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Development and transfer of technologies

**Report on the workshop on best practices in conducting technology needs
assessments**

Note by the secretariat

Summary

In response to a request by the Subsidiary Body for Scientific and Technological Advice at its twenty-fifth session, the secretariat, in collaboration with the Expert Group on Technology Transfer, the United Nations Environment Programme, the United Nations Development Programme and the Climate Technology Initiative organized a workshop on good practices in conducting technology needs assessments (TNAs). The workshop was held on 27–29 June 2007 in Bangkok, Thailand. The workshop provided an opportunity for participants to share lessons learned and good practices in conducting TNAs which will serve as subsequent guidance for those Parties undertaking or updating their technology needs assessments. It also provided an opportunity to discuss ideas on possible further activities on good practices in carrying out TNAs and to exchange views with representatives from the private sector and the financial community on possible ways to enhance access to funding for the implementation of the results of TNAs.

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I. Introduction

A. Mandate

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its twenty-fifth session, requested the secretariat to organize a workshop to share best practices with Parties not included in the Annex I to the Convention (non-Annex I Parties) working on technology needs assessments (TNAs) in collaboration with the Expert Group on Technology Transfer (EGTT), the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the Global Environment Facility (GEF) and the Climate Technology Initiative (CTI).¹

B. Scope of the note

2. This report contains a summary of the 19 workshop presentations² and the panel and general discussions carried out during the workshop. The report was prepared by the secretariat in consultation with the Chair of the EGTT. Ideas on possible further activities on good practices in conducting TNAs that were suggested by participants during the workshop can serve as input to further discussions and considerations by the SBSTA at its twenty-seventh session.

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

3. The SBSTA may wish to take note of the information contained in this document and provide further guidance on strengthening the TNA process.

D. Background

4. In accordance with the framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention (the technology transfer framework), the purpose of TNAs is to assist in identifying and analysing priority technology needs.

5. These needs can form the basis for a portfolio of environmentally sound technologies (ESTs), projects and programmes to facilitate the transfer of, and access to, ESTs and know-how in the implementation of Article 4, paragraph 5, of the Convention. The EGTT has indicated³ that TNAs are centrepieces of the work on technology transfer and reflect the concept of a country-driven approach to this work and that they are essential in bringing together the relevant stakeholders at the national level to identify technology needs and developing plans of action for meeting those needs.

6. The GEF has provided assistance in conducting TNAs to 94 non-Annex I Parties through its Additional Financing for Capacity-building in Priority Areas (also known as Phase II and/or “top ups”). Out of these, 80 TNAs are being supported by UNDP and 14 by UNEP. Thirty-four TNAs have been completed by least developed countries, small island developing States, developing countries and countries with economies in transition, from all geographical regions of the world, and the reports are available on the UNFCCC technology information clearing house (TT:CLEAR).⁴ These TNAs span a relatively long period of time, with the initial ones dating back to 2001 and the most recent ones submitted in 2007. Several Parties are presently undertaking TNAs, including 10 within the context of their second national communication (SNC).

¹ FCCC/SBSTA/2006/11, paragraph 80 (b) (ii).

² Available at <<http://ttclear.unfccc.int/>>.

³ FCCC/SBSTA/2006/INF.4, paragraph 20.

⁴ <<http://ttclear.unfccc.int/ttclear/jsp/index.jsp?mainFrame=../html/TNAStudies.html>>.

7. As requested by the SBSTA at its twenty-first session,⁵ the secretariat has prepared a synthesis report on TNAs completed by non-Annex I Parties (TNA synthesis report) (FCCC/SBSTA/2006/INF.1). This synthesis report presents information on technology needs for mitigation and adaptation to climate change contained in 23 TNAs and 25 initial national communications submitted by non-Annex I Parties. It highlights priority technology needs identified in various sectors to reduce greenhouse gas (GHG) emissions and facilitate adaptation to the adverse impacts of climate change. It draws attention to specific barriers to technology transfer and suggests measures to address them. The synthesis report also highlights ways used to involve stakeholders in a consultative process to conduct TNAs.

8. A background paper on good practices in conducting TNAs was prepared and made available to participants by the secretariat to generate discussions at the workshop.⁶ The paper provides information on the current status of the TNA process; synthesizes good practices in conducting the studies, reporting, synthesizing and analysing the results and communicating and implementing the findings; and presents potential strategies for improving this process. This paper will be revised to incorporate the output of the workshop.

II. Proceedings

9. The workshop was held in Bangkok, Thailand, from 27 to 29 June 2007. It was organized jointly by the secretariat, the Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and the Environment of the Royal Thai Government and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in consultation with the Chair of the EGTT and in collaboration with UNEP, UNDP, the GEF and CTI. Financial support for the organization of the workshop was provided by the European Community, Norway, Sweden and the United States of America.

10. The expected outcomes of the workshop were:

- (a) To share good practices and lessons learned in conducting TNAs among workshop participants representing governments, intergovernmental organizations, non-governmental organizations (NGOs) and the private sector;
- (b) To enable Parties in the process of conducting or updating TNAs to effectively undertake and complete their assessments and reports;
- (c) To identify specific needs and practical ways and means to enable Parties to implement the findings of their TNAs.

11. The agenda of the workshop, prepared in consultation with the Chair and Vice-Chair of the EGTT and representatives of UNEP, the United Nations Industrial Development Organization (UNIDO), the GEF and CTI, included five sessions: setting the scene; lessons learned and good practices in conducting TNAs; strategies and recommendations for improvement; enhancing the implementation of the findings of TNAs; and the way forward. The fourth session consisted of hands-on training in project development using the UNFCCC publication *A guidebook for preparing technology transfer projects for financing* (the practitioners' guide),⁷ and a round table on the role of financial assistance networks in stimulating the dialogue with the private sector on implementing the findings of TNAs.

⁵ FCCC/SBSTA/2004/13, paragraph 90 (b).

⁶ <<http://ttclear.unfccc.int/ttclear/pdf/Workshops/Bangkok/Paper.pdf>>.

⁷ <<http://ttclear.unfccc.int/ttclear/html/IfPG.html>>.

12. The workshop was attended by 86 participants: 64 from non-Annex I Parties,⁸ nine from Parties included in Annex I to the Convention, seven representatives from international organizations and bodies, NGOs and other organizations and the private sector and six resource persons.

III. Summary of discussions

A. Opening and setting the scene

13. In her welcoming remarks, Ms. Nisanart Sathirakul, Deputy Secretary-General of the Office of Natural Resources and Environmental Policy and Planning of Thailand, outlined national activities on climate change and TNAs and invited participants to address in their deliberations not only good practices relating to TNAs but also how to translate good ideas identified in TNAs into practical action and technology cooperation projects.

14. Mr. Pranesh Chandra Saha of UNESCAP discussed the economic output and growth rate and trends in the GHG emissions of the Asia and the Pacific region. He mentioned UNESCAP activities to promote environmentally sustainable growth in the region and, in this context, the importance of technologies for achieving such growth and of mechanisms to provide access to publicly funded technologies.

15. Mr. Kishan Kumarsingh, the Chair of the SBSTA, stressed that it is important, given that some 34 Parties have now completed their TNAs, that those Parties share their experiences with others and identify good practices that would guide future work on TNAs. He emphasized that TNA is a continuous process because technologies are changing. This is particularly true in adaptation owing to the increased understanding of the science of climate change and the improvement of vulnerability assessments.

16. A representative of the secretariat said that the workshop is an expression of the maturity achieved by the EGTT after several years of work. He emphasized that activities carried out under the five main thematic areas of the technology transfer framework were being addressed in the workshop and highlighted the training on preparing project proposals as an important capacity-building activity that will be continued in collaboration with relevant international organizations. He drew attention to the fact that technology is expected to be a building block for the future climate change regime.

17. A representative of UNESCAP outlined activities being carried out by UNESCAP with the aim of: promoting a regional approach to achieving a climate-friendly and climate change-resilient society, providing assistance to developing countries in the Asia and the Pacific region to reduce their GHG emissions, and developing innovative mechanisms for the future climate change regime. He drew attention to clean development mechanism (CDM) projects implemented unilaterally with a scheme for discounting certified emission reductions and the transfer of publicly funded ESTs.

18. Other representatives of the secretariat outlined the background and context of technology transfer activities under the UNFCCC process, focusing on key elements of the technology transfer framework. They also discussed the new activities recommended by the EGTT for enhancing the implementation of this framework that were endorsed by the SBSTA at its twenty-fourth session and the key challenges and outstanding issues for consideration by the Conference of the Parties (COP) at its thirteenth session. The representative drew attention to priority technology needs identified by non-Annex I Parties in their TNAs, barriers to technology transfer and measures to overcome them. Lastly, they presented the main opportunities for financing TNA findings and addressed issues relating to the identification of good practices.

⁸ Eleven from Africa, 27 from Asia and the Pacific and 12 from Latin America and the Caribbean.

19. UNFCCC consultants introduced the background paper on good practices (see para. 8 above). They outlined the objectives and scope of the paper, its audience, the definition of good practices and the approach used to identify these.⁹ The paper analyses, for each step in the TNA process, the current guidance, common issues reported by countries and lessons learned. It also provides case studies and identifies good practices. The consultants presented key findings on and good practices in managing the TNA process and highlighted the main elements to be included in TNA reports. They also presented good practices in cross-cutting issues such as stakeholder consultations and barrier analysis, and addressed issues in implementing the findings of TNAs.

20. The participants from Azerbaijan, Brazil, Finland, Ghana, Japan, Zimbabwe and the United States commented on workshop expectations and the background paper. These expectations included sharing good practices and lessons learned in: engaging stakeholders in the TNA process; establishing the core teams that lead these studies; identifying and addressing barriers to technology transfer; using the TNAs as a centre of activities to address the elements of the technology transfer framework; updating TNAs; and preparing good project proposals.

21. One participant drew attention to the need to assess the value added by the background paper in relation to the UNDP handbook *Conducting Technology Needs Assessments for Climate Change* (TNA handbook).¹⁰ The participant from Brazil outlined his country's experience with biofuels. Several participants highlighted other issues, including dissemination of endogenous technologies; reporting the findings of TNAs in stand-alone studies, in national communications or in both; implementing capacity-building needs identified in TNAs; the use of the practitioners' guide; and the role of CDM in transferring technologies identified in TNAs.

22. In the discussions which followed, the background paper helped to frame the issues and generated several ideas. Several participants viewed this paper as a useful document for countries conducting or updating their TNAs, and provided comments that will be taken into account when revising the paper. With regard to the terminology used in the paper, participants agreed that "good practice" is a more appropriate term in the TNA context than "best practice", which may be country specific.

B. Lessons learned and best practices in carrying out technology needs assessments

23. The second session focused on identifying lessons learned and best practices relating to TNAs. Participants provided case studies of the successful identification and prioritization of technology needs, as well as the implementation of technology transfer projects, the development of policy and legislative frameworks, and capacity-building activities.

1. National perspectives

24. The participant from Kenya pointed out the main barriers to technology transfer in her country, including lack of institutional capacity and access to information, lack of financial resources, market barriers and the absence of a policy on technology development. She said that specialized equipment is required, and associated human capacity has to be developed, in areas such as systematic observation and monitoring of the atmosphere and the carbon cycle. A lesson learned is that Kenya needs a substantial influx of technology, which must be a combination of locally developed technologies and imported technologies.

⁹ This approach includes: a desk review of 34 TNA reports, interviews with coordinators of the TNA, a review of guidance for TNAs, workshop presentations on country experiences and lessons learned, and a questionnaire survey on good practices on TNAs.

¹⁰ <<http://ttclear.unfccc.int/ttclear/html/TNAGuidelines.html>>.

25. A participant from Indonesia emphasized the importance of adequate institutional arrangements for technology transfer which involve relevant stakeholders and are well integrated into the national climate change structures,¹¹ and of legal and regulatory frameworks to enable technology transfer. He drew attention to the need to drive to his country's economy towards low-carbon and carbon-free energy technologies. A lesson learned is that the TNA played a major role in prioritizing technology needs but that the findings need to be updated and revised regularly. Another lesson learned is that it is important to incorporate prioritized technology needs into the climate change national action plan and sectoral plans.

26. A lesson learned from the TNA of Bolivia is that legislation at national and sectoral levels is essential for facilitating technology transfer. Activities undertaken after completing the TNA included further development of an appropriate legislative framework, removal of barriers in the implementation of CDM projects and integration of technology transfer issues into the new national development plan. A fund for adaptation and mitigation projects was also created with financial support from the Netherlands. However, without further financial and technical support Bolivia will not overcome the adverse impacts of global warming.

27. A participant from Thailand said that although his country undertook TNA before doing so under the Convention process, the technology transfer framework has provided new scope and guidance for these activities. A lesson learned is that specialists and stakeholders should be involved in the TNA process, which is an evolving process and should be viewed as a component of the activities addressing climate change carried out by countries and not as a product in itself.

28. A participant from China drew attention to the global, regional and local aspects of technology needs, and suggested that the identification of technology needs take into account environmental, economic, energy and social aspects. He drew attention to some of the problems encountered in conducting a survey to identify technology needs, in choosing the assessment criteria and in updating the list of candidate technologies. The main challenges are to translate the global priorities identified to the level of projects, companies, sectors, regions, and to address the dynamics of technology and market changes.

29. The participant from Armenia highlighted the importance of assistance from the GEF for maintaining and further developing the national capacity for carrying out TNAs and follow-up activities. A lesson learned is that follow-up implementation activities are essential. Examples of such activities included capacity development for CDM projects, preparation and implementation of a district heating energy-efficiency project, development of a project proposal in the transport sector and establishment of a technology transfer centre. With regard to project implementation, the lessons learned are the importance of integrating these activities into existing development programmes, of international cooperation, of public sector reforms aimed at removing the market penetration barriers, of involving the private sector as the basis for technology transfer, of securing seed money from the GEF and of building trust between project participants.

30. The participant from Botswana listed the specific objectives of his country's TNA, which were to define priority sectors, identify suitable technologies, review national policies and achieve social acceptability of technologies. He highlighted high capital costs, lack of expertise, lack of confidence in some of the new technologies and lack of raw material and infrastructure as the main barriers to technology transfer.

¹¹ A Working Group of Transfer of Technology Activities was set up in Indonesia to enhance previous projects, prioritize technology and capacity-building needs and identify modalities to acquire and absorb these technologies.

31. The participant from Viet Nam suggested that while a comprehensive list of technologies should be selected for assessment, TNA output should be limited to a reasonable number of priority technologies that meet national development goals while responding to climate change concerns and complementing existing development programmes. Other lessons learned include:

- (a) All key stakeholders¹² should be engaged in the selection of technology priorities and the design of actions to overcome barriers to technology transfer;
- (b) It is important to build or strengthen the human, scientific, technical and institutional capacity for identifying, designing, developing, monitoring, evaluating and hosting technological projects, including targeted research projects, for bilateral and multilateral funding;
- (c) TNA is an important input to SNC. Carrying out the TNA helped Viet Nam to identify its priorities in climate change adaptation technology transfer and to develop effective strategies to address them. TNA can be a powerful instrument for focusing the attention of government agencies, the international donor community and private sector investors on a well defined set of priority activities.

32. The participant from Georgia mentioned that, in spite of several limitations in her country's first TNA,¹³ Georgia developed eight project proposals, one of which was considered for a CDM project. She emphasized the important role of international organizations in developing and providing guidance, manuals, training materials, databases of technologies, and assessments of the cost-effectiveness and disadvantages of technologies. She concluded that: development banks should strengthen their participation in project financing; TNAs should be a stand-alone document, with a summary reported as the part of national communications; and additional financial support is needed for conducting TNAs.

2. International and private sector perspectives

33. In the part of the second session on international and private sector perspectives, the participant from UNDP summarized the experience of UNDP and UNEP in providing technical support to Parties undertaking their TNAs. He noted that conducting TNAs for adaptation is challenging, as the process must consider uncertainty of impacts and vulnerability, site specific or limited examples, long-term effects of climate change and complex investment decisions. Some of the lessons learned are: to be effective, the TNA process must be demand-driven, sector specific and embedded into the national development process; creating an enabling environment is crucial; cost is one of the major barriers to technology transfer; and there is a need to address cross-sectoral issues, including links between adaptation and mitigation. There is also a need to strengthen links between policymakers and the science and technology community.

34. The participant from CTI suggested that CTI aids the TNA process by giving external technical assistance, providing a supporting role to the country-driven process, sharing lessons learned from other relevant activities and broadening access to financing through its Private Advisory Financing Network (PFAN).¹⁴ The key lessons learned are as follows: engage stakeholders early in the process; focus efforts and be specific; be realistic and do not let the scope of effort overwhelm the process; and targeted

¹² Including government agencies, businesses, technical institutions and international partners.

¹³ Limitations included the fact that only the mitigation sector was considered, that consultation with stakeholders was limited and that clear strategy at the end of the process was lacking.

¹⁴ PFAN is an initiative of CTI in cooperation with the EGTT and the secretariat aimed at broadening access to financing for climate-friendly technologies. It was established as a follow-up of the UNFCCC workshops on innovative financing, which highlighted the lack of project financing proposals that meet the standards of and criteria of private sector financing communities.

capacity-building can unlock opportunities. Experience suggests that Parties may need to: engage the private sector; have a persuasive champion to engage stakeholders; enhance capacity to structure outcomes as discrete projects; and prepare project financing proposals.

35. The participant from LaGuardia Foundation discussed the work of the foundation's MOSAICO network¹⁵ in mobilizing infrastructure and capital for sustainable agriculture in the areas of identifying partners and project opportunities, supporting organizational development, conducting pilot projects, completing commercial and financial chains, promoting replication and documenting best practices and procedures. He presented experiences from several MOSAICO projects, including a small hydropower equity fund, a biofuel programme to provide sustainable livelihoods for farmers and create local jobs in biofuel processing, and an agriculture project in Brazil. A key lesson learned is the importance of local champions for developing and implementing projects.

36. The participant from Excellent Energy International presented two case studies of the company's work: small-scale cogeneration projects running on natural gas, coal and palm shell installed in Thailand. He highlighted the key success factors for energy service companies (ESCOs) in developing energy efficiency projects and stressed the importance of the pre-development and project development phases. Financial assistance networks such as PFAN may help in the funding and financial closure of projects, in connecting project developers and investors and in coaching and training.

C. Strategies and recommendations for improvement

37. For the third session, on strategies and recommendations for improvement, three facilitated breakout sessions were held to identify good practices in: conducting TNAs; reporting, synthesizing and analysing the results of TNAs and communicating their findings; and implementing the findings of TNAs.¹⁶

1. Conducting technology needs assessments

38. Highlights of the breakout session on conducting TNAs are as follows:

- (a) *Approaches adopted and methodologies used to conduct TNAs.* Approaches and methodologies are well known and there just requires some elaboration of the steps for technologies for adaptation to cater for uncertainties in climate change scenarios and sea level rise. The TNA handbook needs some refinements on how to identify capacity-building needs and procedures for implementation. It was also agreed that the TNA process should include development of project proposals. Some participants indicated that the resources available for conducting TNAs are not sufficient and that the level of resources available has a bearing on the coverage of key mitigation and vulnerable sectors, number of technologies assessed, involvement of stakeholders, etc.;
- (b) *Selection of technology criteria for assessment.* Although criteria are country specific, participants agreed that most criteria relate to development priorities, the acceptability and affordability of technologies, and the environmental, social and economic diffusion potentials of technologies. In many cases the challenge is how to perform an in-depth assessment of candidate technologies with a wide range of stakeholders who are well informed;

¹⁵ Includes companies from Brazil, China, India and the United States.

¹⁶ In addition, a questionnaire survey was conducted during the workshop to gather information on what could constitute good practices in TNAs. Twenty participants completed the questionnaire, and a detailed analysis of their answers will be made available in document FCCC/TP/2007/3.

- (c) *Areas covered and selection of key sectors and technologies.* Studying the needs of both mitigation and adaptation technologies is not always possible owing to lack of funds or some other reasons. Most studies used the same criteria for selecting key sectors and sub-sectors for consideration in the assessment and for technologies. The key sectors selected in the TNA should be in line with those sectors identified as key sectors for mitigation and vulnerable sectors for adaptation in national communications and national adaptation programmes of action (NAPAs);
- (d) *Identification of barriers to technology transfer and measures to address barriers and capacity-building needs.* Parties should first identify barriers at the national level, in terms of policies and legislative frameworks, and then identify identification of specific barriers at the community, sectoral and technology levels. Most participants indicated financial and capacity barriers as key barriers to technology transfer. Solutions include policy, advocacy, stakeholder engagement, cost-benefit analysis, improved legal frameworks, and risk assessment. Capacity-building needs for absorbing the technologies transferred and adapting them to local conditions should be identified by technology and by sector, at the systemic, institutional and human capacity levels;
- (e) *Definition and selection of options.* Most participants preferred to prepare exhaustive lists of candidate technologies and wait for the prioritization process to identify the best option. Some participants preferred to limit these lists to those technologies that have the best chance of being transferred. Technologies that may become attractive in the long-term are rarely considered in TNAs;
- (f) *Description of stakeholder participation.* Key stakeholders include policymakers, technocrats, NGOs, academia, sectoral experts, the private sector and civil society representatives. The stakeholders that add most value are sectoral experts. A best practice identified is to involve stakeholders in the TNA process by organizing a scoping workshop that invites their participation. Other approaches to ensuring stakeholder involvement include securing political endorsement of the TNA process, providing incentives, keeping stakeholders informed, lending stakeholders a sense of ownership in the process, and performance appraisal;
- (g) *Support for countries in conducting TNAs.* Measures to support other countries that have not yet completed or initiated their TNA process include promoting the use of the TNA handbook, providing technical and financial support, sharing the experiences of other countries and making available the background paper on good practices. Measures to support countries in updating TNAs include providing additional funding and assisting countries in implementing their technology needs.

2. Reporting, synthesising and analysing the results of technology needs assessments and communicating their findings

39. Highlights of the breakout session on reporting, synthesising and analysing the results of TNAs and communicating their findings are as follows:¹⁷

- (a) *General concerns.* Participants expressed concerns regarding the availability of adequate financial support for continuation of the TNA process. Solutions may include guidance from the COP to make funds available to carry out or update TNAs; COP guidance to conduct TNAs and report on findings; instruments to enable and/or enhance

¹⁷ The breakout group decided to also discuss general aspects relating to the TNA process.

implementation of the findings of TNAs; and a decision by the COP to invite the donor community to consider the TNA findings under their assistance frameworks;

- (b) *Reporting the results of TNAs.* The contents and level of detail of the report will depend on: the type of the report (e.g. stand-alone report or part of the national communication); whether the report needs to be endorsed by the Government and whether the report would be required to be submitted to COP through the UNFCCC; and the funds available for conducting the TNA. In this context participants stressed the importance of a good report, which is the key to the implementation of TNA findings, and noted that the funds available for the SNC will not be sufficient to conduct the TNA and produce such a report;
- (c) *Synthesis and analysis of information from TNAs.* The TNA synthesis report could be made yet more useful by extending it to include an analysis by region, by technology (e.g. renewable, energy efficiency or coastal zones) and by area (mitigation and adaptation) and to include new TNA studies that were completed after the TNA synthesis report was prepared;
- (d) *Communication of TNA findings.* Participants recommended, in addition to making TNA reports available on TT:CLEAR, the development of a communication strategy for disseminating findings of TNAs.

3. Implementing the findings of technology needs assessments

40. Highlights of the breakout session on implementing the findings of TNAs are as follows:

Role of governments

- (a) *Preparation of the implementation plan.* Governments could assess the adequacy of financial resources for implementing the findings of TNAs; prioritize, organize, and provide clarity and focus on, various technologies defined in TNAs; assess market needs; promote partnerships; and increase public awareness. Good practices for governments in this area include providing enabling environments, encouraging coordination among different stakeholders within government, the private sector and the financial sector, and establishing steering committees composed of cross-sectoral government representatives and a pool of experts (as well as the criteria for selecting them). Participants also discussed required elements for successful implementation of the project ideas, concepts or proposals reported in TNAs, such as establishment of strategic partnerships, selection of priorities at the governmental level, clear guidelines for identifying adaptation needs and a time frame in relation to adaptation measures;
- (b) *Promotion of policies and measures needed to reduce the barriers to technology transfer identified in TNAs.* Good practices discussed include executive level government buy-in from the beginning, addressing cultural barriers and creation of working groups focusing on several sectors. Approaches were also recommended at the sectoral level that would integrate social, economic and financial priorities and promote synergies among technology transfer, CDM and NAPA activities;
- (c) *Addressing the needs for capacity-building identified in TNAs.* Governments may: consider the co-benefits aspects, work with external experts, organize training and workshops, work with universities and research and development (R&D) centres on innovative technologies and establish a knowledge database of external experts for internal capacity-building (i.e. train the trainers);

- (d) *Promotion of integration of TNA findings in national development plans and related national programmes.* Governments may consider the results of TNAs when creating relevant policies, economic and R&D plans, and appropriate institutional arrangements;

Role of the private sector

- (e) *Financial advisory networks.* Networks such as PFAN can play a role in enhancing the implementation of TNA results by identifying gaps that need further elaboration and providing assistance in the networking process. Participants recommended PFAN as a positive and scalable model;
- (f) *Engagement of the private sector and the financial community.* One good practice identified is for the Party to initiate cooperation with the private sector at the beginning of the TNA process. Other good practices are to share best practices, identify risks and work with universities to address in their curricula the role of the private sector in technology transfer;

Role of the GEF, international organizations and development banks, and the EGTT

- (g) *The GEF and its implementing agencies.* The bodies could integrate the findings of TNAs in their programmes to support the efforts of Parties in mitigating and adapting to climate change;
- (h) *Development banks and financing institutions.* These could provide training in preparing project financing proposals to financial institutions and project developers. Multinational banks could support the implementation of TNA findings through financing instruments such as a clean energy investment framework;
- (i) *The EGTT.* This group has played an effective role in the production of a series of useful products for various user groups such as the practitioners' guide and the brochure on technologies for adaptation. The EGTT should continue to focus on its role of promoting, conducting outreach and identifying gaps in technology transfer activities and should facilitate the implementation of TNAs.

41. The plenary discussions that followed the breakout sessions further underlined various aspects such as the importance of communicating the findings of TNAs to decision makers, the importance of follow-up on implementation (including through preparation of project proposals for financing), the need for a reporting template and the relationship between the TNAs and SNCs. The central role of TNAs in national technology transfer activities and the need to strengthen the technical and financial support for the TNA process were also highlighted.

42. The Chair of the EGTT noted the concern raised by participants during the workshop with regard to funding for further work of developing country Parties on TNAs and agreed to bring this matter to the attention of the group at its next meeting.

D. Enhancing the implementation of the findings of technology needs assessments

1. Preparing project financing proposals

43. In the fourth session, a representative of the secretariat introduced the work of the EGTT and the secretariat in the area of innovative financing and its links with TNAs, in particular regarding the implementation of the findings of TNAs. This work aims to improve access to financing for technology transfer projects from available financing sources, both public and private. Resource persons from E+Co

introduced the participants to the contents and use of the practitioners' guide, including basic financing and accounting concepts. These presentations highlighted:

- (a) **Challenges faced by project developers** in developing countries in moving from project ideas identified in TNAs towards financial closing of these projects, including the need for capacity-building for project developers in developing countries in preparing and presenting project proposals. Specific needs related to avoiding drafting proposals that are incomplete, imbalanced or misdirected or that receive no response and to address possible language gap between project developers and potential financiers;
- (b) **The aim of the practitioners' guide** to assist project developers in developing countries in preparing successful project proposals. The guide could be used as a tool to enable countries to convert project ideas into successful project proposals for financing. It concentrates on common ingredients that most well prepared proposals contain.

44. A hands-on training session was organized to strengthen the capacity of the participants from developing countries to prepare and present project proposals for financing by using the practitioners' guide. Participants were divided into three breakout groups and, in a series of exercises,¹⁸ were asked:

- (a) **To review the project summary** of a hydropower project from a project developer point of view, looking at criteria such as fairness, completeness and clarity of the information provided. They used a checklist to verify that the key elements of a project proposal were included;¹⁹
- (b) **To evaluate a project proposal** as a representative of an investment company. The participants were provided with a project summary of a rural electrification project and were asked to evaluate the completeness and quality of the proposal based upon a checklist;
- (c) **To review and direct project proposals to the right funding source.** They were provided with four project summaries and asked to review the quality of the project summaries and identify the appropriate funding sources from a choice of technical and business development assistants, lenders, investors, specialized programmes and/or donors and charitable organizations.

45. Highlights of the plenary discussion that followed are summarized as follows:

- (a) *Feedback on hands-on training.* Participants were of the view that the training provides a good general introduction to preparing project proposals, but that a half day exercise is too short to provide any in-depth knowledge. The best way forward is to organize training programmes of three to four days at a regional level. Regarding the format, the training should cover financial structuring of project proposals, using the software included in the guide, extending the exercises with sectoral project proposals including adaptation projects and highlighting climate change benefits of these exercises;²⁰

¹⁸ <<http://ttclear.unfccc.int/ttclear/pdf/Workshops/Bangkok/Workbook.pdf>>.

¹⁹ The checklist included information about the product or service, technology, client, location, market, regulatory setting, champion, owners, other key actors and stakeholders, implementation plan, benefits, costs, revenues, risks and things that might go wrong, the purpose of the proposal and the types of resources being sought.

²⁰ Some participants called for the provision of regional training and one participant proposed separate training in evaluating project proposals. While the former can target climate change focal points and other participants of COP and subsidiary body meetings, the latter should target project developers that need specific financial knowledge.

- (b) *Enhancing the implementation of the findings of TNAs.* Some participants indicated that the links between TNAs and technical assistance for preparing successful project proposals should be strengthened to enhance the implementation of the findings of TNAs;
- (c) *Translation of the practitioners' guide into all official languages of the United Nations.* Some participants suggested making the guide available in all languages of the United Nations to reach a wider audience (it is currently available in English, French and Spanish).

2. Enhancing access to financing resources

46. This part of the session focused on ways and means to enhance access to financial resources for technology transfer. It included a presentation by PPL International on PFAN followed by a round table on the role of financial assistance networks.

47. The representative of PPL International outlined the background, approach and experiences of PFAN and plans for its future. PFAN provides a free consulting service to project sponsors and developers to help them raise international private finance. These services are provided by a network of representatives of specialist investment funds, institutional investors and business consultancies. The review process comprises an initial review of the project including an assessment of the economic feasibility and three follow-up reviews, covering: commercial and financial structuring; technical feasibility; and cash flows and achievements of conditions of the project. Based upon the lessons learned from the pilot phase of PFAN, PPL International stressed that integrating financing considerations in the early stages of project development is key to improving access to financing.

48. During the round table, the representative of the Renewable Energy and Energy Efficiency Partnership (REEEP) introduced the participants to REEEP, a multi-stakeholder partnership aimed at accelerating the uptake of renewable energy and energy efficiency by providing funding for projects and facilitating the removal of other policy, technological, market and regulatory barriers to their deployment.

49. He indicated that the key needs for successful technology transfer identified in TNAs are very similar to the ones addressed by REEEP, including regulation, financial instruments and funding that has been supported by REEEP via its projects. He highlighted several problems regarding financial flows to support technology transfer, including the lack of long-term financing resources, high transaction costs of small-scale projects and the associated risk of investments.

50. The resource person from the International Technology Transfer Center (ITTC) of Tsinghua University, China, discussed the potential role of the centre in enhancing access to financial resources. The ITTC, which is part of the small network of technology centres sharing information which includes TT:CLEAR, acts as a market catalyst for clean technologies by assisting domestic companies to access these technologies, providing market analysis to foreign companies interested in entering the Chinese market, providing consultancy services for CDM projects and acting as an ESCO. ITTC also has the capability to provide training in project development to local project developers and entrepreneurs in China.

51. The representative of UNIDO discussed some of its activities in technology transfer, including a network of more than 20 investment and technology promotional offices aimed at strengthening the capacity of countries and institutions to foster industrial partnerships, in particular, between small- and medium-scale companies throughout the world. He also referred to the COMFAR software package developed by UNIDO, which could assist project developers in preparing project proposals.

52. The discussion that followed focused on the challenges faced by projects dealing with adaptation to climate change, as it has often been stated that much of the interest of financiers and investors focuses on mitigation projects, in particular energy projects. In this context, the lack of capacity to prepare good adaptation project proposals that include structuring and presentation of the finances was highlighted by representatives of the international organizations and the private sector. In this regard, the inclusion of information in proposals about cash flows, which makes risks quantifiable and manageable, was considered to be crucial for improving access to financing.

53. The Chair of the SBSTA noted that many countries are concerned about implementing the findings of TNAs and agreed to hold discussions with the Chair of the Subsidiary Body for Implementation on how to take this issue forward. He will also bring the concerns expressed to the attention of the Chairs of the expert groups (the EGTT, the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention, and the Least Developed Countries Expert Group) at their joint meeting to be held during the twenty-seventh session of the subsidiary bodies.

IV. Final considerations

54. During the final session, participants concluded that the workshop provided a good opportunity for national experts to share lessons learned and good practices in conducting TNAs which will serve as subsequent guidance for those Parties undertaking or updating their TNAs. It also provided an opportunity to exchange views with representatives from the private sector and the financial community on possible ways to enhance access to funding for the implementation of the results of TNAs.

55. Several comments and proposals were made regarding the outcomes of the workshop and possible ways forward, as follows:²¹

- (a) The preparation of a TNA involves key processes relating to the development and transfer of technologies to address climate change. TNA is a dynamic process that needs to take into account the changes in needs as the development process of the country evolves and new technologies are developed. TNA studies need to be updated periodically to keep pace with these developments;
- (b) Countries are the main beneficiaries of the TNA process. Other processes, such as national communications and NAPAs, should build on the findings of TNAs in areas relating to identification of technology needs;
- (c) The background paper, referred to in paragraph 8 above, should be revised and made available as soon as possible to countries undertaking or updating their TNAs;
- (d) Future work should engage more in providing guidance on, and improving tools and mechanisms for, transferring technologies for adaptation. This should include further enhancing the dialogue with the financial community in particular on financing adaptation projects, taking into account the specific financial characteristics of such projects. Sectoral workshops may be needed for in-depth analysis of technology needs, including innovative financing specific to sectors such as renewable energy, energy efficiency and transportation;
- (e) Several financing opportunities were presented during the workshop, including PFAN and other bilateral and multilateral funds that are available. PFAN was seen as a positive

²¹ Additional proposals are included in chapter III.C of this document.

and scalable model. A similar network may be needed to provide guidance on technical issues such as the selection of appropriate adaptation and mitigation technologies;

- (f) Well written project proposals are the key to successful implementation of TNA findings. The practitioners' guide is a useful and simple tool that could be applied to prepare most type of project, but training in its use is needed;
- (g) Further work is needed to promote good practices in conducting TNAs. Work is also needed to strengthen the TNA process and the implementation of TNA findings.
