertaking responsibility for climate change activities within the countries.

56. Other barriers for the implementation of activities under this theme include: lack of capacity among policy- and decision-makers at a regional and national level; weak communication within the private sector at the national level regarding scientific research, development and use of ESTs, and new innovative technologies and know-how; absence of training materials and regular capacity-building activities on technology transfer; absence of technology transfer aspects in national educational programmes; and the need for developing countries to better assess their capacity-building needs and develop capacity on the ground.

57. Possible ways to address the above gaps and barriers include regular capacity-building activities for technology transfer at regional and national levels, use of results of TNAs to develop training materials and for training workshops, and integration of climate change and technology transfer issues into national educational programmes.

¹⁹ FCCC/SBSTA/2006/3.

²⁰ FCCC/TP/2003/1.

5. Mechanisms for technology transfer and cross-cutting issues

Progress and effectiveness in implementation

58. Under this theme, the EGTT was established as an institutional arrangement to facilitate the implementation of the technology transfer framework. The EGTT has provided its annual report to inform Parties on the status and progress of its work and the SBSTA considered and endorsed its proposed work programme for the following year.

59. An emerging area of work under the theme of mechanisms is innovative options for financing the development and transfer of technologies. In 2004, the secretariat, in collaboration with the EGTT, organized a workshop in Montreal, Canada, to address for the first time the issue of innovative options for financing the development and transfer of technologies. The workshop generated critical learning and common understanding on means of financing technology needs in developing countries, as well as possible innovative ways to engage the private sector in technology transfer activities under the Convention, such as seed financing, blending commercial and non-commercial financing sources, and establishing networks of partnerships. Representatives from the private sector financing community actively engaged in instructive assessments of their professional needs in order to engage in developing countries. Based on the productive outcomes of the workshop,²¹ the SBSTA requested the EGTT, with the assistance of the secretariat, to undertake several follow-up activities. These activities included the organization of a workshop on innovative options for financing the results of technology needs assessments held in October 2005 in Bonn, Germany;²² and preparation of a technical paper on innovative options for financing the development and transfer of technologies and a practitioners' guide to assist project developers in developing countries to prepare project proposals that will meet the standards of international finance providers.

60. To date, much of the attention has been focused on the transfer of technologies for mitigation of greenhouse gas emissions. This work should certainly continue and intensify. But it must be complemented by the transfer of technologies to meet the special needs of countries for adaptation to climate change, taking into consideration policy frameworks that advance both adaptation and sustainable development. The seminar on the development and transfer of technologies for adaptation to climate change, organized in June 2005 in Tobago, Trinidad and Tobago,²³ was a first step in that direction. The secretariat was requested to prepare a technical paper on the application of ESTs for adaptation to climate change for consideration at SBSTA 24.²⁴ The paper contains comprehensive information and presented lessons learned in specific sectors (coastal zones, water resources, agriculture, public health and infrastructure) with 15 specific case studies, and it highlighted potential policy recommendations to strengthen the transfer of technologies for adaptation.

Identification of gaps and barriers

61. The COP, by its decision 4/CP.7, requested the secretariat to facilitate the implementation of the technology transfer framework in cooperation with Parties, the GEF and other relevant international organizations. The GEF has submitted its annual report through the SBI to each session of the COP, providing information on its support for the implementation of various activities as guided by the COP. With regard to the GEF support for the implementation of overall activities, the EGTT recognized the need to seek more information from the GEF with regard to the financial support it had provided to specific activities under each key theme of the technology transfer framework.

62. The COP also requested the secretariat to facilitate the work of the EGTT by organizing its meetings and preparing its reports to the SBSTA and to the COP. Since the inception of the EGTT,

²¹ FCCC/SBSTA/2004/11.

²² FCCC/SBSTA/2006/3.

²³ FCCC/SBSTA/2005/8.

²⁴ FCCC/TP/2006/2.

participation of its non-Annex I Party members in its meetings has been funded from the core budget of the secretariat. In addition, financial support for the implementation of the EGTT work programme endorsed by the SBSTA each year was provided by Parties as part of their contribution to the supplementary funds of the secretariat. The EGTT has recognized that adequate resources for the implementation of the work of the EGTT is key for its continued success.

63. Some EGTT members mentioned that creation and strengthening of the international, regional and national clean technologies centres or clean energy units have the potential to contribute to technology transfer. Other EGTT members mentioned that the use of the clean development mechanism and joint implementation mechanism of the Kyoto Protocol could also have such potential.

64. Improvements in the way the EGTT works will make it more efficient as a mechanism to facilitate the implementation of the framework. In accordance with decision 4/CP.7, the COP will review the progress of work and terms of reference of the EGTT at its twelfth session, including, if appropriate, the status and continuation of the group. By decision 6/CP.11, the COP invited Parties to provide views and suggestions on the review of the EGTT to the secretariat by 4 August 2006. In this context, the EGTT recommends that Parties consider measures to further increase the effectiveness of the EGTT, as well as its potential role in assessing relevant technology work in other forums that might relate or contribute to the technology transfer activities under the Convention.

B. Item C of the terms of reference: identification of practical actions to enhance innovative public and/or private partnerships and cooperation with the private sector, and consider concrete steps that governments, business and academia can take to enable effective participation by the private sector

65. The EGTT has initiated several new activities in the past two years to engage the private sector in its work relating to innovative options for financing the development and transfer of technologies. In addition to raising private sector awareness of issues relating to the development, transfer and deployment of technologies in the context of climate change, the focus was on better understanding private sector needs and identifying options for mobilizing private sector capital. Representatives from the private sector, particularly the financial community, actively engaged in the two workshops organized by the secretariat in 2004 and 2005. The workshop reports and the forthcoming technical paper on innovative options for financing the development and transfer of technologies, being prepared by the EGTT, will provide information of use to Parties.

66. Based on the above lessons learned from discussions with the private sector, the EGTT noted a number of issues, including that:

- (a) Financing of technology transfer and climate change are complex issues, often involving terminology/jargon that remains difficult to grasp (large range of issues, lack of sectoral focus, and limited mutual understanding);
- (b) The public and private sectors both have a role to play in enhancing technology transfer and one of the main challenges is to reduce the risks by providing the right policy frameworks and financial tools that will enable the transfer of ESTs. A key role of the public sector is to provide an environment conducive for private sector investments, as most of the technologies are owned by the private sector;
- (c) Public funds are needed to trigger private sector funding towards developing, transferring and deploying ESTs, and to overcome high (perceived) risks; but public funds are scarce compared to the needs identified and there are insufficient public and/or private funding instruments and “smart subsidies” to mobilize private sector capital;
- (d) TNAs do not always include concrete projects, and where they do, most of them are not sufficiently developed to immediately attract investors’ interest;

- (e) Lack of capacity to prepare good project proposals, including for risk analysis, reduces project developers' capability to efficiently target potential private and/or public funders;
- (f) Project proposals that are lacking cash flow and related risk analysis cannot attract investments;
- (g) Identified projects are often small scale and are therefore at a disadvantage for attracting IFIs investments due to high transaction costs and the lack of bundling and/or risk mitigation vehicles;
- (h) Some existing pilot projects²⁵ have demonstrated innovative options for funding the development, transfer and deployment of technologies. There are efforts to design and implement public-private mechanisms to scale up these successful projects;
- (i) Some projects induced by climate change policy considerations, even those directly contributing to the Millennium Development Goals or national sustainable development strategies, are often barred from official development assistance funding because they are not directly linked to other priority policy areas, such as social policy and policy aimed at poverty eradication;
- (j) Cash flows generated from the clean development mechanism and joint implementation have the potential to contribute towards the internalizing of external benefits generated by EST projects but some EST projects can remain at a disadvantage for attracting financing compared to conventional technologies.

67. Partnerships are set up at different levels (multilateral, bilateral, national) and focus on specific sectors or technologies. For example, partnerships at the multilateral level, such as the Renewable Energy and Energy Efficiency Partnership and the Johannesburg Renewable Energy Coalition, have emerged that aim to increase the deployment of ESTs through capacity-building, removing barriers, and providing innovative financing tools. Other multilateral partnerships try to foster international cooperation in the accelerated development and diffusion of ESTs and practices, such as through the CTI. It is crucial to identify the right type of partnership along with the right set of partners/stakeholders for the given focal area in order to attain the intended outcome.

68. TNAs are an important basis for preparing project proposals and, if adequately developed, can be a tool to engage private sector investment. However, they should not be seen as the major source of information on which the private sector would base investment decisions, as such decisions require more detailed financial information. In general, project developers in developing countries need targeted capacity-building to prepare project financing proposals that meet international standards and more specifically to convert the project ideas identified in the TNAs into bankable projects. Access to a network of financing experts to assist in this activity is also needed.

69. The following practical actions have been identified by the EGTT (some of which have already started):

- (a) Practitioners' Guide to assist project developers to create "bankable" proposals that will attract investors' interest, and to assist in identifying potential private and public funding sources
- (b) Project preparation facility to help match project developers needing funding and interested/potential investors (CTI, others).

70. Technology innovation plays an important role in developing those technologies that are needed to address the climate change challenge.

²⁵ For example using carbon funds and new ways of creating and delivering seed capital. See FCCC/SBSTA/2006/3.

C. Item D of the terms of reference: ways to enhance cooperation with relevant conventions and intergovernmental processes

71. Climate change is a cross-cutting issue that affects all aspects of the environment. As such, there are complementary objectives between climate change and other multilateral environmental agreements (MEAs). The impacts of climate change on water resources, agriculture, vegetation, ecosystems, habitats, forestry, marine biology and many others cut across several MEAs.

72. Mechanisms for technology transfer vary from one MEA to another. Nevertheless, there are areas of commonality where possible synergy could be considered.

73. Currently, several international organizations provide oral reports to the SBSTA and hence to the COP. Based on these presentations, the need for technologies for adaptation has emerged as a prominent area of potential cooperation through sharing experiences and successful approaches. It could be beneficial for MEAs to elaborate on approaches for technology transfer to identify possible commonalities.

74. The EGTT identified the following gaps and barriers regarding enhancing cooperation with relevant conventions and intergovernmental processes:

- (a) The need to improve clarity about the objectives of cooperation;
- (b) The issue of cooperation is to a certain extent contentious because it may touch on sovereignty and financial issues (not so much with regard to technology transfer);
- (c) Cross-sectoral nature of the discussion;
- (d) The need to improve the dialogue among MEAs.

75. The focus of each MEA or intergovernmental organization (IGO) can be different and considerable effort could be needed to promote closer cooperation. The UNFCCC could benefit from being proactive, particularly on the issue of technology transfer in the field of technologies for adaptation because it will assist in fostering closer cooperation among MEAs and cost-effectiveness in the implementation of relevant programmes under the MEAs.

76. Overall, the group indicated that it is crucial to be aware of how other conventions and intergovernmental processes (in particular the Commission on Sustainable Development) are elaborating on technology transfer issues relating to climate change. In this context, the EGTT identified the need for a more systematic and coherent overview of these activities through analysis and identification of potential synergy.

D. Item E of the terms of reference: possible medium- and long-term strategies for enhancing the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention, including issues associated with the medium- and long-term planning of the work of the Expert Group on Technology Transfer

77. The work of the EGTT could benefit from the adoption of a rolling, multi-year planning process that could incorporate consideration of medium- and long-term time horizons.

78. The setting of the EGTT's strategic work programmes could benefit from considering:

- (a) The **medium term perspective** (2006–2012). Technology work in the context of the Convention could now benefit from becoming more focused, in particular on practical actions to accelerate the implementation of technology transfer that fully considers sectoral and regional aspects and differences in national circumstances and better integration of national strategies for sustainable development and poverty reduction;

- (b) The **long term perspective** (2013²⁶–2030). Work relating to technology development and transfer could evolve based on future decisions of the COP and Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) and work of international organizations and other forums, as well as the results of work undertaken by Parties under the Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention and the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol established at COP 11.

79. The implementation of the recommendations presented in the annex to this document covers only the period up to 2012. As such, they address the medium-term work, pending the results of the Dialogue.

E. Item F of the terms of reference: promotion of collaborative research and development on technologies for mitigation and adaptation between Parties included in Annex II to the Convention and Parties not included in Annex I to the Convention

80. The group reviewed past activities relating to collaborative research and development (R&D) under the Convention. The group noted progress made regarding ongoing discussions under the SBSTA on research needs, and in-session mitigation workshops also covered some elements relating to R&D needs.

81. On gaps and barriers, the group noted that:

- (a) Based on the available reports of TNAs, information on R&D needs could be addressed more thoroughly;
- (b) There should be more opportunities for identification of common interests on joint R&D for Parties included in Annex I to the Convention and non-Annex I Parties;
- (c) The results of R&D should be fully shared with relevant stakeholders where possible;
- (d) There could be better cooperation on research issues relevant to climate change within countries and within discussions on the technology transfer issue within the UNFCCC process.

F. Item G of the terms of reference: recommendations on possible revision of the key themes in the existing framework

82. The EGTT agreed that the existing structure, five thematic areas of work, and definitions and purpose under the current technology transfer framework should be retained because they cover the areas of work necessary for enhancing the implementation of Article 4, paragraph 5, of the Convention. The lessons learned from the work carried out so far provide a solid basis for enhancing and prioritizing future work on technology transfer.

83. Emerging activities on innovative options for financing the development and transfer of technologies could be integrated into the theme on mechanisms for technology transfer, and the development and transfer of technologies for adaptation to climate change is a cross-cutting issue and could be captured in all thematic areas under the current framework.

84. The analysis given in this document is the result of assessments by the EGTT undertaken in the course of responding to the tasks requested in the ToR agreed by SBSTA at its twenty-second session. The recommendations based upon this analysis, developed with a view to enhancing the implementation of the framework, are contained in the annex.

²⁶ Assuming that the recommendations to be adopted at COP 12 will be reviewed after five years (not necessarily linked to Kyoto Protocol commitment period).

Annex

Recommendations for enhancing the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention

1. The purpose of the recommendations presented in the annex is to identify specific actions for enhancing the implementation of the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention (referred to hereinafter as the technology transfer framework), as requested by decision 6/CP.10.
2. These recommendations were developed taking into account:
 - (a) Experience and lessons learned from the implementation of the technology transfer framework since its adoption by the Conference of the Parties (COP) at its seventh session (decision 4/CP.7);
 - (b) Progress of the work and the activities completed since the inception of the Expert Group on Technology Transfer (EGTT) in 2001 and the outcomes of its deliberations;
 - (c) Relevant ongoing activities relating to the development and transfer of technologies of various national, regional and international organizations, governments and the private sector, in different forums;
 - (d) That the work on advancing the uptake of mitigation technologies and technologies for adaptation to climate change involves cross-cutting activities and, as such, normally is implemented under multiple key themes of the framework;
 - (e) The need to promote a broader involvement of Parties, international organizations, the private sector (in particular business and industry as well as the financial community), technology practitioners and other relevant stakeholders for the implementation of the framework;
 - (f) The need to strike a balance between strategic and operational actions, whereby the strategic actions are implemented by organizing technical workshops and expert meetings. These lead to the preparation of reports, technical papers and other tools on specific issues that provide technical inputs and operational guidance for the benefit of Parties and other users.
3. The existing structure, five thematic areas of work, definitions and purpose under the current technology transfer framework contained in the annex to decision 4/CP.7 continue to provide a solid basis for implementing the provisions of the Article 4, paragraph 5, of the Convention.
4. Given that technology is one of the important elements for discussions on the future long-term cooperative actions to address climate change by enhancing implementation of the Convention, the suggested time frame for the implementation of the actions outlined below is for the medium term covering the period between 2007 and 2012 or until the eighteenth session of the COP (2012). These recommendations address the medium-term work, pending the results of the Dialogue on long-term cooperative actions on climate change by enhancing implementation of the Convention (Dialogue).
5. The implementation of the recommendations presented below should be considered as further actions for enhancing the implementation of Article 4, paragraph 5, of the Convention set out in the technology transfer framework.

6. Work developed under each key theme has evolved to a more practical and results-oriented level and should continue to do so by promoting actions in specific sectors and regions. Therefore, there is a need to undertake periodic review on implementation of the framework and its effectiveness.

7. The EGTT recognized the need for financial and technical support to enable the Parties not included in the Annex I to the Convention (non-Annex I Parties) to implement the recommended actions below. In this regard Parties, when considering these recommendations, may wish to consider ways and means to address these needs.

A. Technology needs and needs assessments

8. Most of the actions described in paragraph 7 of the technology transfer framework under the theme of technology needs assessments (TNAs) have been completed as described in paragraphs 16–21 of the main part of this document. Based on lessons learned in the implementation of this theme, the following recommendations are made to enhance the implementation of this key theme:

- (a) To encourage non-Annex I Parties that have not yet undertaken or completed their TNAs, to do so as soon as possible, and to make these reports available to the secretariat for posting on the UNFCCC technology information clearing house (TT: CLEAR);
- (b) To encourage non-Annex I Parties to provide updated information on their technology needs in their second national communications and other national reports and to make them available to the secretariat;
- (c) To request the secretariat to prepare a synthesis report(s) of the information mentioned in paragraph 8 (a) and (b) above for consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA);
- (d) To request the Global Environmental Facilities (GEF) and its implementing agencies, other intergovernmental organizations (IGOs), international financial institutions (IFIs), Climate Technology Initiative (CTI) and Parties that are in a position to do so to provide capacity-building for non-Annex I Parties to conduct, report and use TNAs;
- (e) To request that, not later than 2009:
 - (i) The secretariat, in collaboration with the EGTT, United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP) and CTI, update the handbook for conducting technology needs assessments before SBSTA 28, taking into account experience and lessons learned indicated in the synthesis report on technology needs prepared by the secretariat,¹ cross-referencing the work on innovative financing and technologies for adaptation, and widely disseminate the updated handbook to Parties through TT:CLEAR and other means in different United Nations official languages;
 - (ii) The EGTT, with the assistance of the secretariat, prepare a report on good practices for conducting TNAs in collaboration with UNDP, UNEP and CTI for consideration by the SBSTA, and disseminate it to relevant stakeholders and practitioners;
- (f) To make available the results of TNAs, related experience and lessons learned in the TNA process and sharing them at national and international levels through the network of technology information centres, including through the organization of workshops by the secretariat in collaboration with relevant international organizations and initiatives;

¹ FCCC/SBSTA/2006/INF.1.

- (g) The secretariat to provide regular updates on progress of the implementation of the results of technology needs identified in TNAs, including success stories for consideration by the SBSTA at its subsequent sessions, as appropriate;
- (h) To invite the EGTT to cooperate closely with the other expert groups constituted under the Convention, especially the Consultative Group of Experts on National Communication from Parties not included in Annex I to the Convention (CGE), with the aim of coordinating activities relating to TNAs and national communications.

9. The main actors in this work are Parties, the EGTT, the secretariat, the GEF and its implementing agencies, and CTI in collaboration with relevant national and international stakeholders.

B. Technology information

10. The actions identified under this theme of the technology transfer framework were mainly completed as described in paragraphs 27–34 of the main part of the document. Based on lessons learned in the implementation of this theme, the following recommendations are made to enhance the implementation of this theme:

- (a) To maintain, update and further develop TT:CLEAR taking into account relevant conclusions of the SBSTA at its twentieth session and client surveys;
- (b) To enhance outreach activities by the secretariat to increase the numbers of users of TT:CLEAR from developing country Parties;
- (c) To share experiences and lessons learned among national and regional experts participating in the pilot project on TT:CLEAR networking through the organization of expert meetings;
- (d) To use TT:CLEAR and the network of technology centres developed through the current pilot programme to share technical information on technologies for adaptation and the associated capacity-building to meet the needs for technology information of vulnerable communities and countries;
- (e) To encourage the link between TT:CLEAR and technical information providers, including the private sector, in technology transfer;
- (f) To encourage the organization of training programmes and workshops by the secretariat in collaboration with the EGTT and relevant national, regional and international organizations for building capacity of experts in the creation of their national technology information databases;
- (g) To encourage Parties to provide more information on their technology transfer activities in their national communications.

11. The main actors in the work are the secretariat, Parties and their national and regional technology centres, relevant international organizations, and the private sector.

C. Enabling environments for technology transfer

12. Based on lessons learned in the implementation of this theme, the following recommendations are made to enhance the implementation of this theme:

- (a) Preparation of technical studies on barriers, good practice and recommendations for developing enhanced enabling environments that accelerate the development and transfer of environmentally sound technologies (ESTs), at the national and international levels. This should cover related trade issues, technology development (including endogenous

technologies), and technology push and market pull factors for consideration by the SBSTA;

- (b) To encourage Parties to avoid trade and intellectual property rights policies, or lack thereof, restricting transfer of technology;
- (c) To encourage Parties to make available through TT:CLEAR and other means information on ongoing and planned publicly funded research and development (R&D) activities where there are opportunities for non-Annex I Parties to jointly participate in such R&D activities, along with the terms under which Parties might participate and the steps necessary to establish such a collaborative relationship;
- (d) Close cooperation with public and/or private partnerships that focus on improving enabling environments for accelerating development and transfer of ESTs and which have been established in the context of processes such as the World Summit on Sustainable Development, the Group of Eight, and other initiatives (Renewable Energy and Energy Efficiency Partnership, Johannesburg Renewable Energy Coalition, Carbon Sequestration Leadership Forum, and CTI and other International Energy Agency implementing agreements);
- (e) To encourage Parties to integrate the objective of technology transfer into national policies and to enhance the interaction between governments and the private sector.

13. The main actors in this work are Parties, the secretariat, relevant international organizations and initiatives, and the private sector.

D. Capacity-building for technology transfer

14. Activities relating to capacity-building are also listed under other sections of these recommendations. Based on lessons learned in the implementation of this theme, the following additional recommendations are made to enhance its implementation:

- (a) To encourage Parties, IGOs and other institutions and initiatives to support capacity-building activities to promote technology transfer, at the regional and national levels, that are targeted to respond to priority capacity-building needs identified by non-Annex I Parties in their TNAs, national communications and other national reports;
- (b) The secretariat to prepare periodic reports containing information relating to capacity-building needs for the development, deployment, application and transfer of technologies from all relevant sources of information, such as national communications of non-Annex I Parties, reports of TNAs, and National Capacity Self Assessment reports supported by the GEF for consideration by the SBSTA. To the extent possible those reports could identify key elements for successful capacity-building for development and transfer of technologies for both mitigation of and adaptation to climate change;
- (c) To increase communication and outreach with regard to technology transfer activities under the framework and the work of the EGTT by creating learning centres (tools and methods) and partnership fairs (opportunities) in parallel with subsidiary body sessions and side events;
- (d) To encourage Parties, IGOs and other institutions and initiatives to organize training in management and operation of climate technologies; to establish/strengthen relevant organizations/institutions in developing countries for capacity-building for technology transfer; to establish/strengthen training, expert exchange, scholarship and cooperative research programmes in relevant national and regional institutions in developing

countries for transfer of ESTs; and to organize seminars/training/workshops on capacity-building for adapting to the adverse effects of climate change.

15. The main actors in this work are Parties, the EGTT, the secretariat, the GEF and its implementing agencies, and relevant international organizations and initiatives.

E. Mechanisms for technology transfer

16. The following recommendations were built on ongoing work of the secretariat and the EGTT in different areas for enhancing the implementation of the technology transfer framework.

1. Innovative options for financing the development and transfer of technologies

17. The recommended actions in this area are:

- (a) To invite relevant international organizations and initiatives, such as CTI, in collaboration with the EGTT and the secretariat, to provide technical support through coaching and training programmes for project developers in developing countries and countries with economies in transitions (EITs) to transform project ideas resulting from TNAs into project proposals that meet the standards of the international financial providers;
- (b) To disseminate the new UNFCCC practitioners' guide for preparing and presenting project financing proposals to Parties and practitioners in developing countries and encourage its use in the activity mentioned in paragraph 14 (a) above; post the guide on TT:CLEAR for distance learning purposes and for use in other training programmes;
- (c) To request the EGTT to promote success stories in financing technology transfer projects in emerging markets involving the private sector, including carbon funds, corporate-social-responsible, and triple-bottom-line² investors;
- (d) To encourage Parties to create an environment conducive for private sector investments by providing such incentives as greater access to multilateral sources and other sources of targeted "smart" subsidy schemes that trigger private sector co-financing;
- (e) To encourage Parties to scale up and/or develop innovative public-private financing mechanisms and instruments that increase access to developing country project and business developers that play a role in the transfer, development, and/or deployment of ESTs, focusing in particular on:
 - (i) Increasing the potential of public funds to leverage private sector capital;
 - (ii) Increasing options for sharing and mitigating risks and for bundling small-scale projects to bridge the distance between large-scale infrastructure investors and small-scale project and business developers;
 - (iii) The role that small and medium-sized enterprises, particularly joint ventures, can play in transferring, deploying and developing environmentally sound technologies;
 - (iv) Providing options for integrated technical assistance to help developing, managing and operating EST projects and businesses;
 - (v) Promoting enterprise and corporate driven R&D, innovation, and cost reductions;

² These measure the economic, social and environmental benefit of a project.

- (f) To strengthen the dialogue between government and industry to encourage discussions between relevant ministries in recipient countries and private sector organizations to enhance the investment conditions for climate friendly technologies;
- (g) For the EGTT to report regularly on the implementation of the mechanisms for technology transfer as spelled out in this document on a regular basis with a view to recommending new approaches that will further enhance technology transfer.

18. The main actors in this work are Parties, the EGTT, the secretariat, the GEF and its implementing agencies, public and private funding institutions, relevant international organizations and initiatives, and the private sector.

2. Possible ways and means to enhance cooperation with relevant Conventions and intergovernmental processes

19. The recommended actions in this area are:

- (a) For the EGTT to explore possible ways to enhance cooperation between the UNFCCC and other multilateral environmental agreements (MEAs), through, inter alia, the Joint Liaison Group and other intergovernmental processes, in particular the Commission on Sustainable Development, where technology transfer is considered. It may be useful to look beyond MEAs and look for synergy with other intergovernmental processes (e.g. World Trade Organization, International Energy Agency (IEA), the Group of Eight, Asia-Pacific Economic Cooperation);
- (b) For the UNFCCC to be proactive in sharing information and experiences relating to the transfer of technologies, in particular for adaptation;
- (c) For the COP to encourage Parties, when formulating climate change strategies programmes and projects, to take into consideration objectives of other MEAs;
- (d) Identification of areas for potential cooperation and formulation of clear objectives for this cooperation.

20. The main actors in this work are Parties, the EGTT, the secretariat, and relevant international organizations and processes.

3. Promotion of endogenous development of technology through provision of financial resources and joint R&D

21. The recommended actions in this area are:

- (a) To invite non-Annex I Parties to provide information on barriers encountered in the development of endogenous technologies. And to invite Parties to share good experiences in the promotion of endogenous technologies in non-Annex I Parties;
- (b) To consider options for encouraging the setting up of institutions such as national systems of innovation that could lead to the endogenous development of technologies in developing countries and countries with economies in transition;
- (c) To share lessons learned in endogenous technology development through TT:CLEAR;
- (d) To report regularly to the SBSTA on endogenous technology development and seek further guidance from the SBSTA and the COP.

22. The main actors in this work are Parties, the EGTT and the secretariat.

4. Promotion of collaborative research and development on technologies

23. The recommended actions in this area are:

- (a) To provide guidance for TNA reporting on joint R&D needs and use of information in the national communications and TNAs to identify needs and opportunities for R&D;
- (b) To provide opportunities for reporting joint R&D agreements, including voluntary agreements, on TT:CLEAR;
- (c) To invite relevant intergovernmental organizations (e.g. Intergovernmental Panel on Climate Change, United Nations Development Programme, United Nations Environment Programme, United Nations International Development Organization, Food and Agriculture Organization of the United Nations) and international organizations (e.g. IEA) to provide information on supported R&D activities relating to climate change;
- (d) To consider options for promoting regional research platforms, making use of existing networks of centres of excellence, where possible;
- (e) To prepare periodic stock-taking papers on status, opportunities, and needs for further R&D;
- (f) To invite governments to encourage academia and industry to develop research programmes to address climate friendly technologies and to promote investment in climate change.

5. The Expert Group on Technology Transfer

24. The COP may wish to take into account the work of the EGTT and the recommendations contained in this document when reviewing the EGTT at its twelfth session.
