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Development and transfer of technologies

Report on the pilot project on networking between the UNFCCC technology information clearing house (TT:CLEAR) and regional and national technology information centres

Note by the secretariat

Summary

This report summarizes the outcomes of the pilot project on networking between the UNFCCC technology information clearing house (TT:CLEAR) and regional and national technology centres referred to hereinafter as the pilot network. It contains information on activities of the secretariat relating to extending the pilot network to cover centres from developing countries, summarizes the presentations and discussions that took place at a small seminar on sharing experiences and lessons learned from the pilot project held in Bonn, Germany, on 12 and 13 March 2007, and it outlines the potential role of a network of technology centres.

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decision 6/CP.10, paragraph 4, encouraged the secretariat to continue its work on a pilot project on networking between the UNFCCC technology information clearing house (TT:CLEAR) and national and regional technology information centres that would provide Parties with a clear understanding of the technical feasibility and cost implications of the strengthening of technology centres in developing countries and to report on the outcome to the Subsidiary Body for Scientific and Technological Advice (SBSTA) at its twenty-third session.

2. The SBSTA, at its twenty-fifth session, taking into consideration the activities identified for immediate follow-up, as contained in document FCCC/SBSTA/2006/INF.8, paragraph 57, on the need to undertake specific follow-up activities, requested the secretariat, in collaboration with the Expert Group on Technology Transfer (EGTT), to organize a small seminar for the technology information centres participating in the pilot project to share lessons learned from the pilot project on networking in collaboration with United Nations Industrial Development Organization (UNIDO), United Nations Environment Programme (UNEP) and United Nations Development Programme (UNDP).[1]

B. Scope of the note

3. This report summarizes the outcomes of the pilot project on networking between TT:CLEAR and regional and national technology centres, referred to hereinafter as the pilot network. It contains information on activities of the secretariat relating to extending the network to cover centres from developing countries, summarizes the presentations and discussions that took place at the small seminar on sharing experiences and lessons learned from the pilot project and it outlines the potential role of a network of technology centres.

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

4. The SBSTA may wish to take note of the information contained in this document and, where necessary, provide further guidance to the secretariat with regard to its efforts to facilitate the work of Parties on sharing information on development, deployment, diffusion and transfer of climate-friendly technologies.

D. Background

5. Following a request by the SBSTA, at its seventeenth session, the secretariat and UNEP established an information sharing link between TT:CLEAR and the Sustainable Alternatives Network (SANet)[2] by using web services. Based on this experience, similar links were also established between the Clean Energy Portal (CEP),[3] Canada, and the Climate Technology Cooperation Gateway (U.S.–CTC Gateway),[4] United States of America. These centres formed the core of the pilot network.

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[1] FCCC/SBSTA/2006/11, para. 80 (b).

[2] The UNEP SANet provides advisory services for the early stages of decision-making. With a global network of information resources, local experts and financing options, it helps businesses innovate with cleaner technologies.

[3] An internationally renowned site for clean energy technology information exchange.

[4] The U.S.–CTC Gateway provides information to facilitate climate technology cooperation with developing countries and countries with economies in transition (EIT countries), including on climate programmes and projects sponsored by the United States of America, climate technology tools, resources and technical experts, and information on technology market opportunities in developing countries and EIT countries.

6. The pilot network was initiated to assess the feasibility of linking technology centres; to explore opportunities for cost-effective sharing of electronic information between TT:CLEAR and the above-mentioned web portals; to elaborate on the scope of information exchange; to assess the impact of networking on the costs of searching for information on technology transfer opportunities by prospective users and providers; and to test technical solutions for information sharing and identify possible functions of the network and potential users.

7. The SBSTA, at its twenty-second session, noted the oral report by the secretariat on progress of the pilot network. It considered this work to be a constructive step forward in linking external resources to TT:CLEAR, noting that greater reliance on other established portals will facilitate work by the secretariat while providing an enriched set of information and services.[5]

8. As requested by decision 6/CP.10, in 2005 the secretariat initiated work to extend the pilot network to technology information centres in developing countries. The objectives of this work were to test the feasibility of networking between national and regional centres in developing countries working on the dissemination of technology information and to provide Parties with a clear understanding of the technical feasibility and cost implications of the strengthening of technology centres in developing countries. In order to meet these objectives, three tasks were undertaken, in close collaboration with technical representatives of the organizations and the regional and national centres participating in the network:

(a) Extended the pilot network to cover three selected national/regional technology information centres in developing countries;

(b) Exchanged views and lessons learned among centres participating in the pilot project on technical, organizational and financial aspects relating to the networking of technology information centres;

(c) Assessed the outcomes of the pilot project on networking between TT:CLEAR and the regional and national technology information centres and reported its findings.

9. The SBSTA, at its twenty-third session, took note of the initial report by the secretariat on the pilot network (FCCC/SBSTA/2005/INF.9), acknowledged the useful contribution this activity could make towards enhancing networking among technology information centres and to enabling Parties to gain access to relevant technology information, and encouraged broader participation through seeking more partners from developed and developing countries and international organizations.

10. The initial report described the concepts and structure of the network, outlined options for efficient sharing and exchange of information, underlined limitations associated with sharing information online and presented some initial lessons learned from the pilot project. It also elaborated on the main activities that would be covered under the tasks listed in paragraph 8 above. In particular, the report identified and analysed three options for efficient sharing and exchange of information: (i) maintain links to external sources of data and information (direct links); (ii) develop specialized search engines and data interfaces; and (iii) use web services. It recommended that the use of web services (option (iii)) be used in implementing the pilot network (mutually searchable databases).

11. At its tenth meeting (December 2006), the EGTT encouraged the secretariat to make this pilot network initiative known to technology centres in developing countries and some members indicated the need to address regional balance when expanding the pilot network. It reinforced its recommendations

[5] FCCC/SBSTA/2005/4, para. 56.

on the technology information theme of the technology transfer framework.[6] It noted that the process could benefit from an update of the survey on the effectiveness of the use of TT:CLEAR, carried out in 2004 (FCCC/SBSTA/2004/INF.8). At the same meeting, the EGTT:

(a) Expressed concern about the capabilities of the centres for enhancing the dissemination of technology transfer information through the current pilot network and recommended that UNEP and the United Nations Industrial Development Organization (UNIDO), which have experience in working with clean production centres, and UNDP, which has experience in capacity-building, be involved in this work;

(b) Emphasized the need for a client driven process of networking technology centres, in particular building on the gaps and barriers identified in the synthesis report on technology needs identified by Parties not included in Annex I to the Convention (non-Annex I Parties);[7]

(c) Noted that it will be necessary to assess the results of the pilot project on networking between TT:CLEAR and regional and national technology information centres against the initial objectives, including alternative means of sharing information between these centres before further expansion of the pilot network.

12. Additional information on networking technology information centres can be found in documents FCCC/SBSTA/2004/10 and FCCC/SBSTA/2004/INF.8 and Add.1 and Corr.1.

II. Extending the pilot network to cover three national or regional technology information centres in developing countries

13. In response to the above-mentioned mandates (paras. 8 and 9), the secretariat approached twenty-seven technology centres in Africa, Asia and the Pacific, and Latin America and the Caribbean. Three centres expressed interest: the International Technology Trade Centre (ITTC) of Tsinghua University, China; the Tunis International Centre for Environmental Technologies (CITET) and the Sahara Sahel Observatory (OSS), Tunisia; and the Caribbean Community Climate Change Centre (CCCCC), Belize. These three centres were selected to joint the pilot network. A description of the selection process, including the list of criteria prepared for the selection of the technology centres can be found in document FCCC/SBSTA/2005/INF.9.

14. In creating a network, these technology centres worked with the UNFCCC secretariat to establish the link between their websites and TT:CLEAR by using the data sharing techniques prototyped during the initial phase of the pilot project. ITTC completed its work and was fully operational as part of the pilot network in the first half of 2006.

15. Following a requests from CITET, a staff member of the secretariat visited the centre from 25 to 27 October 2006 to provide technical guidance and support to the centre to finalize its work under the pilot project. During the mission, technical issues relating to linking the CITET portal with TT:CLEAR were clarified and a revised work programme was developed to enable the centre to successfully complete its work.

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[6] These recommendations encourage Parties and their national and regional technology centres, relevant international organizations, and the private sector 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 (FCCC/SBSTA/2006/5, annex II, para. 10 (d)).

[7] FCCC/SBSTA/2006/INF.1.

16. A small seminar was organized by CITET in Tunis to present and discuss the project. It was attended by some 35 participants from CITET, the OSS and other national organizations. The seminar provided an opportunity for an exchange of views on various issues relating to sharing technology information, the pilot project on networking and the work done by CITET under this project, as well as on other aspects relating to technology transfer, including technology needs assessments (TNAs), technologies for adaptation and innovative financing. CITET completed its work and was fully operational as part of the pilot network in December 2006.

17. The CCCCC was awarded a contract for joining the pilot network in December 2005 but because of problems relating to its website, it was not able to conduct the work and finalize the contract in 2006 (see paras. 33 and 34 below).

III. The small seminar on networking technology information centres

18. The small seminar on networking technology information centres was convened on 12 and 13 March 2006, in Bonn, Germany. It was attended by nine participants representing the centres participating in the pilot network (CCCCC, CITET, CEP, ITTC, UNEP SANet and TT:CLEAR), the Environmental Protection Agency of Ghana[8] and the EGTT Chair for 2007 (Mr. Kok Kee Chow). The U.S.–CTC Gateway was not in the position to send a representative to this seminar but provided its written comments. The agenda of the seminar, prepared in consultation with the EGTT Chair, addressed issues relating to work carried out by the centres participating in the pilot network, experiences and lessons learned, and the potential role of a network of technology centres in enhancing the implementation of the technology framework. Presentations were followed by discussions and particular attention was devoted to addressing the concerns expressed by EGTT and some centres. The seminar was chaired by the EGTT Chair. The presentations and the agenda of the seminar are available on TT:CLEAR.[9]

19. The expected outcome of the seminar was to provide Parties with a clear understanding of the technical feasibility and cost implications of the networking and strengthening of technology centres in developing countries. The seminar focused also on better defining the objectives of the network, clarifying its targeted users and their needs for information, tools that are currently available, how best to build on other relevant initiatives, in particular building on the gaps and barriers identified in the synthesis report on technology needs identified by non-Annex I Parties.

20. In his opening remarks, the EGTT Chair noted that although Internet search engines could provide thousands of hits in response to a technology related search, developing countries still face barriers in accessing relevant technology information. Questions relating to finding the right technology suitable to national conditions cannot be answered easily, and regional centres will be able to provide more relevant information to clients. In this context, he highlighted the importance of sharing information between technology centres, of the pilot network, and of sharing experiences and lessons learned between the centres participating in the network.

21. At the opening, the participant from the UNFCCC secretariat outlined key aspects of the work on development and transfer of technologies, their linkages with the work on technology information and the pilot network project and the main objectives of the seminar. He also outlined its previous work on technology information. In particular, he highlighted elements relating to the role of environmentally sound technologies (ESTs) in addressing the climate change challenge, the development and transfer of technologies under the Convention, the theme on technology information of the technology transfer framework including mandates, work carried out, gaps and barriers, networking technology centres,

[8] Interested in joining the pilot network.
[9] <http://ttclear.unfccc.int/ttclear/jsp/index.jsp?mainFrame=../html/WshpBonn2.html>.

recommendations for future work and EGTT recommendations on networking, and the relevant findings of the synthesis report of technology needs of non-Annex I Parties.

A. Presentations by the centres participating in the pilot network

22. A representative of the ITTC outlined the role of the centre in the technology transfer system of Tsinghua University in China, its structure, and its main areas of activity: environment, energy, biotechnology and chemical engineering. The main functions of the centre are: to provide technology licensing and marketing services for overseas companies; to help Chinese companies seek required technologies from overseas markets; to provide complete business/technology consulting service for overseas companies interested in the Chinese market; and to help Chinese enterprises export their technology or products into international markets. The representative noted that the centre has a national network, experts, company, and government resources. She underlined the reasons for participation in the pilot project, the work carried out, the problems to be solved and provided suggestions on what needs to be done in the future. She presented also three case studies on the work of the centre: use of a fuel cell on a city bus; a waste water treatment using nuclear technology; and a nonpoluting paper pulp factory.

23. Another ITTC representative presented details of work carried out to link ITTC to the pilot network, including the technical solution and software used, the system structure, web services developed, and made an online demonstration. As regards the future, he noted the need for more work to refine the technical solution (e.g. optimize the information flow, data buffering and security); to develop new web services (e.g. financing, successful case studies), networking entities and people for industry; and to address the language issues.

24. The discussion highlighted the importance of access to quality data, often available with local governments, and data collection and maintenance which is a resource-intensive activity, and indicated that some 50,000 users access information from ITTC.

25. A representative of CITET highlighted the functions of the centre as a hub for cleaner production in the region, serving 16 countries and maintaining an environmental portal that provides access to information in French, English and Arabic. She presented some of the projects implemented by CITET and its services, including international cooperation, technical assistance (mainly on diagnosis and establishing environmental management systems), laboratory analysis, training, transfer of technology, documentation and information. The centre is part of the network on cleaner production centres of UNIDO, a focal point for UNEP, and works closely with the World Bank and the European Commission. Its web portal offers a worldwide documentary source with a search tool, a workspace for environmental actors, and a personalized source of information. The portal was developed with support from the World Bank and the German Technical Cooperation Ministry.

26. Another representative of CITET presented the web service implementation of the link to the pilot network, including services and methods created, examples of searches for information, and software used. He stressed that the software developed is kept separately from the main CITET web portal to avoid potential conflicts during the testing phase which may impact negatively on the portal. He also presented the main problems encountered during the implementation of the link, potential problems that could appear by extending the number of services provided and/or by increasing the number of centres, some measures that could reduce the efforts of new centres joining the network and cost–effort estimations for implementation of a link by a new centre.

27. The CITET representative mentioned that web service techniques have been mastered and that CITET will inform visitors of its website of its ability to connect web services directly to all databases by means of its newsletter and the main page of its website.

28. A representative of the CCCCC said that the centre was designated by the governments of the Caribbean Community to be the centre of excellence for the development of policy, technical research and the mobilization of financial and other resources to address climate change within the community. In addition to participating in the pilot network, the centre is expected to become a regional node for the education and outreach clearing house mechanisms under Article 6 of the Convention. He mentioned the problem the centre had with its website, which was leased/rented from and hosted by a private company as part of a joint Global Environment Facility and World Bank project activity. After completion of the project, CCCCC lost control over the quality and administration of the website and could not complete the activities planned under the pilot project.

29. The CCCCC has now established a new website,[10] which came online in February 2007, owned by and located within the centre thus allowing for administrative, technical and editorial control. The site is now being re-populated with data and information on previous projects and activities. Towards this end, the CCCCC seeks to re-establish links with the UNFCCC process and expressed strong interest in accessing the financial resources that were allocated under the pilot network but never accessed to carry out this work.

30. A representative of Natural Resources Canada highlighted the role of the CEP as gateway to Canadian providers of climate change and clean energy products and services, in particular to help visitors navigate the vast resources and information about Canada's expertise and innovative climate change and clean energy industry. He noted that the portal contains information on country specific initiatives from Canada and twenty-three other countries, energy technology projects conducted by Canada and Canadian firms and various events and described the work carried out to link the portal with TT:CLEAR.

31. The CEP representative presented the results of an analysis that showed an increase in the effectiveness of the use of the portal, including on the depth and length of sessions, sessions by country, total numbers of click through, and click through by area of operation and on provinces, and suggested that similar analysis should be performed by each centre in the pilot network. As regards the pilot network, he mentioned that the objective was to prove the concept and develop best practices to facilitate and reduce costs for subsequent implementations by developing countries. Looking ahead, he stressed the need to better define the user base and their information needs, resource constraints and skills gaps to ensure that the best available tool exists. He also raised several questions to be addressed during discussions and provided written comments that are available on TT:CLEAR.

32. Discussions highlighted the services and information offered by RetScreen Software, in some 23 languages, on renewable and energy efficiency technologies, the need for dedicated resources to maintain and update the content of such portals, the need for standardization and use of key words to allow for searches in the network, data buffering as a potential solution to reduce the response time to searches, and the potential of online translation of content to address the language barrier.

33. The written comments submitted by U.S.–CTC Gateway, distributed to participants and discussed during the seminar, indicated that the United States Government established the portal to provide information to facilitate climate technology cooperation with developing countries and countries in transition. A revised Gateway is under development and will mainly consist of links to United States Government websites that highlight clean technology programs, projects and materials. In addition, other websites and specific materials that contain climate-friendly technological information, such as case studies and tools will be linked to the website. Direct hyperlinks will continue to send users to information sources and provide the most up-to-date information. Although some information may be directly placed on the revised website, this will continue to be a small percentage of the total content.

[10] <www.caribbeanclimate.bz>.

34. Once the Gateway is revised, time and resources permitting, a demonstration of the site could be provided. In the meantime, the comments suggested that alternative web systems of information retrieval (mutually searchable databases and direct links) be demonstrated and compared for the following factors: ease of retrieval (speed, length of forms, and information needed to retrieve information); current viability of the links; and the appropriateness of the information supplied by the database.

35. A representative of UNEP SANet said that the project seeks to assist business managers and experts in making informed decisions regarding investments in cleaner technologies by offering three kinds of different but interlinked services: (i) face-to-face communication at the country and regional levels through local desks; (ii) technical assistance and training; and (iii) Internet-based information services, including case studies of businesses that have successfully switched to cleaner technologies.

36. SANet local desks, currently located in Brazil, India, Nicaragua, Peru and the United Republic of Tanzania, offer free information and advice on how to put cleaner technology to work and articulate the need of local stakeholders, thereby increasing local ownership and participation of local businesses. With experts on hand at each location, they offer free advisory services to guide exploration of cleaner-technology options for the client's business and free brokering service to put clients in touch with qualified experts. Each desk maintains a database of experts with proven track records.

37. The SANet Internet-based information services offer easy access to clean-technology resources, including case studies documenting successful adoptions of cleaner technologies, experts with clean-technology experience and how to contact them, planning tools to aid assessing the feasibility of adopting cleaner technology, finance resources and the institutions providing them, and technical assistance and training. He highlighted the e-learning initiative lead by India Local Desk and the SANet Clean Technology News Wire service.

38. Discussions highlighted various possibilities to involve users in ranking the content of the portals and websites in the pilot network (user-driven content), including by means of web boards and facilities to provide comments, ranking web pages, and blogging. They also underlined the importance of adding the date of last update in the information shared in the network so that the nodes can assess how old the information is and the need for better outreach and to make this pilot network known to potential users, other technology centres, and national chambers of commerce. Some participants suggested that nodes should take the lead in conducting issue based outreach, and in regional and sectoral specific activities.

39. The UNFCCC secretariat highlighted the objective and targeted audience of TT:CLEAR and its main role – to complement and work with existing websites and clearing houses of other relevant international organizations and national or regional technology information centres. TT:CLEAR has the potential to act as a gateway for fast access to up-to-date information on the latest technology transfer projects and case studies of successful technology transfer, environmentally sound technologies and know-how, and organizations and experts involved in the development and transfer of technologies. The work carried out to facilitate the exchange of information in the pilot network included development of new services to allow access to TT:CLEAR information on experts, documents and links to Internet resources. Some participants suggested that the TT:CLEAR search interface is too complex for novice users and suggested that it be split into simple and advanced search pages.

B. Summary of experiences and lessons learned

40. The pilot network is a useful exercise for assessing the technical feasibility of a network of technology information centres. Some of the implementation challenges, good practices and lessons learned identified during the seminar are given below:

(a) Defining standards for describing technologies, projects, events, etc, is essential for an efficient exchange of information in such a network. Exchanging information between

the centres could contribute to harmonization of templates used for projects and expert databases, help develop a mechanism to share this type of information, and ensure an appropriate quality control system. It could also harmonize the terminology used.

(b) Web services are a good option for establishing an information sharing network. This technology is mature and flexible and permits an effective exchange of information over the Internet with acceptable delays for search engines and other applications. Nevertheless, the response time should be further tested and techniques such as data buffering and cache scripts may need to be used by a node where the Internet bandwidth is smaller or when the number of nodes in the network increases. To improve the response time, web services should have the possibility to return a limited number of hits (e.g. first 10 hits).

(c) Although most centres found web services to be the preferred option for sharing information in the pilot network, one centre preferred simple annotated links to resources as the most effective and efficient way to deliver information to visitors because:

(i) Mutually searchable databases require considerable work to align formats as well as oversight for needed revisions, and therefore do not add value for users that justifies this investment. With limited budgets, mutually searchable database structures are too resource intensive. Limited resources might be better used to expand links or include content.

(ii) Direct links do require routine maintenance to check for continued viability. Further, direct links take visitors away from the referring website thereby potentially limiting subsequent access. However, for a given level of resource investment, direct links can provide access to a greater amount of substantial high-quality and current information to users of technology information websites.

(d) Web services and clients should be developed by each node. Most nodes developed web services to share information with TT:CLEAR, and further work is needed to develop services between other nodes (e.g. ITTC–CITET and CITET–CEP). However, if a node gathers information from all the other nodes in the network, problems may arise in terms of response time.

(e) Close cooperation is needed between the nodes in the development phase to fine-tune the services according to different needs. The answers provided by web services should include the date of last update of the information provided and, for information contained in databases, the identification keys.

(f) Centres should also document better the web services they offer, clarify their regional coverage and sectoral expertise and provide information on the pilot network on their websites, including links to the websites of all nodes in the network.

(g) Intuitive user interfaces can be developed to allow advanced searches between the participating nodes in the network. Good documentation is needed for ongoing support and to simplify the process for new centres to join the network.

(h) It is expected that the network will increase utilization in each node. However, this may not always be the case and a mechanism is needed to prevent nodes from copying information from other nodes and making it available directly to their users, and to ensure that proper credits to the node providing the information are given to users.

(i) Some portals and centres encountered problems because of: too many issues covered; lack of access to national or regional information (e.g. some local desks that were not very active in SANet); project management; language and translation issues; and quality of content presented on their websites or portals.

(j) While exchanging user profiles could contribute to simplifying user interfaces and delivering customized information, sharing this information in the network may be against legal provisions on privacy.

(k) If the number of nodes increases, it may be important to consider the implementation of a main (central) server that could contain information about, at least, the content and information offered by each node. This model could help to get a faster response time to all the nodes and could also provide utilization statistics.

(l) User statistics and online usage patterns are important tools to be used by each node to assess their effectiveness in providing information. Internet users (e.g. enthusiasts, activists and bloggers) could be better engaged in increasing quantity and quality of content delivered through the nodes.

(m) RSS[11] feeds were used successfully by some nodes to provide targeted news.

41. Some of the issues relating to needs, logistical implications and resource requirements are listed below:

(a) Web services are relatively easy to develop and only modest financial resources are needed to implement a network of technology centres using such services (coding is not hard to learn with appropriate background).[12]

(b) Hardware resources are a moderate barrier for technology centres willing to access the network, but this may change with the growth of the network and services offered.

(c) Efficient participation in such a network requires long-term commitments from centres. Development and maintenance of web portals in project based activities, such as in the case of CCCCC, proved to be unsustainable.

(d) Sufficient staff should be dedicated to develop content and update the information provided by the node. Some centres lack staff with technical skills needed for participating in such a network. Starter kits, such as the TT:CLEAR distribution CD-ROM and centralized solutions that include low-end data collection computers and a central high-end computer connected to the Internet, may prove useful in particular situations.

(e) Translation of information in local languages remains an important barrier that would require considerable resources to overcome.

C. Potential contribution of a network of technology centres

42. Participants stressed that both information sharing and interactive matchmaking should be considered as objectives of the network. However, information sharing has a global/regional character

[11] RSS is a family of web feed formats used to publish frequently updated digital content, such news feeds.

[12] CITET estimated a total of 68 days of work for implanting a link to the network as follows: computer purchasing, seven days; web service and web client programming and integration, 45 days; information and data collection, seven days; data exchange with other network centres, four days; training session, five days.

whereas matchmaking tends to have a regional and national character. They also stressed that both access to financing and to information were commonly identified barriers to technology transfer in the synthesis report on technology needs identified by non-Annex I Parties.

43. A matchmaking function may increase funding to developing countries for technology transfer projects and increase the use of local project developers and experts. A network may also allow for better tracking of successful projects and their contribution to mitigation of, and adaptation to, climate change. A performance indicator for the network could be the number of projects that were promoted and succeeded in securing financing.

44. With regard to information needs of implementing projects in developing countries participants mentioned information on: specific technologies that increase productivity, are using resources more efficiently and are climate friendly; case studies and success stories; financial sources and mechanisms; and technology training programmes and courses. In this context, renewable technologies and technologies for adaptation to climate change were highlighted as priorities.

45. Participants also mentioned the need for the network to better leverage other initiatives such as the Climate Technology Initiative–Private Financing Advisory Network (PFAN) and initiatives of other United Nations agencies (e.g. UNEP, UNDP and UNIDO). They noted the complementarity of the centres participating in the pilot network and these initiatives. For example, SANet local desks could play a role in identifying projects and refer them to PFAN. TT:CLEAR could play a similar role in identifying projects from technology needs assessments (TNAs). CITET is already one of the UNIDO centres for cleaner production and a focal point for UNEP and is now broadening its scope to cover issues relating to transfer of climate friendly technologies. CCCCC is actively working with the World Bank and the GEF on adaptation issues, and ITTC has a central role in the structure supporting technology transfer in China.

46. Participants underlined that provision of information should be client driven and it should be continuously adjusted based on feedbacks from users, surveys and other means to assess effectiveness of the use of portals and web sites. In this context, CEP indicated as major client groups private sector interested in investments, CITET indicated as major clients both public sector (e.g. assistance to ministries) and private sector, mainly industrial enterprises seeking to: obtain ISO 14000 and EMAS certificates; to audit the environmental state of enterprises and assist to upgrade it; solve issues relating to waste water and solid waste management. CITET is also providing consultations to non-governmental organizations (NGOs) and research and development organizations. CCCCC noted the public sector as their main client, while ITTC serves mainly private small- and medium-sized enterprises in the environment and chemical fields.

IV. Summary outcomes of the pilot project

47. The pilot project has accomplished its objectives 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 proposed means for sharing information were found to be technically feasible. The preferred option was compared with alternative means of sharing information between these centres and was found to be still relevant, and the resource implications are relatively modest.

48. With regard to possible future work, priority areas were identified, including the need to do more work on refining the technical solution (e.g. optimise the information flow, data buffering and security), develop new web services (e.g. financial resources and successful case studies), networking entities and people for industry, outreach this activity to make it better known to potential users, better leverage other

initiatives and addressing the language issues. Current centres in the pilot network, particularly the ones in China and Tunisia, could become regional hubs for technology information sharing and use this strength to better contribute to project development and innovative financing activities in the region.

49. The pilot project showed that two centres in developing countries participating in the pilot network have capabilities for enhancing the dissemination of technology transfer information. However, the following questions remain: (i) should this network be maintained and expanded to a larger scale to cover more centres in the regions, and (ii) would other centres have the infrastructure, skills needed and expertise and clients to join the network? To address these questions, an option would be to allow more time for the existing centres to perform their expected functions and, to the extent possible, allow few more centres, particularly from countries in Africa and Latin America and the Caribbean, to join the network to ensure coverage of main languages of the regions. The secretariat could be requested by the SBSTA to report on the outcome of this extended exercise to the SBSTA at its twenty-eighth session.

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